QUESTION BANK

JE

MECHANICAL DEPARTMENT

Question Bank for JE

SN	Subject	No. of Bits
1.	Strength of Materials	100
2.	Heat transfer , Refrigeration and Air Conditioning	80
3.	IC Engines and Nuclear Power Plants	80
4.	Production Engineering	100
5.	Thermodynamics	100
6.	Industrial Engineering and Production Management	100
7.	Fluid Mechanics	100
8.	Material Science	135
9.	Machine Design	100
10.	Combined bits	101
	Total	**996**

STRENGTH OF MATERIALS

1.1. The deflection of any rectangular beam simply supported, is
a) directly proportional to its weight
b) inversely proportional to its width
c) inversely proportional to the cube of its depth
d) directly proportional to the cube of its length

1.2. The ratio of the moment of inertia of a circular plate and that of a square plate for equal depth, is
a) equal to one
b) less than one
c) equal to $3\pi/16$
d) more than one

1.3. The ratio of elongations of a conical bar due to its own weight and that of a prismatic bar of the same length, is
a)1/2
b)1/3
c)1/4
d)1/5

1.4. The ratio of the maximum deflections of a beam simply supported at its ends with an isolated central load and that of with a uniformly distributed load over its entire length, is
a) 1
b) 3/2
c) 2/3
d) 1/3

1.5. The shape of the bending moment diagram over the length of a beam, having no external load, is always
a) parabolic
b) cubical
c) linear
d) circular

1.6. In a loaded beam, the point of con-traflexture occurs at a section where
a) shearing force is maximum
b) bending moment is minimum
c) bending moment is maximum
d) bending moment is zero or changes sign

1.7. The shape of the bending moment diagram over the length of a beam, carrying a uniformly distributed load is always
a) circular
b) linear
c)parabolic
d) cubical

1.8. The ratio of strengths of solid to hollow shafts, both having outside diameter D and hollow having inside diameter D/2, in torsion, is
a) 1/2
b) 1/4
c) 1/16
d) 15/16

1.9. As compared to uniaxial tension or compression, the strain energy stored in bending is only
a) 1/2
b) 1/4
c) 1/3
d) 1/5

1.10. Pick up the incorrect statement
a) Welded joints have better finish
b) Welded joints provide rigidity
c) A welded joint develops strength of its parent metal
d) Welding takes more time than riveting.

1.11. If the shear force along a section of a beam is zero, the bending moment at the section is
a) average of maximum-minimum
b) maximum
c) minimum
d) zero

1.12. A three-hinged arch is said to be :
a) statically determinate structure
b) statically indeterminate structure
c) a bent beam
d) none of these

1.13. The maximum twisting moment a shaft can resist, is the product of the permissible shear stress and
a) polar moment of inertia
b) moment of inertia
c) polar modulus
d) modulus of rigidity

1.14. A beam of length L is pinned at both ends and is subjected to a concentrated bending couple of moment M at its centre. The maximum bending moment in the beam is
a) M/2
b) ML/2
c) M/3
d) M

1.15. If two forces acting at a joint are not along the straight line, then for the equilibrium of the joint
a) each force must be zero
b) one of the forces must be zero
c) forces must be equal and of the same sign
d)forces must be equal in magnitude but opposite in sign.

1.16. The minimum number of rivets for the connection of a gusset plate, is
a) 1
b) 2
c) 3
d) 4

1.17. The weakest section of a diamond riveting, is the section which passes through
a) one rivet hole of end row
b) first row
c) second row
d) central row

1.18. For a simply supported beam with a central load, the bending moment is
a) least at the centre
b) least at the supports
c) maximum at the centre.
d) maximum at the supports

1.19. The slenderness ratio of a vertical column of a square cross-section of 2.5 cm sides and 300 cm length, is
a) 416
b) 200
c) 240
d) 360

1.20. If the width of a simply supported beam carrying an isolated load at its centre is doubled, the deflection of the beam at the centre is changed by
a) 2
b) 1/2
c) 4
d) 1/8

1.21. An arch may be subjected to
a) shear force and thrust
b) bending moment and shear force
c) thrust, shear force and bending moment.
d) bending moment and axial force

1.22. The law which states, “within elastic limits strain produced is proportional to the stress producing it”, is known as
a) stress law
b) poisons law
c) hooke’s law
d) bernoulli’s law

1.23. If a three hinged parabolic arch carries a uniformly distributed load on its entire span, every section of the arch resists.
a) compressive force
b) bending moment
c) shear force
d) tensile force

1.24. The length of a column, having a uniform circular cross-section of 7.5 cm diameter and whose ends are hinged, is 5 m. If the value of E for the material is 2100 tonnes/cm2, the permissible maximum crippling load will be
a) 1.288 t
b) 288.0 t
c) 12.88 t
d) 128.8 t

1.25. In a beam, the neutral plane
a) may be its centre
b) does not change during deformation
c) passes through the C.G. of the area of cross-section
d) none of these

1.26. The radius of gyration of a rectangular section is not proportional to
a) square root of the moment of inertia divided by area of the section
b) square root of the inverse of the area
c) square root of the moment of inertia
d) none of these

1.27. A three hinged parabolic arch hinged at the crown and springings, has a horizontal span of 4.8 m and a central rise of 1 m. It carries a uniformly distributed load of 0.75 tonne per metre over half left hand span. The horizontal thrust at the support will be
a) 1.08 t
b) 10.8 t
c) 1.8 t
d) 0.8 t

1.28. The region of the cross-section of a column in which compressive load may be applied without producing any tensile stress, is known as the core of the cross-section. In circular columns the radius of the core, is
a) one-third of the radius
b) one-half of the radius
c) one-quarter of the radius
d) one-fifth of the radius

1.29. Pick up the correct statement from the following :
a) A rigid material has no plastic zone
b) A rigid material has no plastic zone
c) A brittle material has no plastic zone
d) all the above

1.30. A reinforced concrete beam is assumed to be made of
a) heterogeneous material
b) homogeneous material
c) isotropic material
d)none of these

1.31. If the rivets in adjacent rows are staggered and outermost row has only one rivet, the arrangement of the rivets, is called
a) chain riveting
b) zig-zag riveting
c) diamond riveting
d)none of these

1.32. A simply supported beam carrying a uniformly distributed load over its whole span, is propped at the centre of the span so that the beam is held to the level of the end supports. The reaction of the prop will be

a) 3/8th the distributed load

b) half the distributed load

c) 5/8th the distributed load

d) distributed load

1.33. The number of points of contraflexure in a simple supported beam carrying uniformly distributed load, is

a) 3

b) 2

c) 0

d) 1

1.34. When loads are applied proportionately to a frame structure containing its members in one plane, the structure is called

a) plane frame

b) grid frame

c) space frame

d) truss frame.

1.35. The shear stress at any section of a shaft is maximum

a) at the centre of the section

b) at a distance r/2 from the centre

c) at the top of the surface

d) at a distance 3/4 r from the centre

1.36. A beam is said to be of uniform strength, if

a) deflection is same throughout the beam

b) shear stress is same throughout the beam

c) bending stress is same throughout the beam

d) B.M. is same throughout the beam

1.37. The maximum bending moment due to a moving load on a simply supported beam, occurs

a) at the supports

b) anywhere on the beam

c) under the load

d) at the mid span

1.38. The range within which a load can be applied on a rectangular column, to avoid any tensile stress, is

a) one-fourth of the base

b) one-fifth of the base

c) one-half of the base

d) one-fifth of the base

1.39. In a three hinged arch, the shear force is usually

a) maximum at crown

b) maximum at springings

c) varies with slope.

d) maximum at quarter points

1.40. Influence lines are drawn for structures

a) pin-jointed truss

b) of any type

c) statically determinate

d) none of these.

1.41. When two plates butt together and are riveted with two cover plates with two rows of rivets, the joint is known as

a) butt joint

b) double riveted double cover butt joint

c) lap joint

d) single riveted single cover butt joint

1.42. The areas of cross-section of a square beam and a circular beam subjected to equal bending moments, are same.

a) both the beams are equally strong

b) square beam is more economical

c) both the beams are equally economical

d) circular beam is more economical

1.43. Hooke's law states that stress and strain are

a) directly proportional

b) curvilinearly related

c) inversely proportional

d) none of these.

1.44. If the depth of a simply supported beam carrying an isolated load at its centre, is doubled, the deflection of the beam at the centre will be changed by a factor of

a) 2

b) 1/8

c) 8

d) 4

1.45. If the length of a cantilever carrying an isolated load at its free end is doubled, the deflection of the free end will increase by

a) 2

b) 1/8

c) 3

d) 8

1.46. For a beam, if fundamental equations of statics are not sufficient to determine all the reactive forces at the supports, the structure is said to be

a) statically determinate

b) determinate

c) statically indeterminate

d) none of these.

1.47. The moment diagram for a cantilever which is subjected to a uniformly distributed load will be a

a) parabola

b) rectangle

c) cubic parabola

d) triangle

1.48. The phenomenon of slow growth of strain under a steady tensile stress, is called

a) creeping

b) breaking

c) yielding

d) none of these

1.49. The effect of arching a beam, is

a) to increase the bending moment throughout

b) to reduce the bending moment throughout

c) nothing on the bending throughout

d) all

1.50. A cast iron T section beam is subjected to pure bending. For maximum compressive stress to be three times the maximum tensile stress, centre of gravity of the section from flange side is

a) h/2

b) h/4

c) h/3

d)2/3h

1.51. Ties are load carrying members of a frame, which are subjected to
a) axial compressive loads
b) axial tension loads
c) torsional loads.
d) transverse loads

1.52. For a beam having fixed ends, the unknown element of the reactions, is
a) vertical components at either end
b) horizontal components at either end
c) horizontal component at one end and vertical component at the other
d) horizontal and vertical components at both the ends.

1.53. The value of Poisson's ratio always remains
a) equal to one
b) greater than one
c) less than one
d) none of these

1.54. A column is said to be of medium size if its slenderness ratio is between
a) 20 and 32
b) 160 and 180
c) 32 and 120
d) 120 and 160

1.55. The bending moment is maximum on a section where shearing force
a) is minimum
b) is equal
c) is maximum
d) changes sign

1.56. The moment diagram for a cantilever carrying linearly varying load from zero at its free end and to maximum at the fixed end will be a
a) triangle
b) parabola
c) rectangle
d) cubic parabola

1.57. The rise of a parabolic arch at quarter points, is equal to
a) 2/3 times the rise of the crown
b) 1/2 times the rise of the crown
c) 1/3 times the rise of the crown
d) 3/4 times the rise of the crown

1.58. For the same height, the bottom width for no tension,
a) for triangular section is same as that of a rectangular section
b) for triangular section is more than rectangular section
c) for rectangular section is more than triangular section
d) none of these.

1.59. Strain energy of any member may be defined as work done on it
a) to resist elongation
b) to deform it
c) to resist shortening
d) all the above

1.60. The stress necessary to initiate yielding, is considerably
a) less than that necessary to continue it
b) more than that necessary to continue it
c) more than that necessary to stop it
d) less than that necessary to stop it.

1.61. Failure of riverted joints is due to
a) Shearing of rivets
b) Tearing of plates between rivets
c) crushing of rivets
d) all the above

1.62. Shear force for a cantilever carrying a uniformly distributed load over its length, is
a) cubic parabola
b) triangle
c) parabola
d) rectangle

1.63. Beams of uniform strength are preferred to those of uniform section because these are economical for
a)large spans
b)short spans
c)heavy spans
d)light weights

1.64. In a continuous bending moment curve the point where it changes sign, is called
a) point of virtual hinge
b) point of inflexion
c) point of inflexion
d)all the above

1.65. Reactions at the supports of a structure can be determined by equating the algebraic sum of
a) horizontal forces to zero
b) moment about any point to zero
c) moment about any point to zero
d) all the above

1.66. Pick up the correct assumption of the theory of simple bending
a) The resultant pull or thrust on transverse section of a beam is zero
b) Transverse section of a beam remains plane before and after bending
c) Transverse section of a beam remains plane before and after bending
d) all the above

1.67. A rectangular log of wood is floating in water with a load of 100 N at its centre. The maximum shear force in the wooden log is
a) 50N at the centre
b) 50N at each end
c) none of these
d) 100N at the centre

1.68. In a solid arch, shear force acts
a) tangentially to the arch
b) along the axis of the arch
c) vertically upwards
d) perpendicular to the axis of arch

1.69. A three hinged arch is loaded with an isolated load 1000 kg at a horizontal distance of 2.5 m from the crown, 1 m above the level of hinges at the supports 10 metres apart. The horizontal thrust is
a) 125 kg
b) 750 kg
c) 1250 kg
d) 2500 kg

1.70. For keeping the stress wholly compressive the load may be applied on a circular column anywhere within a concentric circle of diameter
a) d/4
b) d/2
c) d/10
d) d/3

1.71. To ascertain the maximum permissible eccentricity of loads on circular columns, the rule generally followed, is
a) middle third rule of columns
b) middle half rule of columns
c) middle fourth rule of columns
d) none of these.

1.72. The neutral axis of a beam cross-section must
a) be an axis of symmetry of the section
b) pass through the centroid of the section
c) be equidistant from the top of bottom films
d)none of these

1.73. The moment diagram for a cantilever whose free end is subjected to a bending moment, will be a
a)rectangle
b)triangle
c)parabola
d)cubic parabola

1.74. A member is balanced at its end by two inclined members carrying equal forces. For equilibrium the angle between the inclined bars must be
a) 120
b) 60
c) 30
d) 3

1.75. The under mentioned type is simple strain
a) compressive strain
b) tensile strain
c) shear strain
d)all the above

1.76. The ratio of the effective length of a column and minimum radius of gyration of its cross-sectional area, is known
a) slenderness ratio
b) crippling factor
c) crippling factor
d)none of these

1.77. For a stable frame structure, number of members required, is
a) twice the number of joints minus three
b) three times the number of joints minus three
c) twice the number of joints minus two
d) twice the number of joints minus one

1.78. The following assumption is not true in the theory of pure torsion
a) Cross-section of the shaft, which is plane before twist remains plane after twist
b) The twist along the shaft is uniform
c) The shaft is of uniform circular section throughout
d) All radii get twisted due to torsion.

1.79. When a rectangular beam is loaded transversely, the maximum compressive stress develops on
a) bottom fibre
b) neutral axis
c) every cross section
d) top fibre

1.80. A short masonry pillar is 60 cm x 60 cm in cross-section, the core of the pillar is a square whose side is
a) 14.14 cm
b) 17.32 cm
c) 20 cm
d) 22.36cm

1.81. The energy stored in a body when strained within elastic limit is known as
a) resilience
b) impact energy
c) proof resilience
d) strain energy

1.82. Strain resetters are used to
a) measure volumetric strain
b) measure linear strain
c) relieve strain
d) measure shear strain

1.83. The deformation per unit length is called
a) shear stress
b) tensile stress
c) compressive stress
d) strain

1.84. A body is subjected to a tensile stress of 1200 MPa on one plane and another tensile stress of 600 MPa on a plane at right angles to the former. It is also subjected to a shear stress of 400 MPa on the same planes. The maximum normal stress will be

a) 400Mpa

b) 500Mpa

c) 600 Mpa

d) 1000Mpa

1.85. Euler's formula holds good only for
a) both short and long columns
b) long columns
c) weak columns
d) short columns

1.86. Two closely coiled helical springs 'A' and 'B' are equal in all respects but the number of turns of spring 'A' is half that of spring 'B' The ratio of deflections in spring 'A' to spring 'B' is
a) 1/2
b) 1/8
c) 1/4
d) 2

1.87. A steel bar of 5 mm is heated from 15° C to 40° C and it is free to expand. The bar Will induce
a) tensile stress
b) shear stress
c) compressive stress
d) no stress

1.88. The maximum diameter of the hole that can be punched from a plate of maximum shear stress 1/4th of its maximum crushing stress of punch, is equal to (where t = Thickness of the plate)
a) 8t
b) 4t
c) t
d) 10t

1.89. In compression test, the fracture in cast iron specimen would occur along
a) the axis of load
b) an oblique plane
c) at right angles to the axis of specimen
d) none of the above

1.90. The simply supported beam ‘A’ of length l carries a central point load W. Another beam ‘B’ is loaded with a uniformly distributed load such that the total load on the beam is W. The ratio of maximum deflections between beams A and B is
a) 5/4
b) 4/5
c) 5/8
d) 8/5

1.91. The object of caulking in a riveted joint is to make the joint
a) free from stresses
b) free from corrosion
c) leak-proof
d) stronger in tension

1.92. The point of contraflexure is a point where
a) shear force changes sign
b) bending moment is maximum
c) shear force is maximum
d) bending moment changes sign

1.93. Strain energy is the
a) energy stored in a body when strained upto the breaking of a specimen
b) maximum strain energy which can be stored in a body
c) energy stored in a body when strained within elastic limits
d) proof resilience per unit volume of a material

1.94. The maximum stress produced in a bar of tapering section is at
a) smaller end
b) larger end
c) middle
d) anywhere

1.95. When a rectangular beam is loaded transversely, the maximum compressive stress is developed on the
a) every cross-section
b) bottom layer
c) neutral axis
d) top layer

1.96. The neutral axis of the cross-section a beam is that axis at which the bending stress is
a) maximum
b) infinity
c) zero
d) minimum

1.97. When a bar is cooled to – 5°C, it will develop
a) tensile stress
b) shear stress
c) no stress
d) compressive stress

1.98. A masonry dam may fail due to
a) tension in the masonry of the dam and its base
b) overturning of the dam
c) crushing of masonry at the base of the dam
d) any one of the above

1.99. The stress induced in a body, when suddenly loaded, is _____ the stress induced when the same load is applied gradually.
a) equal to
b) one-half
c) four times
d) twice

1.100. When shear force at a point is zero, then bending moment is _____ at that point.
a) maximum
b) zero
c) minimum
d) infinity

STRENGTH OF MATERIALS																			
1.1	C	1.11	B	1.21	C	1.31	C	1.41	B	1.51	B	1.61	D	1.71	C	1.81	D	1.91	C
1.2	D	1.12	A	1.22	C	1.32	C	1.42	B	1.52	D	1.62	D	1.72	B	1.82	B	1.92	D
1.3	B	1.13	C	1.23	A	1.33	C	1.43	A	1.53	C	1.63	A	1.73	A	1.83	D	1.93	C
1.4	C	1.14	D	1.24	C	1.34	C	1.44	B	1.54	C	1.64	D	1.74	A	1.84	D	1.94	A
1.5	C	1.15	A	1.25	B	1.35	C	1.45	B	1.55	D	1.65	D	1.75	D	1.85	B	1.95	B
1.6	D	1.16	B	1.26	D	1.36	C	1.46	C	1.56	D	1.66	D	1.76	A	1.86	A	1.96	C
1.7	C	1.17	B	1.27	A	1.37	C	1.47	A	1.57	D	1.67	D	1.77	A	1.87	D	1.97	A
1.8	D	1.18	C	1.28	C	1.38	B	1.48	A	1.58	A	1.68	D	1.78	D	1.88	B	1.98	D
1.9	C	1.19	A	1.29	D	1.39	B	1.49	B	1.59	D	1.69	C	1.79	D	1.89	B	1.99	D
1.10	D	1.20	B	1.30	A	1.40	D	1.50	B	1.60	B	1.70	A	1.80	A	1.90	D	1.100	C

HEAT TRANSFER , REFRIGERATION AND AIR CONDITIONING

2.1. During adiabatic saturation process on unsaturated air _____ remains constant.
a) dew point temperature
b) wet bulb temperature
c) dry bulb temperature
d) relative humidity

2.2. A perfect black body is one which
a) absorbs heat radiations of all wave lengths falling on it
b) reflects all the heat radiations
c) is black in colour
d) is black in colour

2.3. For ammonia refrigerating systems, the tubes of a shell and tube condenser are made of
a) steel
b) copper
c) aluminium
d) brass

2.4. The formation of frost on cooling coils in a refrigerator
a) reduces power consumption
b) improves C.O.P. of the system
c) increases heat transfer
d) increases power consumption

2.5. The highest thermal diffusivity is of
a) concrete
b) lead
c) iron
d) wood

2.6. Thermal conductivity of water _____ with rise in temperature.
a) decreases
b) remains same
c) may increase or decrease depending upon temperature
d) increases

2.7. The optimum effective temperature for human comfort is
a) same in winter and summer
b) not dependent on season
c) higher in winter than in summer
d) higher in winter than in summer

2.8. The amount of radiation mainly depends upon the
a)temperature of the body
b) nature of the body
c) type of surface of the body
d)all of these

2.9. In free convection heat transfer transition from laminar to turbulent flow is governed by the critical value of the
a) Reynold's number
b) Grashoff's number
c) Reynold's number, Grashoff's number
d) Prandtl number, Grashoff's number

2.10. While designing the refrigeration system of an aircraft, the prime consideration is that the
a) power per TR is low
b) system has high C.O.P.
c) mass of refrigerant circulated in the system is low
d) mass of the refrigeration equipment is low

2.11. A refrigeration system
a) removes heat from a low temperature body and delivers it to a high temperature body
b) rejects energy to a low temperature body
c) removes heat from a high temperature body and delivers it to a low temperature body
d) none of the above

2.12. Thermal diffusivity is a
a) function of temperature
b) dimensionless parameter
c) physical property of a substance
d) all of these

2.13. The heat transfer takes place according to
a) First law of thermodynamics
b) Kirchhoff's law
c) Zeroth law of thermodynamics
d) Second law of thermodynamics

2.14. The difference between dry bulb temperature and wet bulb temperature, is called
a) dry bulb depression
b) wet bulb depression
c) dew point depression
d) degree of saturation

2.15. In aqua-ammonia and Lithium-bromide water absorption refrigeration systems, the refrigerants are respectively

a) ammonia and lithium bromide
b) water and lithium bromide
c) water and water
d) ammonia and water

2.16. The thickness of thermal and hydrodynamic boundary layer is equal if Prandtl number is
a) greater than one
b) equal to one
c) less than one
d) equal to nusslet number

2.17. In a psychrometric process, the sensible heat added is 30 kJ/s and the latent heat added is 20 kJ/s. The sensible heat factor for the process will be
a) 0.6
b) 0.37
c) 0.3
d) 0.67

2.18. In a psychrometric process, the sensible heat added is 30 kJ/s and the latent heat added is 20 kJ/s. The sensible heat factor for the process will be
a) evaporator
b) expansion valve
c) compressor
d) condenser

2.19. Which of the following statement is wrong?
a) Logarithmic mean temperature difference is not equal to the arithmetic mean temperature difference.
b) The amount of heat flow through a body is dependent upon the material of the body.
c) The heat transfer in liquid and gases takes place according to convection.
d) The heat transfer in liquid and gases takes place according to convection.

2.20. The by-pass factor for a cooling coil
a) may increase or decrease with increase in velocity of air passing through it depending upon the condition of air entering
b) increases with increase in velocity of air passing through it
c) decreases with increase in velocity of air passing through it
d) remains unchanged with increase in velocity of air passing through it

2.21. The temperature of ammonia after compression in a vapour compression system is
a) 70 to 110° C
b) 20 to 50° C
c) 50 to 70° C
d) none of these

2.22. Which of the following refrigerant has the maximum ozone depletion potential in the stratophere?
a) Ammonia
b) Carbon dioxide
c) Sulphur dioxide
d) Flourine

2.23. The boiling point of _____ is -10.5°C.
a) sulphur dioxide
b) carbon dioxide
c) R-12
d) ammonia

2.24. The critical radius is the insulation radius at which the resistance to heat flow is
a) maximum
b) minimum
b) zero
d)none of these

2.25. One tonne of refrigeration (1TR) means that the heat removing capacity is
a) 620Kj/min
b) 210 Kj/min
c) 21 Kj/min
d) 420Kj/min

2.26. Which of the following statement is correct?
a) The constant enthalpy lines are also constant wet bulb temperature lines.
b) The wet bulb and dry bulb temperature are equal at saturation condition.
c) The wet bulb temperature is a measure of enthalpy of moist air.
d) all of the above

2.27. A pressure gauge on the discharge side of a refrigerant compressor reads too high. The reasons will be
a) lack of cooling water
b) water temperature being high
c) dirty condenser surface
d) all of these

2.28. During humidification process, _____ increases.
a) wet bulb temperature
b) specific humidity
c) relative humidity
d) dry bulb temperature

2.29. The minimum temperature to which water can be cooled in a cooling tower is
a) dry bulb temperature of air
b) wet bulb temperature of air
c) dew point temperature of air
d) ambient air temperature

2.30. A heat pump working on a reversed Carnot cycle has a C.O.P. of 5. It works as a refrigerator taking 1 kW of work input. The refrigerating effect will be
a) 3kw
b) 1 kw
c) 4 kw
d) 2 kw

2.31. A boot-strap air cooling system has
a) two heat exchangers
b) one heat exchanger
c) one heat exchanger
d) three heat exchangers

2.32. The superheated vapour region, in a pressure enthalpy chart, is represented by the space
a) to the left of saturated liquid line
b) to the right of saturated liquid line
c) between the saturated liquid line and saturated vapour line
d) none of the above

2.33. The operating pressure for refrigerating units using R-12 as a refrigerant is
a) 12 bar
b) 8 bar
c) 16 bar
d) 2 bar

2.34. The centrifugal compressors are generally used for refrigerants that require
a) small displacements and low condensing pressures
b) small displacements and high condensing pressures
c) large displacements and high condensing pressures
d) large displacements and low condensing pressures

2.35. In electrolux refrigerator
a) hydrogen evaporates in ammonia
b) ammonia is absorbed in water
c) ammonia is absorbed in hydrogen
d) ammonia evaporates in hydrogen

2.36. The curved lines on a psychrometric chart indicates
a) wet bulb temperature
b) dry bulb temperature
c) dew point temperature
d) relative humidity

2.37. The automobile radiator is a heat exchanger of
a) regenerator type
b) parallel flow type
c) counter flow type
d) cross flow type

2.38. During sensible cooling of air _____ decreases.
a) relative humidity
b) dry bulb temperature
c) wet bulb temperature
d) specific humidity

2.39. The subcooling in a refrigeration cycle
a) increases C.O.P.
b) does not alter C.O.P.
c) decreases C.O.P.
d) none of these

2.40. Two long parallel surfaces each of emissivity 0.7 are maintained at different temperatures and accordingly have radiation heat exchange between them. It is desired to reduce 75% of the radiant heat transfer by inserting thin parallel shields of emissivity 1 on both sides. The number of shields should be
a) 3
b) 1
c) 2
d)4

2.41. The freezing point of R-12 is
a) -107.7°C
b) -86.6°C
c) -135.8°C
d) -95.2°C

2.42. The wet bulb depression is zero when relative humidity is
a) zero
b) 0.5
c) 0.75
d) 1

2.43. The condition of refrigerant as it leaves the compressor in a vapour compression system is
a) saturated liquid
b) wet vapour
c) dry saturated vapour
d) superheated vapour

2.44. The super-heating in a refrigeration cycle
a) decreases C.O.P
b) increases C.O.P
c) does not alter C.O.P
d) none of these

2.45. In a saturated air-water vapour mixture, the
a) dry bulb, wet bulb and dew point temperature are same
b) dew point temperature is lower than wet bulb temperature
c) dry bulb temperature is higher than wet bulb temperature
d) dry bulb temperature is higher than dew point temperature

2.46. Reynolds number is the ratio of
a) energy transferred by convection to that by conduction
b) kinematic viscosity to thermal diffusivity
c) inertia force to viscous force
d) none of the above

2.47. The ratio of Nusselt number and the product of Reynold's number and Prandtl number is equal to
a) Stanton number
b) Peclet number
c) Grashoff number
d) Biot number

2.48. The condition of refrigerant after passing through the expansion or throttle valve, in a vapour compression system is
a) very wet vapour
b) dry vapour
c) wet vapour
d) high pressure saturated liquid

2.49. The condition of refrigerant after passing through the expansion or throttle valve, in a vapour compression system is
a) radiation
b) convection
c) conduction
d) none of these

2.50. The radiation emitted by a black body is known as
a) total radiation
b) black radiation
c) all of these
d) full radiation

2.51. In a vapour compression system, the condition of refrigerant before entering the expansion or throttle valve is
a) very wet vapour
b) wet vapour
c) high pressure saturated liquid
d) dry vapour

2.52. A good refrigerant should have
a) high operating pressures and low freezing point
b) high specific volume and high latent heat of vaporisation
c) low C.O.P. and low freezing point
d) high latent heat of vaporisation and low freezing point

2.53. According to Stefan-Boltzmann law, the total radiation from a black body per second per unit area is directly proportional to the
a) square of the absolute temperature
b) fourth power of the absolute temperature
c) cube of the absolute temperature
d) absolute temperature

2.54. Air refrigeration cycle is used in
a) gas liquefaction
b) domestic refrigerators
c) commercial refrigerators
d) air-conditioning

2.55. Thermal conductivity of a material may be defined as the
a) quantity of heat flowing in one second through a slab of the material of area 1 cm2 and thickness 1 cm when its faces differ in temperature by 1° C
b) quantity of heat flowing in one second through one cm of material when opposite faces are maintained at a temperature difference of 1° C
c) heat conducted in unit time across unit area through unit thickness when a temperature difference of unity is maintained between opposite faces
d) all of the above

2.56. The alignment circle is marked on the psychrometric chart at
a) 20°C DBT and 50% RH
b) 26°C DBT and 50% RH
c) 20°C DBT and 60% RH
d) 26°C DBT and 60% RH

2.57. If a gas is to be liquified, its temperature must be
a) reduced to a value below its critical temperature
b) increased to a value above its critical temperature
c) equal to critical temperature
d) none of the above

2.58. When the temperature of the surrounding is higher than the temperature of the body, then the heat loss by convection from the body to the surrounding will be
a) negative
b) positive
c) zero
d) none of these

2.59. The index which corelates the combined effects of air temperature, relative humidity and air velocity on the human body, is known as
a) mean radiant temperature
b) dew point temperature
c) effective temperature
d) none of these

2.60. The capillary tube is not used in large capacity refrigeration systems because
a) cost is too high
b) capacity control is not possible
c) required pressure drop can not be achieved
d) it is made of copper

2.61. The pressure at the outlet of a refrigerant compressor is called
a) discharge pressure
b) critical pressure
c) back pressure
d) suction pressure

2.62. The heat is transferred by conduction, convection and radiation in
a) boiler furnaces
b) melting of ice
c) condensation of steam in condenser
d) none of these

2.63. A thermostatic expansion valve in a refrigeration system
a) ensures the evaporator completely filled with refrigerant of the load
b) maintains different temperatures in evaporator in proportion to load
c) is suitable only for constant load systems
d) none of the above

2.64. The total pressure exerted by the mixture of air and water vapour is equal to the sum of pressures which each constituent would exert, if it occupied the same space by itself. This statement is called
a) Avogadro's hypothesis
b) Dalton's law of partial pressures
c) Kinetic theory of gases
d) Newton's law of gases

2.65. Environmental protection agencies advice against the use of chloro-fluoro-carbon refrigerants since
a) these react with plants and cause green-house effect
b) these react with water vapour and cause acid rain
c) these react with oxygen and cause its depletion
d) these react with ozone layer

2.66. The rato of energy transferred by convection to that by conduction is called
a) Nusselt number
b) Stanton number
c) Peclet number
d) Biot number

2.67. The comfort conditions in air conditioning are at (where DBT = Dry bulb temperature, and RH = Relative humidity)
a) 20°C DBT and 80% RH
b) 25°C DBT and 100% RH
c) 22°C DBT and 60% RH
d) 25°C DBT and 40% RH

2.68. The relative humidity lines on a psychrometric chart are
a) curved lines
b) horizontal and uniformly spaced
c) horizontal and non-uniformly spaced
d) vertical and uniformly spaced

2.69. The air cooling system mostly used in transport type aircrafts is
a) simple evaporative air cooling system
b) simple air cooling system
c) boot-strap air cooling system
d) all of these

2.70. The refrigerant supplied to a compressor must be
a) dry saturated liquid refrigerant
b) superheated vapour refrigerant
c) a mixture of liquid and vapour refrigerant
d) none of these

2.71. When the lower temperature of a refrigerating machine is fixed, then the coefficient of performance can be improved by
a) operating the machine at higher speeds
b) operating the machine at lower speeds
c) raising the higher temperature
d) lowering the higher temperature

2.72. A mixture of dry air and water vapour, when the air has diffused the maximum amount of water vapour into it, is called
a) dry air
b) moist air
c) saturated air
d) specific humidity

2.73. In chemical dehumidification process,
a) dry bulb temperature increases
b) dew point temperature decreases
c) wet bulb temperature decreases
d) all of these

2.74. Upto the critical radius of insulation,
a) convective heat loss will be less than conductive heat loss
b) added insulation will decrease heat loss
c) heat flux will decrease
d) added insulation will increase heat loss

2.75. A one tonne refrigerating machine means that
a) one tonne refrigerant is used
b) one tonne is the total mass of machine
c) one tonne of water can be converted into ice
d) one tonne of ice when melts from and at 0° C in 24 hours, the refrigeration effect is equivalent to 210 kJ/min

2.76. A vapour absorption refrigeration system
a) gives noisy operation
b) gives quiet operation
c) requires little power consumption
d) cools below 0° C

2.77. A designer chooses the values of fluid flow rates and specific heats in such a manner that the heat capacities of the two fluids are equal. A hot fluid enters the counter flow heat exchanger at 100° C and leaves at 60° C. A cold fluid enters the heat exchanger at 40° C. The mean temperature difference between the two fluids is
a) 20°C
b) 40°C
c) 30°C
d) 60°C

2.78. The evaporator used in house-hold refrigerators is
a) frosting evaporator
b) non-frosting evaporator
c) defrosting evaporator
d) none of these

2.79. The dry bulb temperature lines, on the psychrometric chart are
a) horizontal and uniformly spaced
b) vertical and uniformly spaced
c) curved lines
d) horizontal and non-uniformly spaced

2.80. The by-pass factor of a cooling coil decreases with
a) increase in fin spacing and decrease in number of rows
b) decrease in fin spacing and increase in number of rows
c) increase in fin spacing and increase in number of rows
d) decrease in fin spacing and decrease in number of rows

HEAT TRANSFER , REFRIGERATION AND AIR CONDITIONING															
2.1	B	2.11	A	2.21	A	2.31	A	2.41	C	2.51	C	2.61	A	2.71	D
2.2	A	2.12	C	2.22	D	2.32	C	2.42	D	2.52	D	2.62	A	2.72	C
2.3	A	2.13	D	2.23	A	2.33	B	2.43	D	2.53	B	2.63	A	2.73	D
2.4	D	2.14	B	2.24	B	2.34	D	2.44	A	2.54	A	2.64	B	2.74	D
2.5	B	2.15	D	2.25	B	2.35	D	2.45	A	2.55	D	2.65	D	2.75	D
2.6	C	2.16	B	2.26	D	2.36	D	2.46	C	2.56	B	2.66	A	2.76	B
2.7	D	2.17	A	2.27	D	2.37	D	2.47	A	2.57	C	2.67	C	2.77	A
2.8	D	2.18	D	2.28	C	2.38	B	2.48	A	2.58	A	2.68	A	2.78	A
2.9	D	2.19	D	2.29	B	2.39	A	2.49	B	2.59	C	2.69	C	2.79	B
2.10	D	2.20	B	2.30	C	2.40	A	2.50	C	2.60	B	2.70	B	2.80	B

IC ENGINES AND NUCLEAR POWER PLANTS

3.1. The purpose of testing an internal combustion engine is
a) to satisfy the customer regarding the performance of the engine
b) to conform the data used in design, the validity of which may be doubtful
c) to determine the information, which can not be obtained by calculations
d) all of the above

3.2. The object of supercharging the engine is
a) to reduce space occupied by the engine
b) to reduce mass ofthe engine per brake power
c) to increase the power output of an engine when greater power is required
d) all of the above

3.3. The effective inhibitor of pre-ignition is
a) alcohol
b) mercury
c) lead
d) water

3.4. Where reactor operation is designed with fast neutrons such as in reactors using highly enriched fuel, the moderator used is
a) carbon dioxide
b) heavy water
c) graphite
d) no moderator is needed

3.5. The brake power of a diesel engine, keeping other parameters constant, can be increased by
a) increasing the temperature of intake air
b) decreasing the density of intake air
c) decreasing the pressure of intake air
d) increasing the pressure of intake air

3.6. The compensating jet in a carburettor supplies almost constant amount of petrol at all speeds because the
a) the flow from the main jet is diverted to the compensating jet with increase in speed
b) jet area is automatically varied depending on the suction
c) the diameter of the jet is constant and the discharge coefficient is invariant
d) flow is produced due to the static head in the float chamber

3.7. In a diesel engine, the duration between the time of injection and ignition, is known as
a) delay period
b) pre-ignition period
c) period of ignition
d) burning period

3.8. A moderator, in nuclear power plants, is a medium introduced into the fuel mass in order to
a) reduce the temperature
b) slow down the speed of fast moving neutrons
c) control the reaction
d) extract heat from nuclear reaction

3.9. The expansion of fuel in a four stroke cycle diesel engine
a) starts at 15° before top dead centre and ends at 30° after top dead centre
b) may start and end anywhere
c) starts at 15° after top dead centre and ends at 30° before bottom dead centre
d) starts at top dead centre and ends at 30° after top dead centre

3.10. The reference fuels for knock rating of spark ignition engines would include
a) iso-octane and normal hexane
b) iso-octane and alpha-methyl naphthalene
c) normal octane and aniline
d) normal heptane and iso-octane

3.11. A moderator generally used in nuclear power plants is
a) heavy water
b) graphite
c) concrete
d) graphite and concrete

3.12. Pre-ignition is caused by the spontantaneous combustion of the mixture before the end of the compression stroke, and is due to
a) red hot carbon deposits on cylinder walls
b) overheated spark plug points
c) cylinder walls being too hot
d) any one of these

3.13. In a four stroke cycle petrol engine, the charge is ignited at
a) 30° before bottom dead centre
b) 30° after top dead centre
c) 30° before top dead centre
d) 30° after bottom dead centre

3.14. Nuclear reactors are used
a) to produce fissionable material
b) to propel ships, submarines, aircrafts
c) to produce heat for thermoelectric power
d) all of these

3.15. In a four stroke cycle, the minimum temperature inside the engine cylinder occurs at the
a) end of suction stroke
b) beginning of suction stroke
c) end of exhaust stroke
d) beginning of exhaust stroke

3.16. Reactors for propulsion applications are designed for
a) any form of uranium
b) natura uranium
c) enriched uranium
d) plutonium

3.17. The thermal efficiency of diesel engines is about
a) 30%
b) 70%
c) 50%
d) 15%

3.18. The exhaust valve in a four stroke cycle petrol engine
a) may open and close anywhere
b) opens at 50° before bottom dead centre and closes at 15° after top dead centre
c) opens at 50° after bottom dead centre and closes at 15° before top dead centre
d) opens at bottom dead centre and closes at top dead centre

3.19. The ratio of the volume of charge admitted at N.T.P. to the swept volume of the piston is called
a) mechanical efficiency
b) volumetric efficiency
c) overall efficiency
d) relative efficiency

3.20. The thermal efficiency of a standard Otto cycle for a compression ratio of 5.5 will be
a) 100%
b) 25%
c) 50%
d) 75%

3.21. The nuclear power station at Tarapur has the reactor of the _____ type.
a) gas cooled
b) pressurized water
c) liquid metal cooled
d) boiling water

3.22. The delay period in compression ignition engines depends upon
a) nature of the fuel mixture strength
b) temperature and pressure in the cylinder at the time of injection
c) relative velocity between the fuel injection and air turbulence pressure of residual gases
d) all of the above

3.23. The theoretically correct mixture of air and petrol is
a) 15:1
b) 10:1
c) 20:1
d) 25:1

3.24. In a four stroke cycle petrol engine, the inlet valve
a) opens at 20° after top dead centre and closes at 20° before bottom dead centre id) may open or close anywhere
b) opens at top dead centre and closes at bottom dead centre
c) opens at 20° before top dead centre and closes at 40° after bottom dead centre
d) None of these

3.25. The basic requirement of a good combustion chamber is
a) low compression ratio
b) high thermal efficiency and power output
c) minimum turbulence
d) low volumetric efficiency

3.26. A diesel engine has
a) four valves
b) two valves
c) one valve
d) three valves

3.27. The nuclear radiators produced in a reactor which must be sheilded are
a) α, β and γ rays
b) electrons
c) neutron and gamma rays
d) none of these

3.28. A carburettor is used to supply
a) petrol and lubricating oil
b) petrol, air and lubricating oil
c) air and diesel
d) petrol and air

3.29. The pressure at the end of compression, in diesel engines, is approximately
a) 35 bar
b) 20 bar
c) 10 bar
d) 25 bar

3.30. A diesel engine has compression ratio from
a) 6 to 10
b) 15 to 25
c) 25 to 40
d) 10 to 15

3.31. The nuclear power station at Tarapur has the reactor of the _____ type.
a) gas cooled
b) boiling water
c) pressurized water
d) liquid metal cooled

3.32. Which of the following does not relate to a compression ignition engine?
a) fuel injector
b) carburettor
c) governor
d) fuel pump

3.33. A carburettor is used to supply
a) air and diesel
b) petrol and lubricating oil
c) petrol and air
d) petrol,air and lubricating oil

3.34. The theoretically correct mixture of air and petrol is
a) 20:1
b) 15:1
c) 10:1
d) 25:1

3.35. The thermal efficiency of diesel engines on weak mixtures is
a) lower
b) unaffected
c) dependent on other factors
d) higher

3.36. The frictional power (F.P.) is given by
a) F.P. = I.P. - B.P.
b) F.P. = B.P. - I.P.
c) F.P. = B.P./I.P.
d) F.P. = I.P./B.P.

3.37. The energy released during the fission of one atom of Uranium – 235 in million electron volts is about
a) 200
b) 100
c) 300
d) 400

3.38. The pressure at the end of compression, in diesel engines, is approximately
a) 25 bar
b) 20 bar
c) 10 bar
d) 35 bar

3.39. The nuclear radiators produced in a reactor which must be sheilded are
a) electrons
b) α, β and γ rays
c) neutron and gamma rays
d) none of these

3.40. Morse test can be conducted for
a) diesel engines
b) petrol engines
c) multi cylinder engines
d) all of these

3.41. Which of the following statement is wrong ?
a) Since the fuel, in compression ignition engines, is injected at the end of compression stroke, therefore, there will be no pre-ignition.
b) n compression ignition engines, detonation occurs near the beginning of combustion.
c) To eliminate knock in compression ignition engines, we want to achieve auto-ignition not early and desire a long delay period.
d) In compression ignition engines, because of hetrogeneous mixture, the rate of pressure rise is comparatively lower

3.42. A mixture containing 65% of iso-octane and 35% of normal heptane will have
a) octane number 35
b) octane number 65
c) qetane number 35
d) cetane number 65

3.43. A moderator
a) absorbs neutrons
b) accelerates neutrons
c) does not absorb neutrons
d) none of these

3.44. In order to mix air and petrol in the required proportion and to supply it to the engine during suction stroke, then _____ is employed.
a) fuel pump
b) injector
c) carburettor
d) none of these

3.45. Supercharging _____ the power developed by the engine.
a) decreases
b)has no effect on
c) increases
d) all the above

3.46. The ratio of the brake power to the indicated power is called
a) overall efficiency
b) mechanical efficiency
c) indicated thermal efficiency
d) volumetric efficiency

3.47. The thermodynamic cycle on which the petrol engine works, is
a) rankine cycle
b) otto cycle
c) joule cycle
d) striling cycle

3.48. The inlet valve of a four stroke cycle internal combustion engine remains open for
a) 230°
b) 130°
c) 180°
d) 270°

3.49. The increase of efficiency of a compression ignition engine, as the load decreases, is due to
a) higher maximum temperature
b) qualitative governing
c) quantitative governing
d) hit and miss governing

3.50. The correct mixture strength (by weight) for petrol is about
a) 18.5:1
b) 14.6:1
c) 20.4:1
d) 22.6:1

3.51. The knocking in spark ignition engines can be reduced by
a) increasing the engine speed
b) retarding the spark
c) both (a) and (b)
d) none of these

3.52. Which of the following statement is correct regarding petrol engines?
a) The fuel is first evaporated after passing through a carburettor and is mixed with air before ignition.
b) The fuel supplied to the engine cylinder is mixed with necessary amount of air and the mixture in ignited with the help of a spark plug.
c) A fine fuel spray mixed with air is ignited by the heat of compression which is at a high pressure.
d) all of the above

3.53. Which of the following statement is correct regarding petrol engines?
a) fine fuel spray mixed with air is ignited by the heat of compression which is at a high pressure.
b) The fuel is first evaporated after passing through a carburettor and is mixed with air before ignition.
c) The fuel supplied to the engine cylinder is mixed with necessary amount of air and the mixture in ignited with the help of a spark plug.
d) all of the above

3.54. In compression ignition engines, swirl denotes a
a) radial motion of the gases in the chamber
b) haphazard motion of the gases in the chamber
c) rotary motion of the gases in the chamber
d) none of the above

3.55. In a four stroke cycle diesel engine, the exhaust valve
a) opens at 60° after top dead centre and closes at 10° before top dead centre
b) may open and close anywhere
c) opens at 30° before bottom dead cnetre and closes at 10° after top dead centre
d) opens at bottom dead centre and closes at top dead centre

3.56. The advancing of spark timing in spark ignition engines will _____ knocking tendency.
a) reduce
b) increase
c) not effect
d) none of these

3.57. The working pressure and temperature inside the cylinder of an internal combustion engine is _____ as compared to a steam engine.
a) very low
b) high
c) low
d) very high

3.58. Morse test is used to determine the I.P. of a
a) single cylinder petrol engine
b) four stroke engine
c) single cylinder diesel engine
d) multi-cylinder engine

3.59. The colour of exhaust from diesel engine is generally.
a) bluish
b) black
c) a white
d) violent

3.60. The maximum propulsive efficiency of a turbo-jet engine is at a speed of
a) 2400 km/h
b) 1000 km/h
c) 2000 km/h
d) 3000 km/h

3.61. In a four stroke cycle petrol engine, the pressure inside the engine cylinder during the suction stroke is _____ the atmospheric pressure.
a) equal to
b) below
c) middle
d) above

3.62. Number of working strokes per min. for a two stroke cycle engine are _____ the speed of the engine in r.p.m.
a) one-half
b) twice
c) four-times
d) equal to

3.63. The control rods in the control system of nuclear reactors are used to
a) control temperature
b) absorb excess neutrons
c) control fuel consumption
d) all of these

3.64. Reflector in nuclear power plants _____ neutron leakage.
a) decreases
b) increases
c) have no effect on
d) all of the above

3.65. In order to eliminate knocking in compression ignition engines, there should be
a) low compression ratio
b) short delay period
c) late auto-ignition
d) high self ignition temperature of fuel

3.66. Which of the following statement is correct ?
a) Compression ratio for petrol engines varies from 6 to 10.
b) Higher compression ratio in diesel engines results in higher pressures
c) Petrol engines work on Otto cycle.
d) all of the above

3.67. The injector nozzle of a compression ignition engine is required to inject fuel at a sufficiently high pressure in order to
a) inject fuel in a chamber of high pressure at the end of compression stroke
b) inject fuel at a high velocity to facilitate atomisation
c) ensure that penetration is not high
d) all of the above

3.68. The specific fuel consumption per B.P. hour for a petrol engine is about
a) 0.3 kg
b) 0.35 kg
c) 0.25kg
d) 0.2 kg

3.69. A higher compression ratio causes
a) an acceleration in the rate of combustion
b) pre-ignition
c) increase in detonation
d) any one of these

3.70. Solid fuel fabricated into various small shapes, which are assembled to form fuel elements, is in the form of
a) plates
b) pallets
c) pins
d) all the above

3.71. The two reference fuels used for cetane rating are
a) cetane and iso-octane
b) cetane and alpha-methyl naphthalene
c) cetane and tetra ethyl lead
d) cetane and normal heptanes

3.72. If the speed of the engine is increased, the indicated power will
a) increase
b) decrease
c) remain same
d) all the above

3.73. In petrol engines, the delay period is of the order of
a) 0.001s
b) 0.003s
c) 0.002 s
d) 0.004 s

3.74. A diesel engine is _____ as compared to petrol engine, both running at rated load.

a) equally efficient
b) less efficient
c) more efficient
d) all of above

3.75. A fuel of cetane number 40 has the same ignition quality as a mixture of
a) 40% diesel and 60% petrol
b) 40% cetane and 60% alpha methyl napthalene
c) 40% alpha methyl napthalene and 60% cetane
d) 40% petrol and 60% diesel

3.76. The scavenging efficiency of a tour stroke cycle diesel engine is
a) between 50 and 85%
b) below 50%
c) between 85 and 95%
d) between 95 and 100%

3.77. The voltage required to produce a spark across the gap, between the sparking points is
a) 4000 to 6000 volts
b) 6000 to 10 000 volts
c) 10 000 to 12 000 volts
d) 2000 to 4000 volts

3.78. Which one of the following event would reduce volumetric efficiency of a vertical compression ignition engine ?
a) inlet valve closing after bottom dead centre
b) exhaust valve closing after top dead centre
c) inlet valve closing before bottom dead centre
d) inlet valve opening before top dead centre

3.79. The material most commonly used for sheilding is
a) lead
b) carbon
c) concrete
d) all the above

3.80. The pressure at the end of compression, in petrol engines, is approximately
a) 10 bar
b) 35 bar
c) 20 bar
d) 25 bar

IC ENGINES AND NUCLEAR POWER PLANTS															
3.1	D	3.11	D	3.21	D	3.31	B	3.41	C	3.51	C	3.61	B	3.71	B
3.2	D	3.12	D	3.22	D	3.32	B	3.42	B	3.52	B	3.62	D	3.72	A
3.3	D	3.13	C	3.23	C	3.33	C	3.43	C	3.53	C	3.63	B	3.73	C
3.4	D	3.14	D	3.24	C	3.34	A	3.44	C	3.54	C	3.64	A	3.74	C
3.5	D	3.15	B	3.25	B	3.35	D	3.45	C	3.55	C	3.65	B	3.75	B
3.6	D	3.16	C	3.26	D	3.36	B	3.46	B	3.56	B	3.66	D	3.76	D
3.7	A	3.17	B	3.27	C	3.37	A	3.47	B	3.57	D	3.67	D	3.77	B
3.8	B	3.18	B	3.28	D	3.38	D	3.48	A	3.58	D	3.68	C	3.78	C
3.9	C	3.19	B	3.29	A	3.39	C	3.49	B	3.59	B	3.69	D	3.79	C
3.10	D	3.20	C	3.30	B	3.40	C	3.50	B	3.60	A	3.70	D	3.80	A

4.1. The method of grinding used to produce a straight or tapered surface on a work piece, is
a) Internal cylindrical grinding
b) External cylindrical grinding
c) Form grinding
d) Surface grinding

4.2. When the cutting edge of the tool is dull, then during machining
a) Discontinuous chips are formed
b) Continuous chips are formed
c) No chips are formed
d) Continuous chips with built-up edge are formed

4.3. If the diameter of the hole is subject to considerable variation, then for locating in jigs and fixtures, the pressure type of locator used is
a) Conical locator
b) Diamond pin locator
c) Cylindrical locator
d) Vee locator

4.4. The maximum production of small and slender parts is done by
a) Watch maker's lathe
b) Sliding head stock automatic lathe
c) multispindle automatic lathe
d) capstan lathe

4.5. Gear lapping is an operation
a) prior to heat treatment
b) After heat treatment
c) for gear reconditioning
d) None of these.

4.6. Side rake angle of a single point cutting tool is the angle
a) By which the face of the tool is inclined towards back
b) By which the face of the tool is inclined sideways
c) between the surface of the flank immediately below the point and a plane at right angles to the centre line of the point of the tool
d) Between the surface of the flank immediately below the point and a line drawn from the point perpendicular to the base

4.7. The average cutting speed for turning brass with a high speed steel tool is
a) 90 to 120 m/min
b) 60 to 90 m/min
c) 15 to 19 m/min
d) 25 to 31 m/min

4.8. The cutting tool in a milling machine is mounted on
a) Spindle
b) Column
c) Knee
d) Arbour

4.9. A single point thread cutting tool should ideally have
a) Zero rake angle
b) Positive rake angle
c) Negative rake angle
d) Point angle

4.10. The work or surface speed for cylindrical grinding varies from
a) 5 to 10 m/min
b) 10 to 20 m/min
c) 20 to 30 m/min
d) 40 to 60 m/min

4.11. The silicon carbide abrasive is chiefly used for grinding
a) Cemented carbide
b) Ceramic
c) Cast iron
d) all of these

4.12. Drilling is an example of
a) Orthogonal cutting
b) Oblique cutting
c) Simple cutting
d) Uniform cutting

4.13. A fixture is defined as a device which
a) Holds and locates a work piece and guides and controls one or more cutting tools
b) Holds and locates a work piece during an inspection or for a manufacturing operation
c) Is used to check the accuracy of work piece
d) All of the above

4.14. Crater wear occurs mainly on the
a) Nose part, front relief face and side relief face of the cutting tool
b) Face of the cutting tool at a short distance from the cutting edge only
c) Cutting edge only
d) Front face only.

4.15. The lead screw of a lathe has _____ threads
a) Single start
b) Double start
c) Multi start
d) Any of these.

4.16. Which of the following statement is wrong about ultra-sonic machining?
a) It is best suited for machining hard and brittle materials.
b) It cuts materials at very slow speeds.
c) It removes large amount of material.
d) It produces good surface finish.

4.17. Lapping is an operation of
a) Making a cone-shaped enlargement of the end of a hole
b) Smoothing and squaring the surface around a hole
c) Sizing and finishing a small diameter hole
d) Producing a hole by removing metal along the circumference of a hollow cutting tool.

4.18. The machining of titanium is difficult due to
a) High thermal conductivity of titanium
b) Chemical reaction between tool and work
c) Low tool-chip contact area
d) None of these.

4.19. In hot machining, tool is made of
a) diamond
b) stainless steel
c) brass or copper
d) tungsten carbide

4.20. The binding material used in cemented carbide tools is
a) Tungsten
b) Chromium
c) Silicon
d) Cobalt

4.21. In machining metals, chips break due to _____ of work material.
a) toughness
b) ductility
c) Elasticity
d) Work hardening

4.22. for softer materials, the point angle of the drill is kept
a) Equal to 118°
b) Less than 118°
c) More than 118°
d) Any one of these

4.23. The rear teeth of a broach
a) Perform burnishing operation
b) Remove minimum metal
c) Remove maximum metal
d) Remove no metal

4.24.In a shaper, the length of stroke is increased by
a) Increasing the centre distance of bull gear and crank pin
b) Decreasing the centre distance of bull gear and crank pin
c) Increasing the length of the arm
d) Decreasing the length of the slot in the slotted lever

4.25. An important geometrical quantity in the cutting of metals which can be used as a criterion for machinability of metals is
a) Cutting speed
b) Feed rate
c) Shear angle
d) Tool geometry

4.26. In metal cutting, use of low feeds and high cutting speeds is desired when the objective is
a) High MRR
b) Dry machining
c) Use of soft cutting tools
d) Surface finish

4.27. The angle on which the strength of the tool depends is
a) Rake angle
b) Cutting angle
c) Clearance angle
d) Lip angle.

4.28. In metal machining, the work-tool contact zone is a zone where heat is generated due to
a) Plastic deformation of metal
b) Burnishing friction
c) Friction between the moving chip and the tool face
d) None of the above

4.29. The hardness of a grinding wheel is specified by
a) Brinell hardness number
b) Rockwell hardness number
c) Vickers pyramid number
d) Letter of alphabet

4.30. Which of the following operations can be performed with milling cutters?
a) cutting key ways on shafts
b) cutting external screw threads
c) cutting teeth of spur gears
d) all of these

4.31. Down milling is also called
a) Conventional milling
b) Climb milling
c) End milling
d) Face milling

4.32. Any number of equal divisions can be obtained on milling machine by
a) Direct indexing
b) Simple indexing
c) Compound indexing
d) Differential indexing

4.33. The type of tool used on lathe, shaper and planer is
a) Single point cutting tool
b) Two point cutting tool
c) Three point cutting tool
d) Multi-point cutting tool

4.34. The relation between tool life (T) and cutting speed (V) is VT^n = Constant. In this relation, the value of n depends upon
a) Work material
b) Tool material
c) Working conditions
d) Type of chip produced

4.35. In order to grind soft material
a) Coarse grained grinding wheel is used
b) Fine grained grinding wheel is used
c) Medium grained grinding wheel is used
d) Any one of these.

4.36. Segmental chips are formed during machining
a) Mild steel
b) Cast iron
c) High speed steel
d) High carbon steel

4.37. A broach has
a) Roughing teeth
b) Semi-finishing teeth
c) Finishing teeth
d) All of these

4.38. In electro-discharge machining, tool is made of
a) Brass
b) Copper
c) Copper tungsten
d) All of these

4.39. The cutting speed is maximum while machining _____ with a high speed steel tool.
a) Cast iron
b) Mild steel
c) Brass
d) Aluminium

4.40. An operation of embossing a diamond shaped pattern on the surface of a workpiece, is known as
a) Counter boring
b) Grooving
c) Knurling
d) Facing

4.41. An operation of embossing a diamond shaped pattern on the surface of a work piece, is known as
a) Sensitive drilling machine
b) Radial drilling machine
c) Gang drilling machine
d) Multiple spindle drilling machine

4.42. The grooving is an operation of
a) Bevelling the extreme end of a workpiece
b) Embossing a diamond shaped pattern on the surface of a workpiece
c) Reducing the diameter of a work piece over a very narrow surface
d) Enlarging the end of a hole cylindrically

4.43. Cutting fluids are used to
a) Cool the tool
b) Improve surface finish
c) Cool the work piece
d) All of these

4.44. The structure of a grinding wheel depends upon
a) Hardness of the material being ground
b) Nature of the grinding operation
c) Finish required
d) all of these

4.45. In which of the following machine, the work rotates and the tool is stationary?
a) Vertical boring machine
b) Horizontal boring machine
c) Precision boring machine
d) Jig boring machine

4.46. The cutting fluid mostly used for machining alloy steels is
a) Water
b) Soluble oil
c) Dry
d) Sulphurised mineral oil

4.47. When the metal is removed by erosion caused by rapidly recurring spark discharges between the tool and work, the process is known as
a) ECM
b) EDM
c) USM
d) None of these

4.48. Tool life is generally better when
a) Grain size of the metal is large
b) Grain size of the metal is small
c) Hard constituents are present in the microstructure of the tool material
d) None of these

4.49. In reaming process
a) Metal removal rate is high
b) High surface finish is obtained
c) High form accuracy is obtained
d) High dimensional accuracy is obtained

4.50. Flank wear occurs mainly on the
a) Nose part, front relief face and side relief face of the cutting tool
b) Face of the cutting tool at a short distance from the cutting edge
c) Cutting edge only
d) Front face only

4.51. In electro-discharge machining, dielectric is used to
a) Help in the movement of the sparks
b) Control the spark discharges
c) Act as coolant
d) all of these

4.52. In metal cutting operations, the shear angle is the angle made by the shear plane with the
a) Direction of the tool axis
b) Direction of tool travel
c) Perpendicular to the direction of the tool axis
d) Central plane of the work piece

4.53. The operation of smoothing and squaring the surface around a hole is known as
a) Counter-sinking
b) Counter-boring
c) Trepanning
d) Spot facing

4.54.The ductile materials, during machining, produce
a) Continuous chips
b) Discontinuous chips
c) Continuous chips with BUE
d) Either (a) or (c)

4.55. Slow speed of the spindle is necessary in
a) Thread cutting
b) Turning a work of larger diameter
c) Turning a hard or tough material
d) all of these

4.56. Discontinuous chips are formed during machining of
a) Brittle material
b) Ductile material
c) Hard material
d) Soft material

4.57. In a planer
a) Tool is stationary and work reciprocates
b) Work is stationary and tool reciprocates
c) Tool moves over stationary work
d) Tool moves over reciprocating work

4.58. If the cutting speed is increased, then the built-up-edge
a) Becomes longer
b) May or may not form
c) becomes smaller and finally does not form at all
d) Has nothing to do with speed

4.59. Tool signature consists of _____ elements.
a) 2
b) 4
c) 5
d) 7

4.60. The negative rake is usually provided on
a) High carbon steel tools
b) High speed steel tools
c) Cemented carbide tools
d) all of these

4.61. The tool life is affected by
a) Depth of cut
b) Cutting speed
c) Feed
d) All of these

4.62. In ultra-sonic machining, tool is made of
a) Tungsten carbide
b) Brass or copper
c) Diamond
d) Stainless steel

4.63. Small nose radius
a) Increases tool life
b) Decreases tool life
c) Produces chipping and decreases tool life
d) Results in excessive stress concentration and greater heat generation

4.64. The relation between the tool life (T) in minutes and cutting speed (V) in m/min is (where n = An exponent, which depends upon the tool and workpiece, and C = A constant)
a) $V^nT = C$
b) $VT^n = C$
c) $V^n/T = C$
d) $V/T^n = C$

4.65. Tool life is measured by the
a) number of pieces machined between tool sharpenings
b) time the tool is in contact with the job
c) volume of material removed between tool sharpenings
d) all of the above

4.66. Soft materials cannot be economically ground due to
a) high temperature involved
b) frequent wheel clogging
c) rapid wheel wear
d) low work piece stiffness

4.67. The process of removing metal by a cutter which is rotated in the same direction of travel of workpiece, is called
a) Up milling
b) Down milling
c) Face milling
d) End milling

4.68. The tool life in case of a grinding wheel is the time
a) between two successive regrinds of the wheel
b) taken for the wheel to be balanced
c) taken between two successive wheel dressings
d) taken for a wear of 1 mm on its diameter

4.69. Crater wear is mainly due to the phenomenon known as
a) diffusion of metals
b) adhesion of metals
c) oxidation of metals
d) all of these

4.70. The tool may fail due to
a) cracking at the cutting edge due to thermal stresse
b) chipping of the cutting edge
c) plastic deformation of the cutting edge
d) all of these

4.71. In machining metal, cutting force at the cutting edge is measured by a
a) Wattmeter
b) Dynamometer
c) Hydrometer
d) Pyrometer

4.72. A feed gear box for a screw cutting lathe is designed on the basis of
a) Geometric progression
b) Arithmetic progression
c) Harmonic progression
d) None of these

4.73. In American Standard Association (A S A) system, if the tool nomenclature is 8-6-5-5-10-15-2 mm, then the side rake angle will be
a) 5°
b) 6°
c) 8°
d) 10°

4.74. The chamfering is an operation of
a) Bevelling the extreme end of a workpiece
b) Embossing a diamond shaped pattern on the surface of a workpiece
c) Reducing the diameter of a workpiece over a very narrow surface
d) Enlarging the end of a hole cylindrically

4.75. In oblique cutting of metals, the cutting edge of the tool is
a) Perpendicular to the workpiece
b) Perpendicular to the direction of tool travel
c) Parallel to the direction of tool travel
d) Inclined at an angle less than 90° to the direction of tool travel

4.76. Surface grinding is done to produce
a) Tapered surface
b) Flat surface
c) Internal cylindrical holes
d) All of these

4.77. Gear finishing operation is called
a) Shaping
b) Milling
c) Hobbing
d) Burnishing

4.78. Continuous chips with built up edge are formed during machining of
a) Brittle materials
b) Ductile materials
c) Hard materials
d) Soft materials

4.79. For harder alloy steel, the point angle of the drill is kept
a) Equal to 118°
b) Less than 118°
c) More than 118°
d) Any of them

4.80. In an orthogonal cutting, the depth of cut is halved and the feed rate is double. If the chip thickness ratio is unaffected with the changed cutting conditions, the actual chip thickness will be
a) Double
b) Halved
c) Quadrupled
d) Unchanged

4.81. In a shaper, the metal is removed during
a) Forward stroke
b) Return stroke
c) Both
d) None

4.82. In _____ operation, the chip thickness is minimum at the beginning of the cut and it reaches to the maximum when the cut terminates.
a) Conventional milling
b) Climb milling
c) Face milling
d) End milling

4.83. In _____ operation, the cutting force is maximum when the tooth begins its cut and reduces it to minimum when the tooth leaves the work.
a) Up milling
b) Down milling
c) Face milling
d) End milling

4.84. Lathe bed is made of
a) Mild steel
b) Alloy steel
c) Pig iron
d) Chilled cast iron

4.85. In metal machining, the zone where the maximum heat is generated due to the plastic deformation of metal, is called
a) Friction zone
b) work-tool contact zone
c) Shear zone
d) None of these

4.86. The operation of making a cone-shaped enlargement of the end of a hole is known as
a) Counter-sinking
b) Counter-boring
c) Trepanning
d) Spot facing

4.87. In a shaper
a) Tool is stationary and work reciprocates
b) Work is stationary and tool reciprocates
c) Tool moves over stationary work
d) Tool moves over reciprocating work

4.88. Which of the following statement is correct about EDM machining?
a) It can machine hardest materials
b) It produces high degree of surface finish.
c) The tool and work are never in contact with each other.
d) All the above

4.89. The correct sequence of the following parameters in order of their maximum to minimum influence on tool life is
a) Feed rate, depth of cut, cutting speed
b) Depth of cut, cutting speed, feed rate
c) Cutting speed, feed rate, depth of cut
d) Feed rate, cutting speed, depth of cut

4.90. Ceramic cutting tools are
a) made by cold pressing of aluminium oxide powder
b) available in the form of tips
c) available in the form of tips
d) all of these

4.91. The angle between the face and flank of the single point cutting tool is known as
a) Rake angle
b) Clearance angle
c) Lip angle
d) Point angle

4.92. The angle between the face and flank of the single point cutting tool is known as
a) Hard and brittle materials
b) Soft and ductile materials
c) Hard and ductile materials
d) Hard and ductile materials

4.93. EDM machining is applied for
a) Shaping carbide dies and punches having complicated profiles
b) Making large number of small holes in sieves and fuel nozzles
c) Embossing and engraving on harder materials
d) All of these

4.94. In metal machining, the zone where the heat is generated due to friction between the moving chip and the tool face, is called
a) Friction zone
b) work-tool contact zone
c) Shear zone
d) None of these

4.95. The drill spindles are provided with standard taper known as
a) Morse taper
b) Seller's taper
c) Chapman taper
d) Brown & Sharpe taper

4.96. A diamond locating pin is used in jigs and fixtures because
a) diamond is very hard and wear resistant
b) it occupies very little space
c) it has a long life
d) it helps in assembly with tolerance on centre distance

4.97. Chemical milling operation is performed
a) on universal milling machine
b) on plain milling machine
c) in a tank containing an etching solution
d) any one of these

4.98. The broaching operation in which the work moves past the stationary tool is called
a) Pull broaching
b) Push broaching
c) Surface broaching
d) Continues broaching

4.99. The process of improving the cutting action of the grinding wheel is called
a) Truing
b) Dressing
c) Facing
d) Clearing

4.100. The enlarging of an existing circular hole with a rotating single point tool is called
a) Boring
b) Drilling
c) Reaming
d) Internal turning

Production Engineering																			
4.1	B	4.11	D	4.21	D	4.31	B	4.41	C	4.51	D	4.61	D	4.71	B	4.81	A	4.91	C
4.2	D	4.12	B	4.22	B	4.32	B	4.42	C	4.52	B	4.62	B	4.72	A	4.82	A	4.92	A
4.3	A	4.13	B	4.23	C	4.33	A	4.43	D	4.53	D	4.63	D	4.73	B	4.83	B	4.93	D
4.4	C	4.14	B	4.24	A	4.34	B	4.44	D	4.54	D	4.64	B	4.74	A	4.84	D	4.94	A
4.5	B	4.15	A	4.25	C	4.35	A	4.45	A	4.55	D	4.65	D	4.75	D	4.85	C	4.95	A
4.6	B	4.16	C	4.26	D	4.36	B	4.46	D	4.56	A	4.66	B	4.76	B	4.86	A	4.96	D
4.7	B	4.17	C	4.27	A	4.37	D	4.47	B	4.57	A	4.67	B	4.77	D	4.87	B	4.97	C
4.8	D	4.18	C	4.28	B	4.38	D	4.48	A	4.58	C	4.68	C	4.78	B	4.88	D	4.98	D
4.9	A	4.19	D	4.29	D	4.39	D	4.49	C	4.59	D	4.69	A	4.79	C	4.89	C	4.99	B
4.10	C	4.20	D	4.30	D	4.40	C	4.50	A	4.60	C	4.70	D	4.80	A	4.90	D	4.100	A

THERMODYNAMICS

5.1. Which of the following variables controls the physical properties of a perfect gas

(a) pressure

(b) temperature

(c) volume

(d) all of the above

5.2. The unit of temperature in S.I. units is

(a) Centigrade

(b) Celsius

(c) Fahrenheit

(d) Kelvin

5.3. Which of the following laws is applicable for the behavior of a perfect gas

(a) Boyle's law

(b) Charles'law

(c) Gay-Lussac law

(d) all of the above

5.4. The unit of mass in S.I. units is

(a) kilogram

(b) gram

(c) tonne

(d) quintal

(e) newton.

5.5. The unit of length in S.I. units is

(a) meter

(b) centimeter

(c) kilometer

(d) millimeter.

5.6. The unit of time in S.I. units is

(a) second

(b) minute

(c) hour

(d) day

5.7. The unit of energy in S.I. units is

(a) watt

(b) joule

(c) joule/s

(d) joule/m

5.8. According to Gay-Lussac law for a perfect gas, the absolute pressure of given mass varies directly as

(a) temperature

(b) absolute

(c) absolute temperature, if volume is kept constant

(d) volume, if temperature is kept constant

5.9. General gas equation is

(a) PV=nRT

(b) PV=mRT

(d) PV = C

(c) PV=KiRT

5.10. An ideal gas as compared to a real gas at very high pressure occupies

(a) more volume

(b) less volume

(c) same volume

(d) unpredictable behaviour

5.11. According to Dalton's law, the total pressure of the mixture of gases is equal to

(a) greater of the partial pressures of all

(b) average of the partial pressures of all

(c) sum of the partial pressures of all

(d) sum of the partial pressures of all divided by average molecular weight

5.12. The unit of pressure in S.I. units is

(a) kg/cm2

(b) mm of water column

(c) pascal

(d) dynes per square cm

5.13. Temperature of a gas is produced due to

(a) its heating value

(b) kinetic energy of molecules

(c) repulsion of molecules

(d) attraction of molecules

5.14. A closed system is one in which

(a) mass does not cross boundaries of the system, though energy may do so

(b) mass crosses the boundary but not the energy

(c) neither mass nor energy crosses the boundaries of the system

(d) both energy and mass cross the boundaries of the system

5.15. According to kinetic theory of gases, the absolute zero temperature is attained when

(a) volume of the gas is zero

(b) pressure of the gas is zero

(c) kinetic energy of the molecules is zero

(d) specific heat of gas is zero

5.16. Kinetic theory of gases assumes that the collisions between the molecules are

(a) perfectly elastic

(b) perfectly inelastic

(c) partly elastic

(d) partly inelastic

5.17. Superheated vapour behaves

(a) exactly as gas

(b) as steam

(c) as ordinary vapour

(d) approximately as a gas

5.18. Absolute zero pressure will occur

(a) at sea level

(b) at the center of the earth

(c) when molecular momentum of the system becomes zero

(d) under vacuum conditions

5.19. The unit of power in S.I. units is

(a) newton

(b) pascal

(c) erg

(d) watt

5.20. The condition of perfect vacuum, i.e., absolute zero pressure can be attained at

(a) a temperature of – 273.16°C

(b) a temperature of 0°C

(c) a temperature of 273 °K

(d) a negative pressure and 0°C temperature

5.21. Intensive property of a system is one whose value

(a) depends on the mass of the system, like volume

(b) does not depend on the mass of the system, like temperature, pressure, etc.

(c) is not dependent on the path followed but on the state

(d) is dependent on the path followed and not on the state

5.22. Characteristic gas constant of a gas is equal to

(a) C/Cv

(b) Cv/Cp

(c) Cp – Cv

(d) Cp + Cv

5.23. The ratio of two specific heats of air is equal to

(a) 0.17

(b) 0.24

(c) 0.1

(d) 1.41

5.24. An open system is one in which

(a) mass does not cross boundaries of the system, though energy may do so

(b) neither mass nor energy crosses the boundaries of the system

(c) both energy and mass cross the boundaries of the system

(d) mass crosses the boundary but not the energy

5.25. Gases have

(a) only one value of specific heat

(b) two values of specific heat

(c) three values of specific heat

(d) no value of specific heat

5.26. According to Avogadro's Hypothesis

(a) the molecular weights of all the perfect gases occupy the same volume under same conditions of pressure and temperature

(b) the sum of partial pressure of mixture of two gases is sum of the two

(c) product of the gas constant and the molecular weight of an ideal gas is constant

(d) gases have two values of specific heat

5.27. Work done in a free expansion process is

(a) + ve

(b) -ve

(c) zero

(d) maximum

5.28. Extensive property of a system is one whose value

(a) depends on the mass of the system like volume

(b) does not depend on the mass of the system, like temperature, pressure, etc.

(c) is not dependent on the path followed but on the state

(d) is dependent on the path followed and not on the state

5.29. The statement that molecular weights of all gases occupy the same volume is known as

(a) Avogadro's hypothesis

(b) Dalton's law

(c) Gas law

(d) Law of thermodynamics

5.30. If a gas is heated against a pressure, keeping the volume constant, then work done will be equal to

(a) + v

(b) – ve

(c) zero

(d) pressure x volume

5.31. Properties of substances like pressure, temperature and density, in thermodynamic coordinates are

(a) path functions

(b) point functions

(c) cyclic functions

(d) real functions

5.32. An isolated system is one in which

(a) mass does not cross boundaries of the system, though energy may do so

(b) neither mass nor energy crosses the boundaries of the system

(c) both energy and mass cross the boundaries of the system

(d) mass crosses the boundary but not the energy

5.33. On weight basis, air contains following parts of oxygen

(a) 21

(b) 23

(c) 25

(d) 73

5.34. Heat and work are

(a) point functions

(b) system properties

(c) path functions

(d) intensive properties

5.35. A perfect gas at 27°C is heated at constant pressure till its volume is double. The final temperature is

(a) 54°C

(b) 327°C

(c) 108°C

(d) 654°C

5.36. The value of n = 1 in the polytropic process indicates it to be

(a) reversible process

(b) isothermal process

(c) adiabatic process

(d) irreversible process

5.37. If value of n is infinitely large in a polytropic process pV" = C, then the process is known as constant

(a) volume

(b) pressure

(c) temperature

(d) enthalpy

5.38. The term N.T.P. stands for

(a) nominal temperature and pressure

(b) natural temperature and pressure

(c) normal temperature and pressure

(d) normal thermodynamic practice

5.39. A heat exchange process in which the product of pressure and volume remains constant is known as

(a) heat exchange process

(b) throttling process

(c) isentropic process

(d) hyperbolic process.

5.40. Change in enthalpy of a system is the heat supplied at

(a) constant pressure

(b) constant temperature

(c) constant volume

(d) constant entropy

5.41. Zeroth law of thermodynamics

(a) deals with conversion of mass and energy

(b) deals with reversibility and irreversibility of process

(c) states that if two systems are both in equilibrium with a third system, they are in thermal equilibrium with each other

(d) deals with heat engines

5.42. In an isothermal process, the internal energy of gas molecules

(a) increases

(b) decreases

(c) remains constant

(d) may increase/decrease depending on the properties of gas

5.43. One watt is equal to

(a) 1 Nm/s

(b) 1 N/mt

(c) 1 Nm/hr

(d) 1 kNm/hr

5.44. Work done is zero for the following process

(a) constant volume

(b) free expansion

(c) throttling

(d) all Of the above

5.45. The basis for measuring thermodynamic property of temperature is given by

(a) zeroth law of thermodynamics

(b) first law of thermodynamics

(c) second law of thermodynamics

(d) third law of thermodynamics

5.46. For which of the following substances, the gas laws can be used with minimum error

(a) dry steam

(b) wet steam

(c) saturated steam

(d) superheated steam

5.47. On volume basis, air contains following parts of oxygen

(a) 21

(b) 23

(c) 25

(d) 79

5.48. In a free expansion process

(a) work done is zero

(b) heat transfer is zero

(c) both (a) and (b) above

(d) work done is zero but heat increases

5.49. If a gas vapour is allowed to expand through a very minute aperture, then such a process is known as

(a) free expansion

(b) hyperbolic expansion

(c) adiabatic expansion

(d) throttling.

5.50. The specific heat of air increases with increase in

(a) temperature

(b) pressure

(c) both pressure and temperature

(d) variation of its constituents

5.51. Which of the following processes are thermodynamically reversible

(a) throttling

(b) free expansion

(c) constant volume and constant pressure

(d) isothermal and adiabatic.

5.52. Which of the following processes is irreversible process

(a) isothermal

(b) adiabatic

(c) throttling

(d) all of the above

5.53. The more effective way of increasing efficiency of Carnot engine is to

(a) increase higher temperature

(b) decrease higher temperature

(c) increase lower temperature

(d) decrease lower temperature

5.54. For reversible adiabatic process, change in entropy is

(a) maximum

(b) minimum

(c) zero

(d) unpredictable

5.55. Entropy change depends on

(a) heat transfer

(b) mass transfer

(c) change of temperature

(d) thermodynamic state

5.56. Isochoric process is one in which

(a) free expansion takes place

(b) very little mechanical work is done by the system

(c) no mechanical work is done by the system

(d) all parameters remain constant

5.57. Energy can neither be created nor destroyed but can be converted from one form to other is inferred from

(a) zeroth low of thermodynamic

(b) first law of thermodynamics

(c) second law to thermodynamics

(d) basic law of thermodynamics

5.58. First law of thermodynamics furnishes the relationship between

(a) heat and work

(b) heat, work and properties of the system

(c) various properties of the system

(d) various thermodynamic processes

5.59. According to first law of thermodynamics

(a) work done by a system is equal to heat transferred by the system

(b) total internal energy of a system during a process remains constant

(c) internal energy, enthalpy and entropy during a process remain constant

(d) total energy of a system remains constant

5.60. In an isothermal process, the internal energy

(a) increases

(b) decreases

(c) remains constant

(d) first increases and then decreases

5.61. Addition of heat at constant pressure to a gas results in

(a) raising its temperature

(b) raising its pressure

(c) raising its volume

(d) raising its temperature and doing external work

5.62. Carnot cycle has maximum efficiency for

(a) reversible engine

(b) irreversible engine

(c) new engine

(d) petrol engine

5.63. Carnot cycle efficiency depends upon

(a) properties of the medium/substance used

(b) condition of engine

(c) working condition

(d) temperature range of operation

5.64. Which of the following represents the perpetual motion of the first kind

(a) engine with 100% thermal efficiency

(b) a fully reversible engine

(c) transfer of heat energy from low temperature source to high temperature source

(d) a machine that continuously creates its own energy

5.65. If a system after undergoing a series of processes, returns to the initial state then

(a) process is thermodynamically in equilibrium

(b) process is executed in closed system cycle

(c) its entropy will change due to irreversibility

(d) sum of heat and work transfer will be zero

5.66. In a Carnot cycle, heat is transferred at

(a) constant pressure

(b) constant volume

(c) constant temperature

(d) constant enthaply

5.67. A diathermic wall is one which

(a) prevents thermal interaction

(b) permits thermal interaction

(c) encourages thermal interaction

(d) discourages thermal interaction

5.68. The door of a running refrigerator inside a room was left open. Which of the following statements is correct?

(a) The room will be cooled to the temperature inside the refrigerator.

(b) The room will be cooled very slightly.

(c) The room will be gradually warmed up.

(d) The temperature of the air in room will remain unaffected.

5.69. Compressed air coming out from a punctured football

(a) becomes hotter

(b) becomes cooler

(c) remains at the same temperature

(d) may become hotter or cooler depend-ing upon the humidity of the surround¬ing air

5.70. During throttling process

(a) heat exchange does not take place

(b) no work is done by expanding steam

(c) there is no change of internal energy of steam

(d) all of the above

5.71. Water contained in a beaker can be made to boil by passing steam through it

(a) at atmospheric pressure

(b) at a pressure below the firuosphejric pressure

(c) at a pressure greater than atmospheric pressure

(d) any pressure

5.72. The energy of molecular motion appears as

(a) heat

(b) potential energy

(c) surface tension

(d) friction

5.73. A sudden fall in the barometer reading is a sign of approaching

(a) fine weather

(b) rains

(c) storm

(d) cold wave

5.74. Calorie is a measure of

(a) specific heat

(b) quantity of heat

(c) thermal capacity

(d)entropy

5.75. 1 kgf/cm2 is equal to

(a) 760 mm Hg

(b) zero mm Hg

(c) 735.6 mm Hg

(d) 1 mm Hg

5.76. One barometric pressure or 1 atmospheric pressure is equal to

(a) 1 kgf/cm2

(b) 1.033 kgf/cm2

(c) 0 kgf/cm2

(d) 1.0197 kgf/cm2

5.77. Barometric pressure is equal to

(a) 760 mm Hg

(b) zero mm Hg

(c) 735.6 mm Hg

(d) 1 mm Hg

5.78. The first law of thermodynamics is the law of

(a) conservation of mass

(b) conservation of energy

(c) conservation of momentum

(d) conservation of heat

5.79. Kelvin Planck's law deals with

(a) conservation of heat

(b) conservation of work

(c) conversion of heat into work

(d) conversion of work into heat

5.80. A perpetual motion machine is

(a) a thermodynamic machine

(b) a non-thermodynamic machine

(c) a hypothetical machine

(d) a hypothetical machine whose opera-tion would violate the laws of thermodynamics

5.81. According to Clausis statement of second law of thermodynamics

(a) heat can't be transferred from low temperature source to high temperature source

(b) heat can be transferred for low temperature to high temperature source by using refrigeration cycle.

(c) heat can be transferred from low temperature to high temperature source if COP of process is more than unity

(d) heat can't be transferred from low temperature to high temperature source without the aid of external energy

5.82. Which of the following is an irreversible cycle?

(a) carnot

(b) Stirling

(c) ericsson

(d) none of the above.

5.83. Thermal power plant works on

(a) Carnot cycle

(b) Joule cycle

(d) Rankine cycle

(d) Otto cycle

5.84. Otto cycle consists of following four processes

(a) two isothermals and two isentropics

(b) two isentropics and two constant volumes

(c) two isentropics, one constant volume and one constant pressure

(d) two isentropics and two constant pres-sures

5.85. For same compression ratio and for same heat added

(a) Otto cycle is more efficient than Diesel cycle

(b) Diesel cycle is more efficient than Otto cycle

(c) efficiency depends on other factors

(d) both Otto and Diesel cycles are equally efficient

5.86. The efficiency of a Carnot engine depends on

(a) working substance

(b) design of engine

(c) size of engine

(d) temperatures of source and sink.

5.87. The efficiency of Carnot cycle is maximum for

(a) gas engine

(b) reversible engine.

(c) petrol engine

(d) steam engine

5.88. Diesel cycle consists of following four processes

(a) two isothermals and two isentropics

(b) two isentropics, and two constant volumes.

(c) two isentropics, one constant volume and one constant pressure

(d) two isentropics and two constant pressures

5.89. If both Stirling and Carnot cycles operate within the same temperature limits, then efficiency of Stirling cycle as compared to Carnot cycle

(a) more

(b) less

(c) equal

(d) depends on other factors

5.90. A cycle consisting of two adiabatics and two constant pressure processes is known as

(a) Otto cycle

(b) Ericsson cycle

(c) Joule cycle

(d) Stirling cycle

5.91. Stirling and Ericsson cycles are

(a) reversible cycles

(b) irreversible cycles

(c) quasi-static cycles

(d) semi-reversible cycles

5.92. Brayton cycle consists' of following four processes

(a) two isothermals and two isentropics

(b) two isentropics and two constant volumes

(c) two isentropics, one constant volume and one constant pressure

(d) two isentropics and two constant pressures

5.93. Reversed joule cycle is called

(a) Carnot cycle

(b) Rankine cycle

(c) Brayton cycle

(d) Bell Coleman cycle

5.94. Which of the following cycles is not a reversible cycle

(a) Carnot

(b) Ericsson

(c) Stirling

(d) None of the above.

5.95. The efficiency of Diesei cycle with decrease in cut off

(a) increases

(b) decreases

(c) remains unaffected

(d) first increases and then decreases

5.96. The cycle in which heat is supplied at constant volume and rejected at constant pressure is known as

(a) Dual combustion cycle

(b) Diesel cycle

(c) Atkinson cycle

(d) Rankine cycle

5.97. Which of the following cycles has maximum efficiency

(a) Rankine

(b) Stirling

(c) Carnot

(d) Brayton

5.98. The following cycle is used for air craft refrigeration

(a) Brayton cycle

(b) Joule cycle

(c) Carnot cycle

(d) Reversed-Brayton cycle.

5.99. The ideal efficiency of a Brayton cycle with regeneration, with increase in pressure ratio will

(a) increase

(b) decrease

(c) remain unchanged

(d) increase/decrease depending on ap-plication

5.100. Gas turbine cycle consists of

(a) two isothermals and two isentropics

(b) two isentropics and two constant volumes

(c) two isentropics, one constant volume and one constant pressure

(d) two isentropics and two constant pressures

THERMODYNAMICS																			
5.1	D	5.11	C	5.21	B	5.31	B	5.41	C	5.51	D	5.61	D	5.71	C	5.81	D	5.91	A
5.2	D	5.12	C	5.22	C	5.32	B	5.42	C	5.52	C	5.62	A	5.72	A	5.82	D	5.92	D
5.3	D	5.13	B	5.23	D	5.33	B	5.43	A	5.53	D	5.63	D	5.73	C	5.83	C	5.93	C
5.4	A	5.14	A	5.24	C	5.34	C	5.44	D	5.54	C	5.64	D	5.74	B	5.84	B	5.94	D
5.5	A	5.15	C	5.25	B	5.35	B	5.45	A	5.55	A	5.65	D	5.75	C	5.85	A	5.95	A
5.6	A	5.16	A	5.26	A	5.36	B	5.46	D	5.56	C	5.66	C	5.376	B	5.86	D	5.96	C
5.7	B	5.17	D	5.27	C	5.37	A	5.47	A	5.57	B	5.67	B	5.77	A	5.87	B	5.97	C
5.8	C	5.18	C	5.28	A	5.38	C	5.48	C	5.58	B	5.68	C	5.78	B	5.88	C	5.98	D
5.9	B	5.19	D	5.29	A	5.39	D	5.49	D	5.59	D	5.69	B	5.79	C	5.89	C	5.99	B
5.10	A	5.20	A	5.30	C	5.40	A	5.50	A	5.60	C	5.70	D	5.80	D	5.90	C	5.100	D

6.1. The aim of value engineering is to

a) Find the depreciation value of a machine
b) Determine the selling price of a product
c) Minimize the cost without change in quality of the product
d) All of the above

6.2. In time study, the rating factor is applied to determine

a) Standard time of a job
b) Merit rating of the worker
c) Fixation of incentive rate
d) Normal time of a worker

6.3. Gantt chart is used for

a) Inventory control
b) Material handling
c) Production schedule
d) Machine repair schedules

6.4. In inventory control theory, the economic order quantity is

a) Average level of inventory
b) Optimum lot size
c) Capacity of a warehouse
d) Lot size corresponding to break-even analysis

6.5. A systematic job improvement sequence will consist of

a) Motion study
b) Time study
c) Job enrichment
d) All of these

6.6. Military type of organization is known as

a) line organization
b) functional organization
c) line and staff organization
d) line, staff and functional organization

6.7. Fixed position layout is also known as

a) analytical layout
b) synthetic layout
c) static product layout
d) none of these

6.8. When slack of an activity is negative

a) it represents a situation where extra resources are available and the completion of project is not delayed
b) it represents that a program falls behind schedule and additional resources are required to complete the project in time
c) the activity is critical and any delay in its performance will delay the completion of whole project
d) all of the above

6.9. Which one of the following chart gives simultaneously information about the progress of work and machine loading?

a) Process chart
b) Machine load chart
c) Man-machine chart
d) Gantt chart

6.10. Probabilistic time for completion of any activity can be found out from

a) optimistic time
b) pessimistic time
c) most likely time
d) all of these

6.11. The type of organization preferred for a steel industry, is

a) line organization
b) functional organization
c) line and staff organization
d) line, staff and functional organization

6.12. A diagram showing the path followed by men and materials while performing a task is known as

a) string diagram
b) flow process chart
c) travel chart
d) flow diagram

6.13. The determination of standard time in a complex job system is best done through

a) stop watch time study
b) analysis of micro motions
c) grouping timing technique
d) analysis of standard data system

6.14. Which of the following are the guidelines for the construction of a network diagram?

a) Each activity is represented by one and only one arrow in the network.
b) Dangling must be avoided in a network diagram.
c) Dummy activity consumes no time or resource
d) all of the above

6.15. In a line organization

a) responsibility of each individual is fixed
b) discipline is strong
c) quick decisions are taken
d) all of these

6.16. A-B-C analysis is used in

a) CPM
b) PERT
c) inventory control
d) all of these

6.17. In A-B-C analysis, which class of items is generally large in number

a) A
b) B
c) C
d) None of the above

6.18. Simplex method is the method used for

a) value analysis
b) network analysis
c) linear programming
d) queuing theory

6.19. Dispatching

a) Prescribes the sequence of operations to be followed
b) Determines the program for the operations
c) Is concerned with the starting of processes
d) Regulates the progress of job through various processes

6.20. The routing function in a production system design is concerned with
a) manpower utilization
b) quality assurance of the product
c) machine utilization
d) optimizing material flow through the plant

6.21. String diagram is used
a) for checking the relative values of various layouts
b) when a group of workers are working at a place
c) where processes require the operator to be moved from one work place to another
d) all of the above

6.22. Queuing theory is associated with
a) inventory
b) sales
c) waiting time
d) production time

6.23. Which of the following statement is correct
a) A-B-C analysis is based on Pareto's principle
b) Simulation can be used for inventory control.
c) Economic order quantity formula ignores variations in demand pattern
d) all of the above

6.24. In break even analysis, total cost consists of
a) fixed cost + sales revenue
b) variable cost + sales revenue
c) fixed cost + variable cost
d) fixed cost + variable cost + profit

6.25. A critical activity has
a) maximum slack
b) minimum slack
c) zero slack
d) average slack

6.26. Break even analysis is a
a) short term analysis
b) long term analysis
c) average of short and long term analysis
d) any one of these

6.27. In a functional organization

a) quality of work is better
b) wastage of material is minimum
c) specialized knowledge and guidance to individual worker is provided
d) all of the above

6.28. The purpose of micro motion study is to
a) assist in finding out the most efficient way of doing work
b) train the individual operator regarding the motion economy principles
c) help in collecting the motion time data for synthetic time standards
d) all of the above

6.29. The correct sequence of phases in value engineering is
a) creative phase, information phase, investigation phase, evaluation phase
b) information phase, creative phase, investigation phase, evaluation phase
c) investigation phase, information phase, creative phase, evaluation phase
d) creative phase, investigation phase, evaluation phase, information phase

6.30. For material transportation, conveyors are used when the prevailing conditions include
a) loads are uniform
b) routes do not vary
c) materials move relatively continuously
d) all of these

6.31. Gantt chart gives information about
a) scheduling and routing
b) sales
c) production schedule
d) machine utilization

6.32. Merit rating is the method of determining the
a) relative values of a job
b) worker's performance on a job
c) worth of a machine
d) value of overall production

6.33. PERT stands for
a) Program Estimation and Reporting Technique
b) Process Estimation and Review Technique
c) Program Evaluation and Review Technique
d) Planning Estimation and Resulting Technique

6.34. A dummy activity in a net work diagram
a) is represented by a dotted line
b) is an artificial activity
c) does not consume time or resources
d) all of these

6.35. The production scheduling is simpler and high volume of output and high labour efficiency are achieved in the case of
a) product layout
b) process layout
c) fixed position layout
d) a combination of line and process layout

6.36. Standard time is equal to
a) normal time *minus* allowances
b) normal time *plus* allowances
c) representative time multiplied by rating factor
d) normal time taken by an operation

6.37. Which of the following are the principles of material handling?
a) keep all the handling to the minimum
b) select only efficient handling equipment
c) move the heaviest weight to the least distance
d) all of the above

6.38. The product layout
a) lowers overall manufacturing time
b) requires less space for placing machines
c) utilizes machine and labour better
d) all of these

6.39. The mathematical technique for finding the best use of limited resources of a company in the maximum manner is known as
a) value analysis
b) network analysis
c) linear programming
d) queuing theory

6.40. Slack represents the difference between the
a) earliest completion time and latest allowable time
b) latest allowable time and earliest completion time
c) earliest completion time and normal expected time
d) latest allowable time and normal allowable time

6.41. Acceptance sampling is used in
a) job production
b) batch production
c) mass production
d) all of these

6.42. Queuing theory is used for
a) job-shop scheduling
b) inventory problems
c) traffic congestion studies
d) all of these

6.43. Which of the following statement is correct
a) When slack of an activity is zero, it falls only on critical path
b) CPM technique is useful to minimize the direct and indirect expenses
c) Critical path of a net work represents the minimum time required for completion of project
d) all of the above.

6.44. Dummy activities are used to
a) determine the critical path
b) determine the project completion time
c) maintain the required net work
d) none of these

6.45. Which of the following statement is wrong
a) An activity consume time and resources whereas an event do not consume time or resources
b) The performance of a specific task is called an activity.
c) An event is an instantaneous point in time at which an activity begins or ends
d) The turning of a job on lathe is an event whereas job turned is an activity

6.46. CPM stands for
a) Combined Process Method
b) Critical Path Method
c) Common Planning Method
d) Critical Process Method

6.47. The average time recorded by work study man for an operation is called
a) standard time
b) normal time
c) representative time
d) none of these

6.48. In value engineering, important consideration is given to
a) customer satisfaction
b) function concept
c) profit maximisation
d) cost reduction

6.49. In value engineering, the term value refers to
a) Manufacturing cost of the product
b) Selling price of the product
c) Total cost of the product
d) Utility of the product

6.50. A device used for lifting or lowering objects suspended from a hook at the end of retractable chains or cable is called
a) Hoist
b) Jib crane
c) Portable elevator
d) Chain conveyor

6.51. Critical path method

a) Helps in ascertaining time schedules

b) Makes better and detailed planning possible
c) Provides a standard method for communicating project plans schedules and to time and cost performance
d) All of the above

6.52. PERT is applied for

a) Marketing programs and advertising programs
b) Installation of machinery
c) Research and development of products
d) All of these

6.53. The most important function of inventory control is

a) Stock control system
b) To run the stores effectively
c) Technical responsibility for the state of materials
d) All of the above

6.54. A feasible solution to the linear programming problem should

a) Satisfy the problem constraints
b) Optimize the objective function
c) Satisfy the problem constraints and non-negativity restrictions
d) Satisfy the non-negativity restrictions

6.55. The start or completion of task is called

a) An event
b) An activity
c) A duration
d) None

6.56. The process capability of a machine is defined as the capability of the machine to

a) Produce a definite volume of work per minute
b) Perform definite number of operations
c) Produce job at a definite spectrum of speed
d) Hold a definite spectrum of tolerance and surface finish

6.57. Service time in queuing theory is usually assumed to follow

a) Normal distribution
b) Poisson's distribution
c) Erlang distribution
d) Exponential law

6.58. At the breakeven point

a) Total cost is more than the sales revenue
b) Total cost is less than the sales revenue
c) Total cost is equal to sales revenue
d) Fixed cost is equal to variable cost

6.59. An activity of the project is graphically represented by _____ on the network diagram.

a) A circle
b) A straight line
c) An arrow
d) A Triangle

6.60. Earliest finish time can be regarded as

a) Earliest start time + duration of activity
b) Earliest start time - duration of activity
c) Latest finish time + duration of activity
d) Latest finish time - duration of activity

6.61. The time taken by a trained worker to perform an operation, while working a steady pace, is known as

a) Standard time
b) Normal time
c) Representative time
d) None of the above

6.62. A company spends considerable amount on publicity to promote sales. This expenditure in break even chart is shown as the

a) Fixed cost line
b) Variable cost line
c) Total cost line
d) Sales revenue line

6.63. The production cost per unit can be reduced by

a) Producing more with increased inputs
b) Producing more with the same inputs
c) Eliminating idle time
d) Minimizing resource waste

6.64. In manufacturing management, the term 'Dispatching' is used to describe

a) Dispatch of sales order
b) Dispatch of factory mail
c) Dispatch of finished product of the user
d) Dispatch of work orders through shop floor

6.65. Product layout is also known as

a) Analytical layout
b) Synthetic layout
c) Static product layout
d) None of these

6.66. The work study is done by means of

a) Planning chart
b) Process chart
c) Stop watch
d) Any of these

6.67. Product layout is used for

a) Job production
b) Batch production
c) Mass production
d) Any of these

6.68. Linear programming can be applied successfully to

a) Chemical industry
b) Oil industry
c) Banks
d) All of these

6.69. The most suitable incentive plan for the maintenance section of an industry will be

a) Piece rate system
b) Group incentive plan
c) Profit sharing plan
d) Simplification

6.70. CPM requires

a) Single time estimate
b) Two time estimate
c) Three time estimate
d) None of these

6.71. The interchangeability can be achieved by

a) Standardization
b) Better process planning
c) Better product planning
d) Bonus plan

6.72. Process layout is employed

a) Where low volume of production is required
b) Where similar jobs are manufactured on similar machines
c) Where machines are arranged on functional basis
d) All of the above

6.73. Direct expenses include

a) Factory expenses
b) Selling expenses
c) Administrative expenses
d) None of these

6.74. Which one of the following techniques is used for determining allowances in time study?

a) Acceptance sampling
b) Linear regression
c) Performance rating
d) Work sampling

6.75. Objective of linear programming for an objective function is to

a) Maximize or minimize
b) Subset or proper set modeling
c) Row or column modeling
d) Adjacent modeling

6.76. In maximization problem, optimal solution occurring at corner point yields the

a) Mean values of Z
b) Highest values of Z
c) Lowest values of Z
d) Mid values of Z

6.77. Which of the following is not an inventory?

a) Machines
b) Raw material
c) Finished goods
d) Consumable tools

6.78. The cost of insurance and taxes are included in

a) Inventory carrying cost
b) Ordering cost
c) Setup cost
d) Shortage cost

6.79. Buffer stock is the level of stock

a) Half of the actual stock
b) At which the ordering process should start
c) Minimum stock level below which actual stock should not fall
d) Maximum stock in inventory

6.80. The time period between placing an order its receipt in stock is known as

a) Lead time
b) Carrying time
c) Shortage time
d) Over time

6.81. The order cost per order of an inventory is Rs. 400 with an annual carrying cost of Rs. 10 per unit. The Economic Order Quantity (EOQ) for an annual demand of 2000 units is

a) 200
b) 400
c) 440
d) 500

6.82. Receiving a required inventory item at the exact time needed.

a) ABC
b) JIT
c) KAIZEN
d) FNSD

6.83. EOQ is the order quantity that ____ over our planning horizon.

a) Min. total inventory cost
b) Min. total ordering cost
c) Min. total carrying cost
d) Required safety stock

6.84. Which of the following is not a forecasting technique?

a) Judgmental
b) Time series
C) Time horizon
d) Associative

6.85. In which of the following forecasting technique, data obtained from past experience is analyzed?

a) Judgmental forecast
b) Time series forecast
c) Associative model
d) All of these

6.86. Short term regular variations related to the calendar or time of day is known as

a) Trend
b) Seasonality
c) Cycles
d) Random variations

6.87. A group of observations measured at successive time intervals is known as

a) A trend component
b) A time series
c) A forecast
d) An additive time series model

6.88. Replacement model is a _____ model

a) Static model
b) Dynamic model
c) Both a & b
d) None of the above

6.89. One can find the initial basic feasible solution by using

a) VAM
b) MODI
c) Optimality test
d) None of the above

6.90. The solution of any transportation problem is obtained in _____ stages

a) 5
b) 4
c) 3
d) 2

6.91. For solving an assignment problem _____ method is used.

a) Hungarian
b) American
c) German
d) None of the above

6.92. A given transportation problem is said to unbalanced if the total supply is not equal to _____

a) Optimization
b) Demand
c) Cost
d) None of these

6.93. _____ variables are fictitious & don't have any physical meaning

a) Optimal variable
b) Decision variable
c) Artificial variable
d) None of these

6.94. An optimal solution is considered the ____ among feasible solution

a) Worst
b) Best
c) Ineffective
d) None of these

6.95. A simple linear programming problem with ____ decision variables can be easily solved by graphical method

a) 1
b) 2
c) 3
d) 4

6.96. In an assignment problem

a) The number of rows and columns must be equal.
b) The number of rows must exceed the number of columns.
c) The number of rows must equal or exceed the number of columns.
d) The number of columns must equal or exceed the number of rows.

6.97. Which of the following statements is accurate with regard to assignment problems?

a) A project can be assigned to more than one person.
b) Only one person can be assigned to each project.
c) A person can be assigned to more than one project.
d) Options a and c

6.98. The two most common objectives for the assignment problem are the minimization of _____.

a) Uncertainty or inexperience
b) Total costs or inexperience
c) Total costs or total time
d) Total time or inexperience

6.99. Which technique requires that we start in the upper-left-hand cell of the table and allocate units to

Shipping routes in a “stair step” fashion?

a) upper-left rule
b) Stair step method
c) Northwest corner rule
d) Vogel’s approximation method

6.100. What does VAM stand for?

a) Variance approximation method
b) Variable assignment method
c) Vector approximation method
d) Vogel’s approximation method

Industrial Engineering and Production Management																			
6.1	C	6.11	D	6.21	D	6.31	C	6.41	C	6.51	D	6.61	A	6.71	A	6.81	B	6.91	A
6.2	C	6.12	D	6.22	C	6.32	B	6.42	D	6.52	D	6.62	B	6.72	D	6.82	B	6.92	B
6.3	C	6.13	D	6.23	A	6.33	C	6.43	D	6.53	D	6.63	B	6.73	D	6.83	A	6.93	C
6.4	B	6.14	D	6.24	C	6.34	D	6.44	C	6.54	C	6.64	D	6.74	D	6.84	C	6.94	B
6.5	D	6.15	D	6.25	C	6.35	A	6.45	D	6.55	A	6.65	B	6.75	A	6.85	B	6.95	B
6.6	A	6.16	C	6.26	A	6.36	B	6.46	B	6.56	A	6.66	C	6.76	B	6.86	B	6.96	A
6.7	C	6.17	C	6.27	D	6.37	D	6.47	C	6.57	D	6.67	C	6.77	A	6.87	B	6.97	B
6.8	B	6.18	C	6.28	D	6.38	D	6.48	D	6.58	C	6.68	D	6.78	A	6.88	B	6.98	C
6.9	C	6.19	C	6.29	A	6.39	C	6.49	D	6.59	C	6.69	B	6.79	C	6.89	A	6.99	C
6.10	D	6.20	C	6.30	D	6.40	A	6.50	A	6.60	A	6.70	A	6.80	A	6.90	D	6.100	D

FLUID MECHANICS

7.1. One litre of water occupies a volume of

a) 100 cc

b) 250cc

c) 500 cc

d) 1000cc

7.2. In one dimensional flow, the flow

a) is steady and uniform

b) takes place in straight line

c) takes place in curve

d) takes place in one direction

7.3. The kinematic viscosity is the

a) ratio of absolute viscosity to the density of the liquid

b) ratio of density of the liquid to the absolute viscosity

c) product of absolute viscosity and density of the liquid

d) product of absolute viscosity and mass of the liquid

7.4. The Reynold's number of a ship is _____ to its velocity and length

a) Directly proportional

b) Inversely proportional

c) both a & c depending on the condition

d) none of the above

7.5. In order to measure the flow with a venturimeter, it is installed in

a) horizontal line

b) inclined line with flow upwards

c) inclined line with flow downwards

d) any direction and in any location

7.6. The pressure less than atmospheric pressure is known as

a) Suction pressure

b) Vacuum pressure

c) Negative gauge pressure

d) All the above

7.7. The maximum efficiency of transmission through a pipe is ___ %

a) 50

b) 56.7

c) 66.67

d) 76.67

7.8. A manometer is used to measure

a) Low pr.

b) Moderate pr.

c) High pr.

d) Atmospheric pr.

7.9. The centre of gravity of the volume of the liquid displaced is called

a) Centre of pressure

b) Centre of buoyancy

c) Metacentre

d) none

7.10. The coefficient of discharge for an external mouthpiece is

a) 0.375

b) 0.5

c) 0.707

d) 0.855

7.11. The body will sink down if the force of buoyancy is _____ the weight of the liquid displaced.

a) Less than

b) More than

c) Equal to

d) None

7.12. If a body floating in a liquid returns back to its original position, when given a small angular displacement, the body is said to be in

a) Neutral equilibrium

b) Stable equilibrium

c) Unstable equilibrium

d) none of these

7.13. The pressure measured with the help of a piezometer tube is in

a) N/mm^2

b) N/m^2

c) Head of liquid

d) all of these

7.14. The weight per unit volume of a liquid at a standard temperature and pressure is called

a) Specific weight

b) Mass density

c) Specific gravity

d) None of these

7.15. The Bernoulli's equation is based on the assumption that

a) There is no loss of energy of the liquid flowing

b) The velocity of flow is uniform across any cross-section of the pipe

c) No force except gravity acts on the fluid

d) All of the above

7.16. The metacentric heights of two floating bodies A and B are 1 m and 1.5 m respectively. Select the correct statement.

a) The bodies A and B have equal stability

b) The body A is more stable than body B

c) The body B is more stable than body A

d) The bodies A and B are unstable

7.17. The velocity corresponding to Reynold number of 2800, is called

a) sub-sonic velocity

b) super-sonic velocity

c) lower critical velocity

d) higher critical velocity

7.18. A flow in which _____ force is dominating over the viscosity is called turbulent flow.

a) Inertia

b) Elastic

c) Viscous

d) Surface tension

7.19. The atmospheric pressure at sea level is

a) 110 KN/m^2

b) 10.3 m of water

c) 750mm of Hg

d) All the above

7.20. Reynold's number is the ratio of inertia force to

a) Pressure force

b) Elastic force

c) Viscous force

d) Gravity force

7.21. The unit of dynamic viscosity in S.I. units is

a) N-m/s^2

b) N-s/m^2

c) Poise

d) Stoke

7.22. Bulk modulus of a fluid _____ as the pressure increases.

a) Remains same

b) Increases

c) Decreases

d) None

7.23. The flow of water through the hole in the bottom of a wash basin is an example of

a) Steady flow

b) Uniform flow

c) Free vortex

d) Forced vortex

7.24. A glass tube of smaller diameter is used while performing an experiment for the capillary rise of water because

a) It is easier to see through the glass tube

b) Glass tube is cheaper than a metallic tube

c) It is not possible to conduct this experiment with any other tube

d) All of the above

7.25. A compound pipe is required to be replaced by a new pipe. The two pipes are said to be equivalent, if

a) Length of both the pipes is same
b) Diameter of both the pipes is same
c) Loss of head and discharge of both the pipes is same
d) Loss of head and velocity of flow in both the pipes is same

7.26. In a footstep bearing, if the speed of the shaft is doubled, then the torque required to overcome the viscous resistance will be

a) Double

b) Four times

c) Eight times

d) Sixteen times

7.27. The velocity at which the laminar flow stops, is known as

a) Velocity of approach

b) Lower critical velocity

c) Higher critical velocity

d) None of these

7.28. The Newton's law of resistance is based on the assumption that the

a) planes of the body are completely smooth

b) space around the body is completely filled with the fluid

c) fluid particles do not exert any influence on one another

d) all of the above

7.29. The Euler's equation for the motion of liquids is based upon the assumption that

a) the fluid is non - viscous, homogeneous and incompressible

b) the velocity of flow is uniform over the section

c) the flow is continuous, steady and along the stream line

d) all of the above

7.30. The shear stress-strain graph for a newtonian fluid is a

a) straight line

b) parabolic curve

c) hyperbolic curve

d) elliptical

7.31. A flow in which the viscosity of fluid is dominating over the inertia force is called

a) steady flow

b) unsteady flow

c) laminar flow

d) turbulent flow

7.32. An air vessel is provided at the summit in a syphon to

a) avoid interruption in the flow

b) increase discharge

c) increase velocity

d) maintain pressure difference

7.33. The length of the divergent cone in a venturimeter is _____ that of the convergent cone.

a) three to four times

b) five to six times

c) equal to

d) double

7.34. A flow through a long pipe at constant rate is called

a) steady uniform flow

b) steady non-uniform flow

c) unsteady uniform flow

d) unsteady non-uniform flow

7.35. In a short cylindrical external mouthpiece, the vena contracta occurs at a distance _____ the diameter of the orifice from the outlet of orifice.

a) Equal to

b) 1/4

c) 1/3

d) 1/2

7.36. Viscous force is the _____ of shear stress due to viscosity and cross-sectional area of flow.

a) Sum

b) Difference

c) Product

d) Ratio

7.37. with an increase in size of tube, the rise or depression of liquid in the tube due to surface tension will

a) decrease

b) increase

c) remain unchanged

d) depend upon the characteristics of liquid

7.38. One stoke is equal to

a) 10^{-2} m^2/s

b) 10^{-3} m^2/s

c) 10^{-4} m^2/s

d) 10^{-6} m^2/s

7.39. The specific weight of water in S.I. units is taken as

a) 9.81 KN/m^3

b) 9.81 x 10^3 N/m^3

c) 9.81 x 10^{-6} N/mm^3

d) any one of these

7.40. The power transmitted through the pipe is maximum when the head lost due to friction is equal to

a) one-fourth of the total supply head

b) one-third of the total supply head

c) one-half of the total supply head

d) two-third of the total supply head

7.41. The force exerted by a moving fluid on an immersed body is directly proportional to the rate of change of momentum due to the presence of the body. This statement is called

a) Newton's law of motion

b) Newton's law of cooling

c) Newton's law of viscosity

d) Newton's law of resistance

7.42. A flow is called sub-sonic, if the Mach number is

a) less than unity

b) unity

c) between 1 and 6

d) more than 6

7.43. The flow in a pipe is neither laminar nor turbulent when Reynold number is

a) less than 2000

b) between 2000 and 2800

c) more than 2800

d) none of these

7.44. The buoyancy depends upon the

a) weight of the liquid displaced

b) pressure with which the liquid is displaced

c) viscosity of the liquid

d) compressibility of the liquid

7.45. A piezometer tube is used only for measuring

a) low pressure
b) high pressure
c) moderate pressure
d) vacuum pressure

7.46. The flow in a pipe is turbulent when Reynold number is

a) less than 2000

b) between 2000 and 2800

c) more than 2800

d) none of these

7.47. When a tank containing liquid moves with an acceleration in the horizontal direction, then the free surface of the liquid

a) remains horizontal

b) becomes curved

c) falls on the front end

d) falls on the back end

7.48. Euler's number is the ratio of _____ force to pressure force

a) inertia

b) gravity

c) viscous

d) none of the above

7.49. The most economical section of a rectangular channel is one which has hydraulic mean depth or hydraulic radius equal to

a) half the depth

b) half the breadth

c) twice the depth

d) twice the breadth

7.50. When a cylindrical vessel containing liquid is revolved, the surface of the liquid takes the shape of
a) a triangle
b) a paraboloid
c) an ellipse
d) none of these

7.51. The hydraulic mean depth or the hydraulic radius is the ratio of

a) area of flow and wetted perimeter

b) wetted perimeter and diameter of pipe

c) velocity of flow and area of flow

d) none of these

7.52. The imaginary line drawn in the fluid in such a way that the tangent to any point gives the direction of motion at that point, is known as

a) path line

b) stream line

c) steak line

d) potential line

7.53. Stoke is the unit of

a) kinematic viscosity in C. G. S. units

b) kinematic viscosity in M. K. S. units

c) dynamic viscosity in M. K. S. units

d) dynamic viscosity in S. I. units

7.54. One poise is equal to

a) 0.1 N-s/m^2

b) 1 N-s/m^2

c) 10 N-s/m^2

d) 100 N-s/m^2

7.55. The absolute pressure is equal to

a) gauge pressure + atmospheric pressure

b) gauge pressure - atmospheric pressure

c) atmospheric pressure - gauge pressure

d) gauge pressure - vacuum pressure

7.56. When the pressure intensity at a point is more than the local atmospheric pressure, then the difference of these two pressures is called

a) gauge pressure

b) absolute pressure

c) positive gauge pressure

d) vacuum pressure

7.57. The hammer blow in pipes occurs when

a) there is excessive leakage in the pipe

b) the pipe bursts under high pressure of fluid

c) the flow of fluid through the pipe is suddenly brought to rest by closing of the valve

d) the flow of fluid through the pipe is gradually brought to rest by closing of the valve

7.58. When a body is placed over a liquid, it will sink down if

a) gravitational force is equal to the upthrust of the liquid

b) gravitational force is less than the upthrust of the liquid

c) gravitational force is more than the upthrust of the liquid

d) none of the above

7.59. A flow whose streamline is represented by a curve, is called

a) one-dimensional flow

b) two-dimensional flow

c) three-dimensional flow

d) four-dimensional flow

7.60. When the Mach number is equal to unity, the flow is called

a) sub-sonic flow

b) sonic flow

c) super-sonic flow

d) hyper-sonic flow

7.61. A flow is called hyper-sonic, if the Mach number is

a) less than unity

b) unity

c) between 1 and 5

d) none of these

7.62. If the depth of water in an open channel is greater than the critical depth, the flow is called

a) critical flow

b) turbulent flow

c) tranquil flow

d) torrential flow

7.63. The intensity of pressure at any point, in a liquid, is

a) directly proportional to the area of the vessel containing liquid

b) directly proportional to the depth of liquid from the surface

c) directly proportional to the length of the vessel containing liquid

d) inversely proportional to the depth of liquid from the surface

7.64. The liquid used in manometers should have

a) low density

b) high density

c) low surface tension

d) high surface tension

7.65. When a body is placed over a liquid, it will float if

a) gravitational force is equal to the upthrust of the liquid

b) gravitational force is less than the upthrust of the liquid

c) gravitational force is more than the upthrust of the liquid

d) none of the above

7.66. The hydraulic gradient line lies over the centre line of the pipe by an amount equal to the

a) pressure head

b) velocity head

c) pressure head + velocity head

d) pressure head - velocity head

7.67. The flow in a pipe or channel is said to be non-uniform when

a) the liquid particles at all sections have the same velocities

b) the liquid particles at different sections have different velocities

c) the quantity of liquid flowing per second is constant

d) each liquid particle has a definite path

7.68. The ratio of the inertia force to the viscous force is called

a) Reynold's number

b) Froude's number

c) Weber's number

d) Euler's number

7.69. A flow whose streamline is represented by a straight line, is called _____ dimensional flow.

a) 1

b) 4

c) 2

d) 3

7.70. The discharge through a channel of trapezoidal section is maximum when

a) width of channel at the top is equal to twice the width at the bottom

b) depth of channel is equal to the width at the bottom

c) the sloping side is equal to half the width at the top

d) the sloping side is equal to the width at the bottom

7.71. When the water level on the downstream side of a weir is above the top surface of a weir, the weir is known as

a) narrow-crested weir

b) broad-crested weir

c) Ogee weir

d) submerged weir

7. 72. The tangential velocity of the water element having a free vortex is

a) directly proportional to its distance from the centre

b) inversely proportional to its distance from the centre

c) directly proportional to its (distance)^2 from the centre

d) inversely proportional to its (distance)^2 from the centre

7.73. The unit of kinematic viscosity in S. I. units is

a) N-m/s

b) N-s/m^2

c) m^2/s

d) N-m

7.74. A fluid whose viscosity does not change with the rate of deformation or shear strain is known as

a) real fluid

b) ideal fluid

c) newtonian fluid

d) non-newtonian fluid

7.75. The variation in the volume of a liquid with the variation of pressure is called its

a) surface tension

b) compressibility

c) capillarity

d) viscosity

7.76. The pressure measured with the help of a pressure gauge is called

a) atmospheric pressure

b) gauge pressure

c) absolute pressure

d) mean pressure

7.77. A venturiflume is used to measure

a) pressure of liquid

b) discharge of liquid

c) pressure difference between two points in a channel

d) pressure difference between two points in a pipe

7.78. The metacentric height is the distance between the

a) centre of gravity of the floating body and the centre of buoyancy

b) centre of gravity of the floating body and the metacentre

c) metacentre and centre of buoyancy

d) original centre of buoyancy and new centre of buoyancy

7.79. The pressure of the liquid flowing through the divergent portion of a venturimeter

a) remains constant

b) increases

c) decreases

d) depends upon mass of liquid

7.80. Water is a _____ fluid

a) real

b) ideal

c) newtonian

d) non-newtonian

7.81. Barometer is used to measure

a) velocity of liquid

b) atmospheric pressure

c) pressure in pipes and channels

d) difference of pressure between two points in a pipe

7.82. The mass of 2.5 m^3 of a certain liquid is 2 tonnes. Its mass density is

a) 200 kg/m^3

b) 400 kg/m^3

c) 600 kg/m^3

d) 800 kg/m^3

7.83. The factional resistance of a pipe varies approximately with _____ of the liquid

a) pressure

b) velocity

c) square of velocity

d) cube of velocity

7.84. The product of mass and accelaration of flowing liquid is called

a) inertia force

b) viscous force

c) gravity force

d) pressure force

7.85. A point, in a compressible flow where the velocity of fluid is zero, is called

a) critical point

b) vena contracta

c) stagnation point

d) none of these

7.86. Falling drops of water become spheres due to the property of

a) surface tension of water

b) compressibility of water

c) capillarity of water

d) viscosity of water

7.87. Whenever a plate is held immersed at some angle with the direction of flow of the liquid, it is subjected to some pressure. The component of this pressure, in the direction of flow of the liquid, is known as

a) lift

b) drag

c) stagnation pressure

d) bulk modulus

7.88. The height of a water column equivalent to a pressure of 0.15 MPa is

a) 15.3 m

b) 25.3 m

c) 35.3 m

d) 45.3 m

7.89. The total energy of a liquid particle in motion is equal to

a) pressure energy + kinetic energy + potential energy

b) pressure energy - (kinetic energy + potential energy)

c) potential energy - (pressure energy + kinetic energy

d) kinetic energy - (pressure energy + potential energy)

7.90. In case of flow through parallel pipes,

a) the head loss for all the pipes is same

b) the total discharge is equal to the sum of discharges in the various pipes

c) the total head loss is the sum of head losses in the various pipes

d) Both (A) and (B)

7.91. Coefficient of velocity is defined as the ratio of

a) actual velocity of jet at vena contracta to the theoretical velocity

b) area of jet at vena contracta to the area of orifice

c) actual discharge through an orifice to the theoretical discharge

d) none of the above

7.92. A differential manometer is used to measure

a) atmospheric pressure

b) pressure in pipes and channels

c) pressure in venturimeter

d) difference of pressures between two points in a pipe

7.93. The point at which the resultant pressure on an immersed surface acts, is known as

a) centre of gravity

b) centre of depth

c) centre of pressure

d) centre of immersed surface

7.94. A notch is used to measure _____ of liquids.

a) pressure

b) discharge

c) velocity

d) volume

7.95. The magnitude of water hammer depends upon the

a) elastic properties of the pipe material

b) elastic properties of the liquid flowing through the pipe

c) speed at which the valve is closed

d) all of the above

7.96. A flow in which the quantity of liquid flowing per second is constant, is called _____ flow.

a) steady

b) streamline

c) turbulent

d) unsteady

7.97. The force present in a moving liquid is

a) inertia force

b) viscous force

c) gravity force

d) all of these

7.98. The ratio of the inertia force to the elastic force is called

a) Reynold's number

b) Froude's number

c) Weber's number

d) Mach number

7.99. A fluid having no viscosity is known as

a) real fluid

b) ideal fluid

c) newtonian fluid

d) non-newtonian fluid

7.100. The force per unit length is the unit of

a) surface tension

b) compressibility

c) capillarity

d) viscosity

FLUID MECHANICS																			
7.1	D	7.11	A	7.21	B	7.31	C	7.41	D	7.51	A	7.61	D	7.71	D	7.81	B	7.91	A
7.2	B	7.12	B	7.22	B	7.32	A	7.42	A	7.52	B	7.62	C	7.72	B	7.82	D	7.92	D
7.3	A	7.13	C	7.23	C	7.33	A	7.43	B	7.53	A	7.63	B	7.73	C	7.83	C	7.93	C
7.4	A	7.14	A	7.24	A	7.34	A	7.44	A	7.54	A	7.64	D	7.74	C	7.84	A	7.94	B
7.5	D	7.15	D	7.25	C	7.35	B	7.45	C	7.55	A	7.65	B	7.75	B	7.85	C	7.95	D
7.6	D	7.16	C	7.26	A	7.36	C	7.46	C	7.56	C	7.66	A	7.76	B	7.86	A	7.96	A
7.7	C	7.17	D	7.27	B	7.37	A	7.47	C	7.57	C	7.67	B	7.77	B	7.87	B	7.97	D
7.8	C	7.18	A	7.28	D	7.38	C	7.48	A	7.58	C	7.68	A	7.78	B	7.88	A	7.98	D
7.9	B	7.19	B	7.29	D	7.39	D	7.49	A	7.59	B	7.69	A	7.79	C	7.89	A	7.99	B
7.10	D	7.20	C	7.30	A	7.40	B	7.50	B	7.60	B	7.70	C	7.80	C	7.90	D	7.100	A

8.1. Specify the sequence correctly

A. Grain growth, recrystallisation, stress relief

B. Stress relief, grain growth, recrystallisation

C. Stress relief, recrystallisation, grain growth

D. Grain growth, stress relief, recrystallisation

8.2. Thermoplastic materials are those materials which

A. are formed into shape under heat and pressure and results in a permanently hard product

B. do not become hard with the application of heat and pressure and no chemical change occurs

C. are flexible and can withstand considerable wear under suitable conditions

D. are used as a friction lining for clutches and brakes

8.3. Which of the following material has maximum ductility?

A. Mild steel

B. Copper

C. Nickel

D. Aluminium

8.4. An eutectoid steel consists of

A. wholly pearlite

B. wholly austenite

C. pearlite and ferrite

D. pearlite and cementite

8.5. Shock resisting steels should have

A. low wear resistance

B. low hardness

C. low tensile strength

D. toughness

8.6. Cast iron is a

A. ductile material

B. malleable material

C. brittle material

D. tough material

8.7. The hardness is the property of a material due to which it

A. can be drawn into wires

B. breaks with little permanent distortion

C. can cut another metal

D. can be rolled or hammered into thin sheets

8.8. Malleable cast iron is produced

A. by adding magnesium to molten cast iron

B. by quick cooling of molten cast iron

C. from white cast iron by annealing process

D. none of these

8.9. Smelting is the process of

A. removing the impurities like clay, sand etc. from the iron ore by washing with water

B. expelling moisture, carbon dioxide, sulphur and arsenic from the iron ore by heating in shallow kilns

C. reducing the ore with carbon in the presence of a flux

D. all of the above

8.10. The percentage of carbon in cast iron varies from

A. 0.1 to 0.5

B. 0.5 to 1

C. 1 to 1.7

D. 1.7 to 4.5

8.11. The ability of a material to absorb energy in the plastic range is called

A. resilience

B. creep

C. fatigue strength

D. toughness

Answer: Option A

8.12. Brass is an alloy of

A. copper and zinc

B. copper and tin

C. copper, tin and zinc

D. none of these

8.13. A material is said to be allotropic, if it has

A. fixed structure at all temperatures

B. atoms distributed in random pattern

C. different crystal structures at different temperatures

D. any one of the above

8.14. Closed packed hexagonal space lattice is found in

A. zinc, magnesium, cobalt, cadmium, antimony and bismuth

B. gamma-iron, aluminium, copper, lead, silver and nickel

C. alpha-iron, tungsten, chromium and molybdenum

D. none of the above

8.15. The hardness and tensile strength in austenitic stainless steel can be increased by

A. hardening and cold working

B. normalising

C. martempering

D. full annealing

8.16. The quenching of steel from the upper critical point results in a fine grained structure.

A. Agree

B. Disagree

8.17. An alloy steel which is work hardenable and which is used to make the blades of bulldozers, bucket wheel excavators and other earth moving equipment contain iron, carbon and

A. chromium

B. silicon

C. manganese

D. magnesium

8.18. Which of the following has a fine gold colour and is used for imitation jewellery?

A. Silicon bronze

B. Aluminium bronze

C. Gun metal

D. Babbit metal

8.19. When the steel is normalised, its

A. yield point increases

B. ductility decreases

C. ultimate tensile strength increases

D. all of these

8.20. White cast iron has a high tensile strength and a low compressive strength.

A. Yes

B. No

8.21. Dye penetrant method is generally used to locate

A. core defects

B. surface defects

C. superficial defects

D. temporary defects

8.22. The charge is fed into the blast furnace through the

A. stack

B. throat

C. bosh

D. tuyers

8.23. A small percentage of boron is added to steel in order to

A. increase hardenability

B. reduce machinability

C. increase wear resistance

D. increase endurance strength

8.24. Which of the following process of steel making is in operation at Tata Iron and Steel Works, Jamshedpur?

A. Bessemer process

B. Open hearth process

C. Duplex process

D. Electric process

8.25. The unit cells

A. contain the smallest number of atoms which when taken together have all the properties of the crystals of the particular metal

B. have the same orientation and their similar faces are parallel

C. may be defined as the smallest parallelopiped which could be transposed in three coordinate directions to build up the space lattice

D. all of the above

8.26. Which of the following when used in ordinary low carbon steels, makes the metal ductile and of good bending qualities?

A. Sulphur

B. Phosphorus

C. Manganese

D. Silicon

8.27. The hardness of steel depends upon the

A. amount of cementite it contains
B. amount of carbon it contains
C. contents of alloying elements
D. method of manufacture of steel

8.28. Cartidge brass can be

A. cold rolled into sheets
B. drawn into wires
C. formed into tube
D. any one of these

8.29. Which of the following statement is correct?

A. The product produced by blastfurnace is called cast iron.
B. The pig iron is the name given to the product produced by cupola.
C. The cast iron has high tensile strength.
D. The chilled cast iron has no graphite.

8.30. Blast furnace is used to produce

A. pig iron
B. cast iron
C. wrought iron
D. steel

8.31. In flame hardening, oxy-acetylene flame is used.

A. Yes
B. No

8.32. Which of the following statements are true for annealing of steels?

A. Steels are heated to 500 to 700° C
B. Cooling is done slowly and steadily
C. Internal stresses are relieved
D. all of these

8.33. The ability of a material to undergo large permanent deformation with the application of a tensile force, is called ductility.

A. Correct

B. Incorrect

8.34. Which of the following steel making process is being adopted at Rourkela Steel Plant?

A. Bessemer process

B. Open-hearth process

C. Electric process

D. L-D process

8.35. 18-4-1 high speed steel contains

A. vanadium 4%, chromium 18% and tungsten 1%

B. vanadium 1%, chromium 4% and tungsten 18%

C. vanadium 18%, chromium 1% and tungsten 4%

D. none of the above

8.36. Which of the following statement is true about brittle fracture?

A. High temperature and low strain rates favour brittle fracture

B. Many metals with hexagonal close packed (H.C.P) crystal structure commonly show brittle fracture

C. Brittle fracture is always preceded by noise

D. Cup and cone formation is characteristic for brittle materials

8.37. Grey cast iron has

A. carbon in the form of free graphite

B. high tensile strength

C. low compressive strength

D. all of these

8.38. Induction hardening is basically a

A. carburising process

B. surface hardening process

C. core-hardening process

D. none of these

8.39. When elements like nickel, chromium, copper and molybdenum are added to the molten cast iron, it produces

A. white cast iron

B. nodular cast iron

C. malleable cast iron

D. alloy cast iron

8.40. The strength is the ability of a material to resist

A. deformation under stress

B. externally applied forces with breakdown or yielding

C. fracture due to high impact loads

D. none of these

8.41. The material widely used for making pendulums of clocks is

A. stainless steel

B. high speed steel

C. heat resisting steel

D. nickel steel

8.42. The stiffness is the ability of a material to resist

A. deformation under stress

B. fracture due to high impact loads

C. externally applied forces with breakdown or yielding

D. none of the above

8.43.The blade of a power saw is made of

A. boron steel

B. high speed steel

C. stainless steel

D. malleable cast iron

8.44. In induction hardening _____ is high.

A. current

B. voltage

C. frequency

D. temperature

8.45. The metal suitable for bearings subjected to light loads, is

A. silicon bronze

B. white metal

C. monel metal

D. phosphor bronze

8.46.The property of a material essential for spring materials is

A. stiffness

B. ductility

C. resilience

D. plasticity

8.47. A steel with carbon above 0.8% is known as hyper-eutectoid steel.

A. Agree

B. Disagree

8.48. Which of the following material has nearly zero coefficient of expansion?

A. Stainless steel

B. High speed steel

C. Invar

D. Heat resisting steel

8.49. In normalising process, the hypo-eutectiod steel is heated from 30° C to 50° C above the upper critical temperature and then cooled in still air.

A. True

B. False

8.50. The alloying element which can replace tungsten in high speed steels is

A. nickel

B. vanadium

C. cobalt

D. molybdenum

8.51. Chromium when added to steel _____ the tensile strength.

A. does not effect

B. decreases

C. increases

8.52. Which of the following is added in low carbon steels to prevent them from becoming porous?

A. Sulphur

B. Phosphorus

C. Manganese

D. Silicon

8.53. A steel with carbon _____ is known as hypo-eutectoid steel.

A. 0.8%

B. below 0.8%

C. above 0.8%

8.54. Free cutting steels

A. contain carbon in free from

B. require minimum cutting force

C. is used where rapid machining is the prime requirement

D. can be cut freely

8.55. The presence of hydrogen in steel causes

A. reduced neutron absorption cross-section

B. improved weldability

C. embrittlement

D. corrosion resistance

8.56. Tin base white metals are used where the bearings are subjected to

A. large surface wear

B. elevated temperatures

C. light load and pressure

D. high pressure and load

8.57. The charge of the blast furnace consists of

A. calcined ore (8 parts), coke (4 parts) and limestone (1 part)

B. calcined ore (4 parts), coke (1 part) and limestone (8 parts)

C. calcined ore (1 part), coke (8 part) and limestone (4 parts)

D. calcined ore, coke and limestone all in equal parts

8.58. The ability of a material to resist fracture due to high impact loads, is called

A. strength

B. stiffness

C. toughness

D. brittleness

8.59. The purpose of heat treatment is to

A. relieve the stresses set up in the material after hot or cold working

B. modify the structure of the material

C. change grain size

D. any one of these

8.60. An alloy of copper, tin and zinc is known as

A. brass

B. bronze

C. gun metal

D. muntz metal

8.61. Which of the following iron exist between 910° C and 1403° C?

A. α-iron
B. β-iron
C. γ-iron
D. δ-iron

8.62. The material in which the atoms are arranged chaotically, is called

A. amorphous material
B. mesomorphous material
C. crystalline material
D. none of these

8.63. In basic bessemer process, the furnace is lined with

A. silica bricks
B. a mixture of tar and burnt dolomite bricks
C. either (a) or (b)
D. none of these

8.64. Polyvinylchloride (PVC) is a _____ material.

A. thermoplastic
B. thermosetting

8.65. In a unit cell of close packed hexagonal space lattice, there are twenty four atoms.

A. Correct
B. Incorrect

8.66.The steel produced by cementation process is known as _____ steel.

A. blister
B. crucible

8.67.Duralumin has better strength than Y-alloy at high temperature.

A. True
B. False

8.68. Normalising of steel is done to

A. refine the grain structure

B. remove strains caused by cold working

C. remove dislocations caused in the internal structuure due to hot working

D. all of the above

8.69. A steel containing 12 to 14% chromium and 0.12 to 0.35% carbon is called martensitic stainless steel.

A. True

B. False

8.70.. When a steel containing _____ 0.8% carbon is cooled slowly below the lower critical point, it consists of ferrite and pearlite.

A. equal to

B. less than

C. more than

8.71.. Shock resistance of steel is increased by adding

A. nickel

B. Chromium

C. nickel and chromium

D. sulphur, lead and phosphorus

8.72. In low carbon steels, _____ raises the yield point and improves the resistance to atmospheric corrosion.

A. Sulphur

B. Phosphorus

C. Manganese

D. Silicon

8.73. A steel containing 16 to 18% chromium and about 0.12% carbon is called

A. ferritic stainless steel

B. austenitic stainless steel

C. martensitic stainless steel

D. nickel steel

8.74. The alloy, mainly used for corrosion resistance in stainless steels is

A. Silicon

B. Manganese

C. Carbon

D. Chromium

8.75. The temperature required for full annealing in hyper-eutectoid steel is

A. 30° C to 50° C above upper critical temperature

B. 30° C to 50° C below upper critical temperature

C. 30° C to 50° C above lower critical temperature

D. 30° C to 50° C below lower critical temperature

8.76. The bond formed by transferring electrons from one atom to another is called

A. ionic bond

B. covalent bond

C. metallic bond

D. none of these

8.77. Which of the following property is desirable in parts subjected to shock and impact loads?

A. Strength

B. Stiffness

C. Brittleness

D. Toughness

8.78. German silver contains

A. 1% silver

B. 2% silver

C. 5% silver

D. no silver

8.79. Connecting rod is, usually, made from

A. low carbon steel

B. high carbon steel

C. medium carbon steel

D. high speed steel

8.80. Which of the following impurity in cast iron makes it hard and brittle?

A. Silicon

B. Sulphur

C. Manganese

D. Phosphorus

8.81. There are fourteen atoms in a unit cell of

A. body centred cubic space lattice

B. face centred cubic space lattice

C. close packed hexagonal space lattice

D. none of these

8.82. The maximum internal diameter of a blast furnace is about

A. 3 m

B. 6 m

C. 9 m

D. 12 m

8.83. In spheroidising process, the steel is

A. heated below the lower critical temperature and then cooled slowly

B. heated upto the lower critical temperature and then cooled in still air

C. heated slightly above the lower critical temperature and then cooled slowly to a temperature of 600°C

D. none of the above

8.84. Pearlite is a combination of 87% ferrite and 13% cementite.

A. Yes

B. No

8.85. The percentage carbon content in wrought iron is about

A. 0.02

B. 0.1

C. 02

D. 0.4

8.86. The alloying element which reduces the formation of iron sulphide in steel is

A. chromium

B. nickel

C. vanadium

D. manganese

8.87. For a steel containing 0.8% carbon

A. there is no critical point

B. there is only one critical point

C. there are two critical points

D. there can be any number of critical points

8.88. In high speed steels, manganese is used to tougher the metal and to increase its

A. yield point

B. critical temperature

C. melting point

D. hardness

8.89. The machinability of aluminium increases when _____ is added to aluminium.

A. copper

B. magnesium

C. silicon

D. lead and bismuth

8.90. Body centred cubic space lattice is found in

A. zinc, magnesinm, cobalt, cadmium, antimony and bismuth

B. gamma-iron, aluminium, copper, lead, silver and nickel

C. alpha-iron, tungsten, chromium and molybdenum

D. none of the above

8.91.When a low carbon steel is heated upto lower critical temperature,

A. there is no change in grain size

B. the average grain size is a minimum

C. the grain size increases very rapidly

D. the grain size first increases and then decreases very rapidly

8.92. Grey cast iron is _____ than white cast iron.

A. softer

B. harder

8.93. Corrosion resistance of steel is increased by adding nickel and chromium.

A. Agree

B. Disagree

8.94. The silicon steel is widely used for

A. connecting rods

B. cutting tools

C. generators and transformers in the form of laminated cores

D. motor car crankshafts

8.95. Ball bearings are, usually, made from

A. low carbon steel

B. high carbon steel

C. medium carbon steel

D. chrome steel

8.96. Which of the following is a case hardening process?

A. Carburising

B. Cyaniding

C. Nitriding

D. all of these

8.97. In a crystalline material, atoms are arranged in definite and orderly manner and form.

A. Agree

B. Disagree

8.98. The austenitic stainless steel contains

A. 18% chromium and 8% nickel

B. 8% chromium and 18% nickel

C. 14% chromium and 0.35% carbon

D. 14% nickel and 0.35% carbon

8.99. The process used for relieving the internal stresses previously set up in the Metal and for increasing the machinability of steel, is

A. normalising

B. full annealing

C. process annealing

D. spheroidising

8.100. Steel containing upto 0.15% carbon, is known as

A. mild steel

B. dead mild steel

C. medium carbon steel

D. high carbon steel

8.101. In a unit cell of a body centred cubic space lattice, there are _____ atoms.

A. six

B. nine

C. fourteen

D. seventeen

8.102. Cast iron has

A. high compressive strength

B. excellent machinability

C. good casting characteristic

D. all of these

8.103. The nuts and bolts are made from silicon steel.

A. Correct

B. Incorrect

8.104. Silicon in cast iron

A. makes the iron soft and easily machinable

B. increases hardness and brittleness

C. makes the iron white and hard

D. aids fusibility and fluidity

8.105. The process which improves the machinability of steels, but lowers the hardness and tensile strength, is

A. normalising

B. full annealing

C. process annealing

D. spheroidising

8.106. Which of the following iron exists at 910° C?

A. α-iron

B. β-iron

C. γ-iron

D. δ-iron

8.107. The iron ore mostly used for the production of pig iron is

A. magnetite

B. haematite

C. limonite

D. siderite

8.108. A carbon steel having Brinell hardness number 100 should have ultimate tensile strength closer to

A. 100 N/mm^2

B. 200 N/mm^2

C. 350 N/mm^2

D. 1000 N/mm^2

8.109. The steel widely used for making precision measuring instruments is

A. nickel steel

B. nickel-chrome steel

C. high speed steel

D. chrome-vanadium steel

8.110. The ductility is the property of a material due to which it

A. can be drawn into wires

B. breaks with little permanent distortion

C. can be rolled or hammered into thin sheets

D. can resist fracture due to high impact loads

8.111. The high speed steel has _____ percentage of tungsten.

A. maximum

B. minimum

8.112. The essential constituent of a hardened steel is

A. pearlite

B. austenite

C. martensite

D. troostite

8.113. The cutting tools are made from

A. nickel steel

B. chrome steel

C. nickel-chrome steel

D. high speed steel

8.114. The maximum solubility of carbon in austenite is 1.7% at 1130° C.

A. Yes

B. No

8.115. In a close packed hexagonal space lattice, there are

A. nine atoms out of which eight atoms are located at the corners of the cube and one atom at its centre

B. twelve atoms, all of which are located at the twelve corners of a hexagonal prism

C. fourteen atoms out of which eight atoms are located at the coners of the cube and six atoms at the centres of six faces

D. none of the above

8.116. In the middle part of the blast furnace (zone of absorption), the temperature is

A. 400° to 700°C

B. 800°C to 1000°C

C. 1200°C to 1300°C

D. 1500°C to 1700°C

8.117. The temperature in the upper part of the blast furnace (zone of reduction) is _____ that of the middle part.

A. equal to

B. less than

C. more than

8.118. The temperature point at which the change starts on heating the steel is called

A. lower critical point

B. upper critical point

C. point of recalescence

D. point of decalescence

8.119. Aluminium bronze has high resistance to corrosion.

A. True

B. False

8.120. Manganese bronze contains more copper than silicon bronze.

A. Yes

B. No

8.121. In a face centred cubic space lattice, there are

A. nine atoms out of which eight atoms are located at the corners of the cube and one atom at its centre

B. fourteen atoms out of which eight atoms are located at the corners of the cube and six atoms at the centres of six faces

C. seventeen atoms out of which twelve atoms are located at the twelve corners of the hexagonal prism, one atom at the centre of each of the two hexagonal faces and three atoms are symmetrically arranged in the body of the cell

D. none of the above

8.122. The fuel used in a blast furnace is

A. coal

B. coke

C. wood

D. producer gas

8.123. Face centred cubic space lattice is found in gamma-iron, aluminium, copper, lead, silver and nickel.

A. True

B. False

8.124. Which of the following is a point imperfection?

A. Vacancy

B. Interstitial imperfection

C. Frenkel imperfection

D. all of these

8.125. The process in which carbon and nitrogen both are absorbed by the metal surface to get it hardened is known as

A. carburising

B. cyaniding

C. flame hardening

D. induction hardening

8.126. The catalysts are used to accelerate the chemical reaction during the process of ploymerisation of plastics.

A. True

B. False

8.127. Muntz metal (Yellow brass) contains

A. 70% copper and 30% zinc

B. 60% copper and 40% zinc

C. 59% copper, 40% zinc and 1% tin

D. 60.45% copper, 35.2% zinc and 5.35% nickel

8.128. Which of the following gives the correct order of increasing hot hardness of cutting tool materials?

A. Diamond, Carbide, High speed steel

B. Carbide, Diamond, High speed steel

C. High speed steel, Carbide, Diamond

D. High speed steel, Diamond, Carbide

8.129. The slag from the blast furnace

A. is used as a ballast for rail road

B. is mixed with tar for road making

C. consists of calcium, aluminium and ferrous silicates

D. all of the above

8.130. Which of the following is a mesomorphous material?

A. Mica

B. Silver

C. Lead

D. Brass

8.131. The casting ability of aluminium increases when _____ is added to aluminium.

A. copper

B. magnesium

C. silicon

D. lead and bismuth

8.132. Manganese bronze has

A. good wearing qualities and high elasticity

B. high yield point, high fatigue limit and excellent cold and hot corrosion resistance

C. high resistance to corrosion

D. valuable cold working property

8.133. A steel is heated at about 875° C where the structure consists of entirely austenite. It is then cooled suddenly at a temperature of about 250° C to 525° C. This process of heat treatment is known as

A. normalising

B. annealing

C. austempering

D. martempering

8.134. Silicon bronze contains

A. 60% copper, 35% zinc and 5% manganese

B. 88% copper, 10% tin and 2% zinc

C. 96% copper, 3% silicon and 1% manganese

D. 76% copper, 20% silicon and 4% zinc

8.1 In acidic bessemer process, the furnace is lined with
35.

A. silica bricks

B. a mixture of tar and burnt dolomite bricks

C. either (a) or (b)

D. none of these

MATERIAL SCIENCE																		
8.1	C	8.11	A	8.21	B	8.31	A	8.41	D	8.51	C	861	C	8.71	C	8.81	B	8.91
8.2	B	8.12	A	8.22	B	8.32	D	8.42	A	8.52	D	8.62	A	8.72	B	8.82	C	8.9
8.3	A	8.13	C	8.23	A	8.33	A	8.43	B	8.53	B	8.63	B	8.73	A	8.83	C	8.93
8.4	A	8.14	A	8.24	C	8.34	D	8.44	C	8.54	C	8.64	A	8.74	D	8.84	A	8.94
8.5	D	8.15	A	8.25	D	8.35	B	8.45	D	8.55	C	8.65	B	8.75	C	8.85	A	8.95
8.6	C	8.16	A	8.26	C	8.36	B	8.46	C	8.56	A	8.66	A	8.76	A	8.86	D	8.96
8.7	C	8.17	C	8.27	B	8.37	A	8.47	A	8.57	A	8.67	B	8.77	D	8.87	B	8.97
8.8	C	8.18	B	8.28	D	8.38	B	8.48	C	8.58	C	8.68	D	8.78	D	8.88	B	8.98
8.9	C	8.19	D	8.29	D	8.39	D	8.49	A	8.59	D	8.69	A	8.79	C	8.89	D	8.99
8.10	D	8.20	B	8.30	A	8.40	B	8.50	D	8.60	C	8.70	B	8.80	B	8.90	C	8.100

8.101	B	8.111	A	8.121	B	9.131	C
8.102	D	8.112	C	8.122	B	9.132	C
8.103	B	8.113	D	8.123	A	9.133	C
8.104	A	8.114	A	8.124	D	9.134	C
8.105	D	8.115	D	8.125	B	9.135	A
8.106	A	8.116	B	8.126	A		
8.107	B	8.117	B	8.127	B		
8.108	C	8.118	A	8.128	C		
8.109	A	8.119	B	8.129	D		
8.110	A	8.120	B	8.130	A		

MACHINE DESIGN

9.1. The sleeve or muff coupling is designed as a

a) dun cylinder

b) thick cylinder

c) solid shaft

d) hollow shaft

9.2. Screws used for power transmission should have

a) Low efficiency

b) high efficiency

c) very fine threads

d) strong teeth

9.3. When bevel gears connect two shafts whose axes intersect at an angle greater than a right angle and one of the bevel gears has a pitch angle of 90°, then they are known as

a) angular bevel gears

b) crown bevel gears

c) internal bevel gears

d) mitre gears

9.4. A screw is said to be over hauling screw, if its efficiency is

a) less than 50%

b) more than 50%

c) equal to 50%

d) none of these

9.5. Soderberg relation is based on _____ of the material whereas all other failure relation for dynamic loading are based on ultimate strength of the material.

a) elastic strength

b) yield strength

c) shear strength

d) ultimate strength

9.6. In a flange coupling, the flanges are coupled together by means of

a) bolts and nuts

b) studs

c) headless taper bolts

d) none of these

9.7. A transmission shaft includes

a) counter shaft

b) line shaft

c) over head shaft

d) all of these

9.8. Slenderness ratio is the ratio of

a) maximum size of column to minimum size of column

b) width of column to depth of column

c) effective length of column to least radius of gyration of the column

d) effective length of column to width of column

9.9. According to Indian standard specifications, 100 H6/g5 means that the

a) actual size is 100 mm

b) basic size is 100 mm

c) difference between the actual size and basic size is 100 mm

d) none of the above

9.10. The ball bearings are provided with a cage

a) to reduce friction

b) to facilitate slipping of balls

c) to prevent the lubricant from flowing out

d) to maintain the balls at a fixed distance apart

9.11. When screw threads are to be used in a situation where power is being transmitted in one direction only, then the screw threads suitable for this will be

a) square threads

b) acme threads

c) knuckle threads

d) buttress threads

9.12. In radial cams, the follower moves

a) in a direction perpendicular to the cam axis

b) in a direction parallel to the cam axis

c) in any direction irrespective of cam axis

d) along the cam axis

9.13. In order to avoid tearing of the plate at an edge, the distance from the centre line of the rivet hole to the nearest edge of the plate should be equal to (where *d* = Diameter of rivet hole)

a) d

b) 1.5d

c) 2d

d) 2.5d

9.14. The value of stress concentration factor depends upon

a) material of the part

b) geometry of the part

c) material and geometry of the part

d) none of these

9.15. Which of the following material has the maximum ductility?

a) Mild steel

b) Copper

c) Zinc

d) Aluminium

9.16. When a bolt is subjected to shock loading, the resilience of the bolt should be considered in order to prevent breakage at the

a) Head

b) Shank

c) Thread

d) Middle

9.17. An open belt drive is used when

a) shafts are arranged parallel and rotate in the opposite directions

b) shafts are arranged parallel and rotate in the same directions

c) shafts are arranged at right angles and rotate in one definite direction

d) driven shaft is to be started or stopped whenever desired without interferring with the driving shaft

9.18. In unilateral system of tolerance, the tolerance is allowed on

a) one side of the actual size

b) one side of the nominal size

c) both sides of the actual size

d) both sides of the nominal size

9.19. both sides of the nominal size

a) socket joint

b) nipple joint

c) union joint

d) spigot and socket joint

9.20. Surface endurance limit of gear material is dependent upon its

a) elastic strength

b) yield strength

c) brinell hardness number

d) toughness

9.21. The rolling contact bearings are known as

a) thick lubricated bearings

b) plastic bearings

c) thin lubricated bearings

d) antifriction bearings

9.22. The backlash for spur gears depends upon

a) module

b) pitch line velocity

c) tooth profile

d) both (a) and (b)

9.23. The size of a gear is usually specified by

a) pressure angle

b) pitch circle diameter

c) circular pitch

d) diametral pitch

9.24. The bearings of heavy series have capacity _____ over the medium series.

a) 10 to 20%

b) 20 to 30%

c) 30 to 40%

d) 40 to 50%

9.25. In leaf springs, the longest leaf is known as

a) lower leaf

b) master leaf

c) upper leaf

d) none of these

9.26. When the bearing is subjected to large fluctuations of load and heavy impacts, the bearing characteristic number should be _____ the bearing modulus.

a) 5 times

b) 10 times

c) 15 times

d) 20 times

9.27. The rolling contact bearings as compared to sliding contact bearings have

a) small overall dimensions

b) accuracy of shaft alignment

c) low starting and low running friction except at very high speeds

d) all of the above

9.28. The maximum normal stress theory is used for

a) brittle materials

b) ductile materials

c) plastic materials

d) non-ferrous materials

9.29. When two non-intersecting and non-coplaner shafts are connected by gears, the arrangement is known as

a) spur gearing

b) helical gearing

c) bevel gearing

d) spiral gearing

9.30. When a nut is tightened by placing a washer below it, the bolt will be subjected to

a) tensile stress

b) compressive stress

c) shear stress

d) none of these

9.31. A locking device extensively used in marine type connecting rod ends is a

a) jam nut

b) castle nut

c) sawn nut

d) ring nut

9.32. The difference between the tooth space and the tooth thickness as measured on the pitch circle, is called

a) working depth

b) clearance

c) face width

d) backlash

9.33. A sliding bearing which operates without any lubricant present, is called

a) zero film bearing

b) boundary lubricated bearing

c) hydrodynamic lubricated bearing

d) hydrostatic lubricated bearing

9.34. The radial distance of a tooth from the pitch circle to the top of the tooth is called

a) dedendum

b) addendum

c) clearance

d) working depth

9.35. In a gear, having involute teeth, the normal to the involute is a tangent to the

a) pitch circle

b) base circle

c) addendum circle

d) dedendum circle

9.36. The metal suitable for bearings subjected to light loads is

a) silicon bronze

b) white metal

c) monel metal

d) phosphor bronze

9.37. Which of the following is an antifriction bearing?

a) journal bearing

b) pedestal bearing

c) collar bearing

d) needle bearing

9.38. A connecting rod is designed as a

a) long column

b) short column

c) strut

d) all of these

9.39. The cross-section of the arm of a bell crank lever is

a) rectangular

b) elliptical

c) I-section

d) any one of these

9.40. In worm gears, the angle between the tangent to the pitch helix and an element of the cylinder, is known as

a) helix angle

b) pressure angle

c) pitch lead angle

d) none of these

9.41. Idler pulley is used for

a) increasing velocity ratio

b) for applying tension

c) changing the direction of motion of belt

d) all of these

9.42. The longitudinal stress is _____ of the circumferential stress.

a) one-half

b) two-third

c) three-fourth

d) double

9.43. A screw will be self locking, if

a) friction angle is less than helix angle

b) friction angle is more than helix angle

c) friction angle is equal to helix angle

d) efficiency of screw is 100%

9.44. The maximum shear stress theory is used for

a) brittle materials

b) ductile materials

c) plastic materials

d) non-ferrous materials

9.45. The surface finish factor for a mirror polished material is

a) 0.45

b) 0.65

c) 0.85

d) 1

9.46. The elasticity is the property of a material which enables it to

a) regain its original shape after deformation when the external forces are removed

b) draw into wires by the application of a tensile force

c) resist fracture due to high impact loads

d) retain deformation produced under load permanently

9.47. For low and moderate speed engines, the cam follower should move with

a) uniform velocity

b) simple harmonic motion

c) uniform accleration and retardation

d) cycloidal motion

9.48. If a bearing is designated by the number 305, it means that the bearing is of

a) light series whose bore is 5 mm

b) light series whose bore is 25 mm

c) medium series whose bore is 5 mm

d) medium series whose bore is 25 mm

9.49. Tapered roller bearings can take

a) radial load only

b) axial load only

c) both radial and axial loads and the ratio of these being less than unity

d) both radial and axial loads and the ratio of these being greater than unity

9.50. In order to remove internal stresses produced by hardening the steel, the process usually adopted is

a) tempering
b) annealing
c) normalising
d) Spheroidising

9.51. A bolt of uniform strength can be developed by

a) keeping the core diameter of threads equal to the diameter of unthreaded portion of the bolt

b) keeping the core diameter smaller than the diameter of the unthreaded portion

c) keeping the nominal diameter of threads equal to the diameter of unthreaded portion of the bolt

d) none of the above

9.52. The ratio of endurance limit in shear to the endurance limit in flexure is

a) 0.25

b) 0.40

c) 0.55

d) 0.70

9.53. The lower deviation is the algebraic difference between the

a) minimum limit and the basic size

b) maximum limit and the basic size

c) actual size and the corresponding basic size

d) none of the above

9.54. When carbon in the cast iron is principally in the form of graphite, the cast iron will be of

a) grey colour

b) white colour

c) yellow colour

d) brown colour

9.55. The rivet head used for boiler plate riveting is usually

a) snap head
b) pan head
c) counter sunk head
d) conical head

9.56. 18/8 steel contains

a) 18% nickel and 8% chromium

b) 18% chromium and 8% nickel

c) 18% nickel and 8% vanadium

d) 18% vanadium and 8% nickel

9.57. A localised compressive stress at the area of contact between two members is known as

a) tensile stress

b) bending stress

c) bearing stress

d) shear stress

9.58. The metal suitable for bearings subjected to heavy loads is

a) silicon bronze

b) white metal

c) monel metal

d) phosphor bronze

9.59. For hardening alloy steels and high speed steels, they are heated to

a) 500 to 600°C

b) 700 to 900°C

c) 1100 to 1300°C

d) 1300 to 1500°C

9.60. An universal coupling is used to connect two shafts

a) which are perfectly aligned

b) which are not in exact alignment

c) have lateral misalignment

d) whose axes intersect at a small angle

9.61. Euler's formula for a mild steel column is not valid if the slenderness ratio is

a) 60

b) 90

c) 100

d) 120

9.62. The standard length of the shaft is

a) 5 m

b) 6 m

c) 7 m

d) all of these

9.63. When the shaft rotates in anticlockwise direction at slow speed in a bearing, it will

a) have contact at the bottom most of the bearing

b) move towards right of the bearing making the metal to metal contact

c) move towards right of the bearing making no metal to metal contact

d) move towards left of the bearing making metal to metal contact

9.64. A taper key which fits half in the key way of the hub and half in the key way of shaft, is known as

a) sunk key

b) flat saddle key

c) hollow saddle key

d) tangent key

9.65. When bevel gears having equal teeth and equal pitch angles connect two shafts whose axes intersect at right angle, then they are known as

a) angular bevel gears

b) crown bevel gears

c) internal bevel gears

d) mitre gears

9.66. A sliding bearing which can support steady loads without any relative motion between the journal and the bearing, is called

a) zero film bearing

b) boundary lubricated bearing

c) hydrodynamic lubricated bearing

d) hydrostatic lubricated bearing

9.67. In case of pressure vessels having closed ends, the fluid pressure induces

a) longitudinal stress

b) circumferential stress

c) shear stress

d) none of these

9.68. A machine part subjected to _____ is called a strut.

a) an axial tensile force

b) an axial compressive force

c) a tangential force

d) any one of these

9.69. When two helical springs of equal lengths are arranged to form a cluster spring, then

a) shear stress in each spring will be equal

b) load taken by each spring will be half the total load

c) all of the above

d) none of these

9.70. For a shaft diameter of 200 mm, the number of bolts in a marine flange coupling should be

a) 8

b) 4

c) 6

d) 10

9.71. The stress in the threaded part of the bolt will be _____ as compared to the shank.

a) same

b) higher

c) lower

d) none

9.72. The dedendum circle diameter is equal to (where ϕ = Pressure angle)

a) pitch circle diameter x cos ϕ

b) addendum circle diameter x cos ϕ

c) clearance circle diameter x cos ϕ

d) pitch circle diameter x sin ϕ

9.73. Which one of the following is a positive drive?

a) Crossed flat belt drive

b) Rope drive

c) V-belt drive

d) Chain drive

9.74. The period during which the cam follower remains at rest, when cam moves, is known as

a) constant period

b) fixed period

c) dwell period

d) idle period

9.75. The flank of the tooth is the

a) surface of the top of the tooth

b) surface of the tooth above the pitch surface

c) surface of the tooth below the pitch surface

d) width of the tooth measured along the pitch circle

9.76. The included angle for the British Association thread is

a) 29°

b) 47.3°

c) 55°

d) 60°

9.77. The contact ratio is the ratio of

a) length of path of contact to the circular pitch

b) length of arc of contact to the circular pitch

c) length of arc of approach to the circular pitch

d) length of arc of recess to the circular pitch

9.78. The cracks in helical springs used in railway carriages usually start on the inner side of the coil because of the fact that

a) it is subjected to a higher stress than the outer side

b) it is subjected to a higher cyclic loading than the outer side

c) it is more stretched than the outer side during the manufacturing process

d) it has a lower curvature than the outer side

9.79. The wire ropes make contact at

a) bottom of groove of the pulley

b) sides of groove of the pulley

c) sides and bottom of groove of the pulley

d) anywhere in the groove of the pulley

9.80. When the speed of belt increases,

a) the coefficient of friction between the belt and pulley increases

b) the coefficient of friction between the belt and pulley decreases

c) the power transmitted will decrease

d) the power transmitted will increase

9.81. An involute pinion and gear are in mesh. If both have the same size of addendum, then there will be interference between the

a) tip of the gear and flank of pinion

b) tip of the pinion and flank of gear

c) flanks of both gear and pinion

d) tip of both gear and pinion

9.82. The property of a material which enables it to be drawn into wires with the application of a tensile force, is called

a) plasticity

b) elasticity

c) ductility

d) malleability

9.83. A wood-ruff key is

a) a tapered key with head at one end

b) fitted in pairs at right angles

c) capable of tilting in a recess milled out in the shaft

d) all of the above

9.84. Lewis equation in gears is used to find the

a) tensile stress in bending

b) shear stress

c) compressive stress in bending

d) fatigue stress

9.85. All stresses produced in a belt are

a) compressive stresses

b) tensile stresses

c) both tensile and compressive stresses

d) shear stresses

9.86. An elastic bar is fixed at the upper end and loaded at the lower end by a falling weight. The shock load produced can be reduced by

a) increasing the length of bar

b) decreasing the cross-sectional area of the bar

c) decreasing the modulus of elasticity of the bar

d) all of the above

9.87. The ratio of driving tensions in V-belt drives is _____ flat belt drives.

a) equal to

b) sin α times more than

c) sin α times less than

d) cosec α times more than

9.88. Which of the following spring is used in mechanical wrist watch?

a) Helical compression spring

b) Spiral spring

c) Torsion spring

d) Bellevile spring

9.89. Which of the following has threads at both ends?

a) Bolt

b) Tap bolt

c) Stud

d) none of these

9.90. The ratio of the ultimate stress to the design stress is known as

a) elastic limit

b) strain

c) factor of safety

d) bulk modulus

9.91. The cam follower extensively used in air-craft engines is

a) knife edge follower

b) flat faced follower

c) spherical faced follower

d) roller follower

9.92. The resilience of a bolt may be increased by

a) increasing its shank diameter

b) increasing its length

c) decreasing its shank diameter

d) decreasing its length

9.93. In worm, gears, pitch lead angle is

a) half the angle between two inclined faces in axial plane

b) the angle between the tangent to the pitch helix and the plane of rotation

c) the angle between the tangent to the pitch helix and an element of the cylinder

d) none of the above

9.94. When the length of the journal is equal to the diameter of the journal, then the bearing is said to be a

a) short bearing

b) long bearing

c) medium bearing

d) square bearing

9.95. A connecting rod should be

a) strong in buckling about X-axis

b) strong in buckling about Y-axis

c) equally strong in buckling about X-axis and Y-axis

d) any one of the above

9.96. When the connected members are very yielding (soft gasket) as compared to the bolt, then the resultant load on the bolt will be equal to the

a) initial tension

b) external load applied

c) sum of the initial tension and external load applied

d) initial tension or external load, whichever is greater

9.97. Which one of the following loading is considered for the design of axles?

a) Bending moment only

b) Twisting moment only

c) Combined bending moment and twisting moments

d) Combined action of bending moment, twisting moment and axial thrust

9.98. A basic hole is one whose

a) lower deviation is zero

b) upper deviation is zero

c) lower and upper deviations are zero

d) none of these

9.99. In levers, leverage is the ratio of

a) load lifted to the effort applied

b) mechanical advantage to the velocity ratio

c) load arm to the effort arm

d) effort arm to the load arm

9.100. If a shaft made from ductile material is subjected to combined bending and twisting moment, calculations based on which one of the following failure theories will give the most conservative value?

a) Maximum principal stress theory

b) Maximum shear stress theory

c) Maximum strain energy theory

d) Maximum distortion energy theory

MACHINE DESIGN																			
9.1	D	9.11	D	9.21	D	9.31	D	9.41	B	9.51	A	9.61	A	9.71	B	9.81	A	9.91	D
9.2	B	9.12	A	9.22	D	9.32	D	9.42	A	9.52	C	9.62	D	9.72	A	9.82	C	9.92	B
9.3	B	9.13	B	9.23	B	9.33	A	9.43	B	9.53	A	9.63	D	9.73	D	9.83	C	9.93	B
9.4	B	9.14	C	9.24	B	9.34	B	9.44	B	9.54	A	9.64	A	9.74	C	9.84	C	9.94	D
9.5	B	9.15	A	9.25	A	9.35	B	9.45	D	9.55	A	9.65	D	9.75	C	9.85	B	9.95	C
9.6	A	9.16	C	9.26	C	9.36	D	9.46	A	9.56	B	9.66	D	9.76	B	9.86	D	9.96	C
9.7	D	9.17	B	9.27	D	9.37	D	9.47	B	9.57	C	9.67	D	9.77	B	9.87	D	9.97	A
9.8	C	9.18	B	9.28	A	9.38	C	9.48	D	9.58	B	9.68	B	9.78	B	9.88	C	9.98	A
9.9	B	9.19	A	9.29	D	9.39	D	9.49	D	9.59	C	9.69	C	9.79	A	9.89	C	9.99	D
9.10	D	9.20	C	9.30	A	9.40	A	9.50	A	9.60	D	9.70	A	9.80	C	9.90	C	9.100	A

COMBINED BITS (Answers are given in bold letters)

10.1. A refigerant used in the domestic refrigerator is
a) Freon
b) sulphur dioxide
c) air
d) methane

10.2. Rapping allowance is provided on a pattern to take care of
a) distortion
b)shrinkage
c)machining
d)easy withdrawl

10.3. Mandrels are used to hold
a) face plate
b) drill bits
c) hollow work pieces
d) cutting tools

10.4. An aircraft gas turbine operates on
a) sterling cycle
b) otto cycle
c) rankine cycle
d) bryton cycle

10.5. **Feed in a lathe is expressed in**
a) mm per revolution
b) mm per degree
c) rpm
d) mm

10.6. The pump with a low initial cost and low maintenance cost is
a) double acting piston pump
b) bucket pump
c) centrifugal pump
d) gear pump

10.7. Reducing flame is obtained in oxyactetylane welding with
a) equal parts of both gases
b) excess of acetylene
c) excess oxygen
d) reduced acetylene

10.8. Sprue is the passing provided for the
a) smooth flow
b) outflow
c) inflow
d) solidification of the molten metal

10.9. In Industry of the developed nations the type of production most often occurring is

a) mass production

b) single lot production

c) batch production

d) create lot production

10.10. In upcut milling the work piece is fed

a) at angle of 60 deg to the cutter

b) against the rotating cutter

c) at the right angle of the cutter

d) in the direction of the cutter

10.11. Upsetting is the term used in one of the following operations

a) turning

b) drilling

c) casting

d) forging

10.12. The operation of enlarging of a hole is called

a)boring

b) drilling

c) counter sinking

d) reaming

10.13. **Brasses and bronzes are welded using**

a) reducing flame

b) carburising flame

c) neutral flame

d) oxidising flame

10.14. **Which of the following operations cannot be performed on a lathe**

a) drilling

b) slotting

c) thread cutting

d) facing

10.15. **Draft on a pattern is provided for**

a) easy lifting of the casting

b) facilitating pattern making

c) facilitating withdrawal of the pattern from the mould

d) providing for strinkage of the casting

10.16. **For the purpose of comparison, the steam generating capacity of a boiler is generally expressed in terms of**

a) equivalent evaporation

b) thermal efficiency

c) steam pressure

d) kg/hr

10.17. The output of a gas turbine is 300 KW and its efficiency is 20 percent, the heat supplied is

a) 15 kw

b) 6000 kw

c) 150 kw

d) 600 kw

10.18. One of the following methods is adopted for governing of steam turbines in a power plant

a) speed control

b) blow off in boiler

c) throttle governing

d) hit and miss governing

10.19. Quick return motion is used in a

a) lathe

b) drilling

c) shaper

d) grinder

10.20. Which of the following is not used as a refrigerant ?

a) ammonia

b) sulphur dioxide

c) carbon monoxide

d) carbon dioxide

10.21. The friction experienced by a body, when in motion, is known as

a) static friction

b) dynamic friction

c) rolling friction

d) limiting friction

10.22. The force required to move the body up the plane will be minimum if it makes an angle with the inclined plane _____ the angle of friction.

a) greater than

b) equal to

c) none of these

d) less than

10.23. One of the following function is not performed by coating on the welding electrodes

a) provide protective atmosphere

b) refuce oxidation

c) increase the cooling rate

d) stabilize the arc

10.24. Feeler gauges are used for measuring the

a) pitch of the screw threads

b) thickness of plates

c) clearances between mating parts

d) radius of curvature

10.25. One of the following objectives is not achieved by the process of annealing
a) to increase the yield point
b) to relieve internal stress
c) to refine grain structure
d) to soften the metal

10.26. In a process chart the inverted triangle symbol indicates
a) transport
b) an operation
c) storage
d) inspection

10.27. The objective of time study is to determine the time taken by
a) a trainee
b) a very good worker
c) a new worker
d) efficient machine utilization

10.28. **A smooth cylinder lying on its convex surface remains in _____ equilibrium**
a) unstable
b) stable
c) neutral
d) none of these

10.29. The range of projectile on a downward inclined plane is _____ the range on upward inclined plane for the same velocity of projection and angle of projection.
a) more than
b) none of these
c) less than
d) equal to

10.30. If the resultant of two equal forces has the same magnitude as either of the forces, then the angle between the two forces is
a) 90
b) 120
c) 60
d) 30

10.31. **The melting point of the filler material in brazing should be above**
a) 600 deg c
b) 420 deg c
c) 1000 deg c
d) 800 deg c

10.32. Static friction is always _____ dynamic friction
a) greater than
b) less than
c) equal to
d) none of these

10.33. The breakeven point is that volume of production where

a) no profit exists

b) fixed cost are less

c) minimum losses occur

d) maximum profits are obtained

10.34. Two balls of equal mass and of perfectly elastic material are lying on the floor. One of the ball with velocity v is made to struck the second ball. Both the balls after impact will move with a velocity

a) v/2

b) v/4

c) v

d) v/8

10.35. In oxyacetylene welding, acetylene is produced using

a) CaC2 and H2O

b) Ca (OH)2 and CO2

c) CH4 and H2SO4

d) CaCO3 and H2O

10.36. A micrometer screw has pitch of 0.5 mm and the themble has 100 equal divisions marked on it, the least count of the instrument in mm is

a) 0.025

b) 0.5

c) 0.05

d) 0.005

10.37. **A product layout is generally suggested for**

a) batch production

b) jobbing work

c) continuous type of production

d) efficient machine utilisation\

10.38. The range of a projectile is maximum, when the angle of projection is

A) 60

b) 45

c) 30

d) 90

10.39. The mechanical advantage of a lifting machine is the ratio of

a) distance moved by effort to the distance moved by load

b) output to the input

c) all the above

d) load lifted to the effort applied

10.40. **One of the materials used for making surface plate is**

a) brass

b) granite

c) wood

d) stainless steel

10.41. Three forces acting on a rigid body are represented in magnitude, direction and line of action by the three sides of a triangle taken in order. The forces are equivalent to a couple whose moment is equal to

a) half the area of the triangle

b) twice the area of the triangle

c) none of these

d) area of triangle

10.42. The unit of power in S.I. units is

a) joule

b) watt

c) kg-m

d) horse power

10.43. If the number of pulleys in a system is equal to its velocity ratio, then it is a _____ system of pulleys

a) first

b) second

c) third

d) fourth

10.44. When a rigid body is suspended vertically, and it oscillates with a small amplitude under the action of the force of gravity, the body is known as

a) compound pendulum

b) simple pendulum

c) seconds pendulum

d) torsional pendulum

10.45. The law of motion involved in the recoil of gun is

a) newtons second law of motion

b) newtons third law of motion

c) newtons first law of motion

d) none of these

10.46. A redundant frame is also called _____ frame.

a) perfect

b) imperfect

c) deficient

d) none of these

10.47. The angle between two forces when the resultant is maximum and minimum respectively are

a) 90 and 0

b) 0 and 180

c) 90 and 180

d) 180 and 0

10.48. two like parallel forces are acting at a distance of 24 mm apart and their resultant is 20 N. It the line of action of the resultant is 6 mm from any given force, the two forces are

a) 15N and 15 N

b) 15 N and 5 N

c) none of these

d) 20N and 5N

10.49. If tension in the cable supporting a lift moving downwards is half the tension when it is moving upwards, the acceleration of the lift is

a) none of these

b) g/2

c) g/3

d) g/4

10.50. If the number of pulleys in a system is equal to its velocity ratio, then it is a _____ system of pulleys

a) first

b) second

c) third

d) fourth

10.51. When two elastic bodies collide with each other,

a) the two bodies will momentarily come to rest after collision

b) all the above

c) the two bodies begin to ragian their original shape

d) the two bodies tend to compress and deform at the surface of contact

10.52. The amplitude is always _____ radius of the circle.

a) equal to

b) less than

c) greater than

d) none of these

10.53. A machine having an efficiency greater than 50%, is known as

a) ideal machine

b) reversible machine

c) non- reversible machine

d) neither reversible nor non reversible

10.54. Which of the following are vector quantities?

a) angular velocity

b) angular acceleration

c) angular displacement

d) all of these

10.55. **The force, by which the body is attracted, towards the centre of the earth, is called**

a) mass

b) weight

c) impulsive force

d) momentum

10.56. When a body falls freely under gravitational force, it possesses _____ weight.
a) less
b) no
c) minimum
d) maximum

10.57. **The unit of energy in S.I. units is**
a) dyne
b) watt
c) kg-m
d) joule

10.58. **The total motion possessed by a body, is called**
a) momentum
b) weight
c) mass
d) impulsive force

10.59. **The matter contained in a body, is called**
a) mass
b) momentum
c) impulsive force
d) weight

10.60. In a four stroke cycle, the minimum temperature inside the engine cylinder occurs at the
a) beginning of suction stroke
b) end of suction stroke
c) beginning of exhaust stroke
d) end of exhaust stroke

10.61. **The diesel engines are also known as _____ engines.**
a) compression ignition
b) spark ignition
c) otto ignition
d) carnot ignition

10.62. **Nuclear reactors are used**
a) to produce heat for thermoelectric power
b) to produce fissionable material
c) to propel ships, submarines, aircrafts\
d) all of these

10.63. In diesel engines, the fuel is injected in the form of very fine spray, into the engine cylinder, which gets ignited due to high temperature of the compressed air.
a) agree
b) disagree
c) neither agree nor disagree

10.64. In a diesel engine, the duration between the time of injection and ignition, is known as
a) Pre-ignition period
b) **Delay period**
c)Period of ignition
d)Burning period

10.65. The primary fuel used in nuclear power plants is

a) U_{235}
b) U_{238}
c) Pu_{239}
d) Pu_{233}

10.66. The thermal efficiency of diesel engines is about
a) 15 %
b) 30 %
c) 50 %
d) 70 %

10.67. A two stroke diesel engine has
a) one port
b) two ports
c) three ports
d) four ports

10.68. The self ignition temperature of petrol is _____ as compared to diesel oil.
a) Same
b) lower
c) higher
d) moderate

10.69. The pressure inside the cylinder is _____ the atmospheric pressure during the exhaust stroke.

a) Equal to
b) Below
c) Above
d) Moderate

10.70. A carburettor is used to supply
a) petrol, air and lubricating oil
b) air and diesel
c) petrol and lubricating oil
d) petrol and air

10.71. A taper provided on the pattern for its easy and clean withdrawl from the mould is known as
a) distortion allowance
b) machining allowance
c) draft allowance
d) shrinkage allowance

10.72. **The fullers are used**
a) for finishing flat surfaces
b) to finish the punched hole
c) for necking down a piece of work
d) for punching a hole

10.73. **In arc welding, the electric arc is produced between the work and the electrode by**
a) voltage
b) flow of current
c) contact resistance
d) **all of these**

10.74. The algebraic difference between the minimum limit and the basic size is called
a) fundamental deviation
b) lower deviation
c) actual deviation
d) upper deviation

10.75. **Thread rolling is restricted to**
a) ferrous materials
b) ductile materials
c) hard materials
d) none of these

10.76. **The property of sand due to which it evolves a great amount of steam and other gases is called**
a) cohesiveness
b) adhesiveness
c) collapsibility
d) permeability

10.77. **The blank diameter used in thread rolling will be**
a) equal to minor diameter of the thread
b) **a little larger than the minor diameter of the thread**
c) equal to pitch diameter of the thread
d) a little larger than the pitch diameter of the thread

10.78. **The purpose of a riser is to**
a) act as a reservoir for the molten metal
b) **feed the molten metal to the casting in order to compensate for the shrinkage**
c) deliver molten metal into the mould cavity
d) deliver the molten metal from pouring basin to gate

10.79. The chisel used for cutting key ways is

a) cape chisel

b) diamond pointed chisel

c) flat chisel

d) round nose chisel

10.80. In a bilateral system of tolerance, the tolerance is allowed on

a) both sides of the nominal size

b) one side of the nominal size

c) one side of the nominal size

d) one side of the actual size

10.81. The draft or taper allowance on casting is generally

a) 1 to 2 mm/m

b) 5 to 10 mm/m

c) 10 to 15 mm/m

d) 2 to 5 mm/m

10.82. The type of file used for a wood work is

a) single-cut file

b) double cut file

c) rasp-cut file

d) any one of these

10.83. In a centrifugal casting method

a) core is made of non-ferrous metal

b) core is made of ferrous metal

c) core is made of sand

d) no core is used

10.84. **The cold chisels are made by**

a) rolling

b) piercing

c) drawing

d) forging

10.85. **The cross-section of a chisel is usually**

a) rectangular

b) square

c) octagonal

d) hexagonal

10.86. In welding copper alloys with TIG arc welding

a) direct current with straight polarity is used

b) direct current with reversed polarity is used

c) alternating current is used

d) any one of these

10.87. Which of the following methods can be used for manufacturing 2 metre long seamless metallic tubes?

a) rolling

b) drawing

c) extrusion

d) extrusion and rolling

10.88. **The temperature at which the new grains are formed in the metal is called**

a) lower critical temperature

b) recrystallisation temperature

c) eutectic temperature

d) upper critical temperature

10.89. The accuracy of micrometers, calipers, dial indicators can be checked by a

a) plug gauge

b) feeler gauge

c) slip gauge

d) ring gauge

10.90. In sheet metal blanking, shear is provided on punches and dies so that

a) good cut edge is obtained

b) warping of sheet is minimised

c) press load is reduced

d) cut blanks are straight

10.91. A zinc diffusion process is called

a) galvanising

b) anodising

c) Parkerising

d) sheradising

10.92. **In a hot chamber die casting machine**

a) non-ferrous alloys with high melting temperature are casted

b) ferrous alloys with low melting temperature are casted

c) ferrous alloys with high melting temperature are casted

d) non-ferrous alloys with low melting temperature are casted

10.93. Which of the following welding process uses non-consumable electrodes?

a) MIG welding

b) TIG welding

c) Manual arc welding

d) Submerged arc welding

10.94. Metal patterns are used for

a) small castings

b) complicated castings

c) large castings

d) large scale production of castings

10.95. **Carburising flame is used to weld**

a) hard surfacing materials such as satellite

b) brass and bronze

c) steel, cast iron, copper, aluminium etc

d) all of these

10.96. In average work, the tolerance produced by investment casting method is

a) +0.5 mm

b) +0.2 mm

c) ±0.05 mm

d) +1 mm

10.97. In submerged arc welding, an arc is produced between a

a) metal electrode and the work

b) two tungsten electrodes and the work

c) carbon electrode and the work

d) bare metal electrode and the work

10.98. Galvanising is a

a) zinc diffusion process

b) process of coating zinc by hot dipping

c) process used for making thin phosphate coating on steel

d) none of the above

10.99. The machining allowance provided on patterns depends upon

a) method of casting used

b) type of casting metal

c) size and shape of casting

d) all of these

10.100. **In shielded arc welding**

a) welding rod coated with slag is used

b) welding rod coated with fluxing material is used

c)large electrode is used

d) none of the above

10.101. When a hole or cavity to be cored is not in line with the parting surface, then a _____ is used.

a) balanced core

b) horizontal core

c) vertical core

d) drop core

GENERAL KNOWLEDGE

1. what is the Head Quarters of South central Railway (A)
   A) Secunderabad B) Mumbai C) Chennai D) Bangalore

2. what is the name of the river in Hyderabad (D)
   A) Godavari B) Krishna C) Penna D) Musi

3. Charminar is Located at (C)
   A)Warganal B) KURNOOL C)HYDERABAD D) Vijayawada

4. Who is the Governor of Andhrapradesh& Telangana States (A)
   A)E.S.L.Narsimhan B) Dattatreya C) Kishan Reddy D) K. SrIhari.

5. The name of the woman Tennis Star Who belongs to Hyderabad is (B)
   A) HAMPI B) Sania Mirza C) Midali Raj D) Karanam Laskmi.

6. Who is the president of INDIA (A)
   A) Pranab Mukherji B) Manmohan singh C) Sarath pawar D) Nitish kumar.

7. Who is the prime minster of INDIA (B)
   A)Venkaiah Naidu B) Narendra Modi C) Rahul Gandhi D) Molayam Yadav

8. The Festival of Christmas is Celebrated on (D)
   A)January 25th B) April 25th C) OCTOBER 25TH D) December 25th

9. Whose Birth day we celebrate on October 2Nd (A)
   A)Mahatma Gandhi B) Nehru C) Indra Gandhi D) Rajiv Gandhi

10. The Birth place of Mahatma Gandhi is (B)
    A)Hyderabad B) Pour Bander C) Delhi D) Mumbai

11. Who is the writer of poem Sare Jahan se Accha Hindusitan hamara (C)
    A) Kasim B) Kabir C) Muhammad Iqbal D) Rahim

12. The writer of National Anthem of INDIA Jana Gana Mana ? (A)
    A) Rabindranath Tagore B) S.C.Bose C) Nehru D) C.Narayana Reddy

13. Which city Located on the banks of river Hoogly (A)
    A) Kolkata B) Delhi C) Mumbai D) JAIPUR

14. Which award is given to the coaches of Sportspersons? (A)
    A) Dronacharya award B) savyasachi award C) Keshav Award D) Champion Award.

15. The Chief Minister of Telangana state (A)
A) K.Chandrasekhar Rao B) T.Harish Rao C) K.T.Rama Rao D) T.Srinivas Yadav

16. The Chief Minister of Andhrapradesh (A)
A) N.Chandrababu Naidu B) K.E.Krishana murthy C) Y.S.Jagan Mohan Reddy D) N.Balakrishna.

17. Who is the First Woman President of INDIA (C)
A) Vijayalakshmi pandit B) Sheela Dikshit C) Prathiba patil D) Sonia Gandhi

18. The Parliament Bhavan situated at (A)
A) NewDelhi B) Kolkata C) Mumbai D)Chennai

19. Which Telugu movie won National film fare Award (C)
A) Srimanthudu B) Gopala Gopala C) Bahubali D) Gabber Singh

20. Where The Lord Venkateswara swami Seven Hills situated at (A)
A)Tirupathi B) Kadapa C) Kurnool D) Hyderabad

21. Golkonda Fort Situated at Ans (A)
A) Hyderabad B) Vizag C) Vijayawada D) Warangal

22. The capital of Rajasthan Ans (C)
A) Udaipur B) Jodhpur C) Jaipur D) Mount Abu

23. The Famous Dilwara Temples located at Ans (A)
A)Mount Abu B) Kolkata C) New Delhi D) Mumbai

24. The speaker of Andhra Pradesh Assembly Ans (B)
A) N.Chandra Babu Naidu B) Dr. K.Siva Prasad C) Y.JaganMohan Reddy D) Smt. P.Sujatha

25. Which is International Yoga Day? Ans (A)
A) June 21 B) March 22 C) September 22 D) December 23

26) What is the formation Day of Telengana Ans (A)
A)02.06.2014 B) 02.07.2014 C) 02.09.2014 D) 02.10.2014

27) The oldest Stock Exchange of India is (C)
A) Bangalore Stock Exchange B) Ahmedabad Stock Exchange
C) Bombay Stock Exchange D) Hyderabad St5ock Exchange

28) Which of the following describes India as a secular State ? (C)
A) Fundamental Rights B) Ninth Schedule
C) Preamble to the Constitution D) Directive Principles

29) Land of Midnight Sun is (C)
A) Japan B) Finland C) Norway D) Canada

30) The Head quarters of International Labour Organisation (C)
A) New York B) London C) Geneva D) Rome

31) The Head quarters of United Nations International Children's Emergency Fund (UNICEF) (D)
A) London B) Berne C) Paris D) New York

32) Headquarters of International Crime Police (INTERPOL) (B)
A) Geneva B) Paris C) New York D) Rome

33) Head quarters of Red Cross (A)
A) Geneva B) Norway C) Berne D) Montreal

34) The Highest Award in India (D)
A) Padma Bhushan B) Jnanpith C) Arjun D) Bharat Ratna

35) The Longest River in India (B)
A) The Godavari B) The Ganges C) The Krishna D) The Yamuna

36) The largest populated City in India (C)
A) Kolkata B) Hyderabad C) Mumbai D) Bangalore

37) The largest State in India (Area) (A)
A) Rajasthan B) Uttar Pradesh C) Punjab D) Tamil Nadu

38) The Largest State in terms of population in India (D)
A) Rajasthan B) Bihar C) Kerala D) Uttar Pradesh

39) The Biggest Cave Temple in India (B)
A) Ajantha B) Ellora C) Elephenta D) Dilwara

40) The Tallest Statue in India (C)
A) The Statue of Buddha B) The Statue of Gandhi
C) The Statue of Gomateswar D) The Statue of Ambedkar

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41) The Largest Dam in India (B)
A) TheBakra Nangal Dam B) Hirakud Dam C) Nagarjuna Sagar D) Tehri Dam

42) The largest Public Sector Bank (D)
A) Andhra Bank B) Bank of India C) Syndicate Bank D) State Bank of India

43) The smallest State in Area (A)
A) Goa B) Assam C) Uttarakhand D) Delhi

44) The smallest state in Population (C)
A) Assam B) Goa C) Sikkim D) Meghalaya

45) The largest port in India (A)
A) Mumbai B) Krishnapatnam C) Kolkata D) Vishakhapatnam

46) The largest River in India (B)
A) Krishna B) Ganga C) Godavari D) Yamuna

47) The longest Railway Platform in India is situated at (C)
A) New Delhi B) Kolkata C) Kharagpur D) Mumbai

48) The Highest Air port in India (D)
A) Jammu B) Siachin C) Gwaliar D) Leh(Laddakh)

49) The longest Dam in India (D)
A) Bakranangal Dam B) Nagarjuna Sagar Dam C) Tehri Dam D) Hirakud Dam

50) Total No. of states in India (A)
A) 29 B) 30 C) 28 D) 27

51) The capital city of Punjab (B)
A) Amritsar B) Chandigarh C) Ludhiana D) Patiala

52) The capital city of Uttarakhand (A)
A) Dehradun B) Manali C) Rampur D) Kulu

53) The capital city of Sikkim (C)
A) Kohima B) Dimapur C) Gangtok D) Ludhiana

54) The capital city of Jharkhand (D)
A) Jamshedpur B) Tatanagar C) Indore D) Ranchi

55) The capital city of Arunachal Pradesh (B)
A) Dispur B) Itanagar C) Panaji D) Imphal

56) Total No. of Union Territories in India (C)
A) 09 B) 10 C) 07 D) 06

57) The largest city in Madhya Pradesh (A)
A) Indore B) Bhopal C) Jhansi D) Vadodara

58) The Official language of the State of Nagaland (B)
A) Hindi B) English C) Manipuri D) Khasi

59) The capital city of Goa (A)
A) Panaji B) Vasco C) Guwahati D) Faridabad

60) The largest city in Uttar Pradesh (C)
A) Lucknow B) Banaras C) Kanpur D) Amedhi

61) The Chief Minister of Tamilnandu state (B)
A) Karuna nidhi B) Jayalalitha C) capt .vijayakant D) Sasikala

62) The Chief Minister of Bihar (D)
A) Lalu Prasad Yadav B) Sarad Pawar C) Akhilesh Yadav D) Nitish Kumar

63) The Chief Minister of Gujarat (A)
A) Anandi Ben Patel B) Narendra Modi C) Amit shah D) Naveen Patnaik

64) The Chief Minister of Maharashtra (C)
A) Shivraj Singh Chouhan B) Mukul sangma C) Devendra Fadnavis D) K.T.Rama Rao

65) The Chief Minister of Jammu & Kashmir (B)
A) Harish Rawat B) Mahabooba Mufti C) Mamata Banerjee D) Jayalalitha

66) The Chief Minister of Rajasthan (D)
A) Prakash singh Badal B) Akhilesh Yadav C) Oomen Chandy D) Vasundhara Raje

67) The Governor of Manarashtra (B)
A) K.Rosaiah B) Ch.Vidya Sagar C) Kalyan Singh D) S.C.Jamir

68) The C.M. of West Bengal state (A)
A) Mamata Banerjee B) Kiran bedi C) Roopa Ganguly D) Kokana sen

69) The governor of west Bengal (C)
A) Krishn Kant Paul B) Mridula Sinha C) Keshari Nath Tripathi D) Nirbhay Sharma

70) The governor of Meghalaya (D)
A) P.Sadasivam B) S.C.Jamir C) Acharya Devvrat D) V.Shanmuganthan

71) The Chief Minister of Delhi (D)
A) N.Rangaswamy B) Manik Sarkar C) Harish Rawat D) Arvind Kejriwal

72) The governor of Puducherry (B)
A) Vijay Kumar B) A.K.Singh C) Ashish Kundra D) Kaptain Singh solanki

73) The governor of Delhi (C)
A) Ram Naik B) Kalyan Singh C)Najeeb Jung D) Vijay Kumar

74) The governor of Tamil Nadu (C)
A) Jayalalitha B) Karunanidhi C) K.Rosaiah D) Stalin

75) The governor of Kerala (B)
A) Oomen Chandi B) P.Sathasivam C) Mukul Sangma D) Naveen Patnaik

76) Who is Home Minister of Government of India (A)
A) Rajnath Singh B) Suresh Prabhu C) Venkaiah Naidu D) Sushma Swaraj

77) Who is Minister for Railways (D)
A) Sushma Swaraj B) Amit Shah C) Arun Jaitley D) Suresh Prabhu

78) Who is the Finance Minister of India (B)
A) Nitin Gadkari B) Arun Jaitley C) Smriti Irani D) Sadananda Gowda

79) The President of India in 1977 (D)
A) Pratibha Patil B) Sankar Dayal Sarma C) Hamid Ansari D) Neelam Sanjiva Reddy

80) The Nightingale of India, (C)
A) Kamala Gandhi B) Dr.Najma Heptullah C) Sarojini Naidu D) Vijayalaxmi Pandit

81) The Founder of Ramakrishna Mission ? (D)
A) Radhakant Dev B) Ram Mohan Roy C) Ramakrishna Paramhans D) Swami Vivekananda

82) The Longest River in the World is (A)
A) Nile B) Ganga C)Amazon D) Mississippi Misouri

83) In Which Place Rock Graden located (C)
A) Lucknow B) Mumbai C) Chandigarh D) Ahmedabad

84)The Number of Chromosomes in the nuclei of Human being is (B)
A) 23 B)46 C)44 D) 48

85)The Largest Muscle in Human body lies in (B)
A) Hands B)Hip C) Neck D) Leg

86) Lord Buddha got Nirvana at (A)
A)Bodh Gaya B) Lubini C) Sarnath D) Kushinagar

87)who was the only muslim lady to occupy the throne of Delhi ? (B)
A) Nurjahan B) Raziya Sultan C) Muntaj Mahal D) Hamidabanu Begum

88) In which state Panchayat Rai was first implemented ? (C)
A) Gujarat B) Bihar C) Rajasthan D)Uttar Pradesh

89) Who is the Father of Indian Constitution ? (D)
A) B.N.Roy B) N.G.Ayengar C) DR.Rajendra Prasad D) DR. B.R.Ambedkar

90) Siachen is a (A)
A) Glacier B) Mountain C) River D) Valley

91) The Biggest Employer in INDIA is (B)
A) Army B) Indian Railways C) LIC D) State Bank of India

92) How many Zones are there in Indian Railways (C)
A) 20 B) 18 C) 16 D) 15

93) The National Rail Museum is located at (D)
A) Hyderabad B) Kolkata C) Mumbai D) New Delhi

94) First underground Railway (B)
A) Mumbai Metro B) Kolkata Metro C) Delhi Metro D) Bangalore Metro

95) The busiest Railway Station in India (C)
A) Hyderabad B) Mumbai C) Howrah D) New Delhi

96) The train between India and Pakistan (A)
A) Samjhauta Express B) Himasagar Express C) Vivek Express D) Rapthisagar Express

97) The Headquarters of Indian Railways (C)
A) Bhubaneswar B) Hyderabad C) New Delhi D) Chennai

98) No. of divisioins in South Central Railway (D)
A) 05 B) 04 C) 09 D) 06

99) The Highest Railway Station in India (A)
A) Ghum Railway Station B) Ooty C) Shimla D) Ahju

100) The world's longest Railway Platform is at (B)
A) Kollam B) Gorakhpur C) Kharagpur D) Bilaspur

101) The study of universe is known as ? (A)
A) Cosmology B) Galaxy C) Milky way D) Orbit

102) which is biggest planet ? (C)
A) Moon B) Earth C) Jupiter D) Mercury

103) which planet known as Red Planet ? (B)
A) Pluto B) Mars C) Venus D) Mercury

104) Study of Earth quakes called as ? (D)
A) Primary wave B)Surface wave C) Secondary wave D)Seismology

105)Vizag affected by Which cyclone ? (B)
A)Maysak B) Hudhud C) Noul D) Haiyan

106) Light Year is the unit of measurement of ? (B)
A) speed of light B)Distance between stars C)Time D) None of the above

107) The most appropriate unit to measure thickness of coin is ? (A)
A) Millimeter B) Centimeter C)Meter D) Decimeter

108) Which two metals will be attracted by a magnet? (A)
A) Iron and Steel B) Gold and Sliver C) Aluminum and lead D) Wood and Iron

109)The Father of the Indian nuclear programme ? (B)
A) C.V.Raman B) Homi Jehangir Bhabha C) Radha Krishna D) None of the above

110) The Indian space research organization in AP ? (C)
A) Vijayawada B) Kurnool C) Sriharikota D) Tirupati

111. What are called primary colors? (C)
A) White ,blue, pink B) Purple , black , white C) Red, Green and Blue D) None of the above

112) 2016-17 Railway budget , the percentage of lower berth quota for senior citizens is (D)
A) 10% B) 20% C) 30% D) 50 %
113) One rupee note signed by (B)
A) RBI Governor B) Finance Secretary C) chief minister D) Speaker

114) The No of Languages on Rs 100 note are? (C)
A) 1 B) 5 C) 15 D) 10

115)Which country's Prime minister Residence is called as 7 race course ? (C)
A) British B) Bharat C) Nepal D) Japan

116) First game played at Space ? (C)
A) Hockey B) cricket C) Chess D) Tennis

117) Revolutions list
1. Black revolution - Petroleum production
2. Blue Revolution ;- Fish production
3. Golden Revolution ;- Fruits and Overall Horticulture development and Honey production
4. Green Revolution ;- Food Grains
5. Silver Revolution ;- Eggs and poultry Revolution

118)The number of Members nominated for Rajya sabha by president of India ? (D)
A) 10 B) 8 C) 6 D) 12

119) Two members nominated by president for Lok sabha belongs to which community ? (C)
A) Jain B) Hindu C) Anglo- Indian D) Sikh

120) Which district of Telangana famous for Nirmal paintings ? (A)
A) Adilabad B) Rangareddy C) Medak d) karimnagar

121) Hyderabad is famous for ? (B)
A) Cloths B) pearls C) JUTE products D) Watches

122) MMTS Suburban rail system operated at ? (C)
A) Kolkata B) Bangalore C) Hyderabad D) PUNE

123) New capital city of Andhar pradesh ? (B)
A)Kurnool B) Amaravati C) GUNTUR D) Nellore

124) which place receive first monsoon rains in India ? (A)
A) Kerala B) Mumbai C) Chennai D) Punjab

125) The Author of Wings of Fire ? (C)
A) Chatan bhagat B) Sudha murthy C) A.P.J.A.Kalam D) None of the above

126) Which city was the summer capital of India during British Rule ? (B)
A) Ooty B) Simla C) panmarchi D) Matheran

127) Which state is known as India's Spice Garden ? (D)
A) Karnataka B) Bihar C) Uttarakhand D) Kerala

128) Name the annual fair of Rajasthan that is famous for its Camel trading event ? (A)
A) puskkar Mela B) Kumbha Mela C) Sonepur Mela D) Suraj Kund Mela

129) Saina nehwal is a famous ---- player ? (C)
A) Tennis B) Golf C) Badminton D) Cricket

130) Numismatics is the study of ? (A)
A) Coins B) Numbers C) Stamps D) Space

131) Who is Known as the Iron man of India ? (C)
A) Jawaharlal Nehru B) Bal Gangadhar Tilak C) Sardar Vallabhai patel D)Mahatma Gandhi

132) who worked for the welfare of Deaf , dumb and blind persons ? (A)
A) Helen Keller B) Lady Ada Byron C) Amelia Earhart D) Dayana

133) world famous writer of Crime and thriller novels ? (B)
A) Charles Dickens B) Agatha Christie C) Ian Fleming D) Montessori

134) who is known as mother of Primary Education ? (D)
A) Queen mary B) Queen Elizebeth C) Queen Victoria D) Lady Montessori

135) Who discovered sea route to India ? (B)
A) Leif Ericsson B) Vascodo Gama C) Chirstopher Columbus D) Eric the Red

136) First Italian Traveller to reach China ? (A)
A) Marco Polo B) Bartholomeu Dias C) Ibn Battuta D) Amundsen

137) ---------- is Roof of the world ? (C)
A) Korea B) Japan C) Tibet D) China

138) The first person to climb Mount Everest ? (A)
A) Edmund Hillary B) Neil Armstrong C) Piccard D) Mathew fontaine maury

139)The First Woman police officer climbed Mount Everest recently ? (B)
A) Kiran bedi B) G.R.Radhika C) Swathi Lakra D) Aruna Bhuguna

140) The most abundant Gas in the universe is ? (C)
A) Oxygen B) Nitrogen C) Hydrogen D) Helium

141) Which is Known as World Sugar Bowl ? (C)
A)China B) Chile C) Cuba D) Burma

142 Which is Known as City of Canals ? (A)
A) Venice B) Austrila C) New York D) Paris

143) The Largest Island is ? (A)
A) Green Land B) Ice Land C) Andaman and Nicobar D) Laksha dweep

144) The author of "My Experiments with truth" (A)
A) Mohan Das Karamchand Gandhi B) Ravindra Nath Tagore C)) Nehru D) Advani

145) The slogan "Jai Jawan Jai Kisan" was given by (C)
A) Balgangadhar Sastry B) Bipin Chandra Pal C) Lalbahadur Sastry D) None of the above

146) The famous silk centre in Tamilnadu (B)
A) OOty B) Conjeevaram C) Mahabalipuram D) Chidambaram

147) The grand old man of India (B)
A) Sardar Patel B) Dadabai Nauroji C)Subhash Chandra Bose D) Balagangadhar Tilak

148) Diesel Engine invented by (A)
A) Rudolph Diesel B) Alexander Fleming C) Right Brothers D) James Guttenburg

149) Dynamo invented by (D)
A) Davvison B) London C) Dalton D) Michael Faraday

150) Buland Darwaja located at (C)
A) Delhi B) Jhansi C) Fathepur Sikri D) Agra

151. Rajiv Gandhi International Airport situated at (C)
A) Mumbai B) Delhi C) Hyderabad D) Chennai

152. Lalbahadu rSastry Airport is at (A)
A) Varanasi B)Nagpur C) Jaipur D) Ahmedabad

153. Indira Gandhi International Airport is at (D)
A) Lucknow B)Bangalore C) SrinagaR D) Delhi

154. Chatrapati Shivaji International Airport is at (B)
A)Amritsai B) Mumbai C) Kolkata D) Cochin

155. Vir Savarkar Air port is at (A)
A) Port Blair B) Nagpur C) Jaipur D) Amritsar

156. Kempegowda International Airport is at (C)
A)Goa B) cochin C) Bangalore D)Calicut

157. Netaji Subhash Chandra Bose International Airport is at (A)
A) Kolkata B) Ahmedabad C) Varanasi D) Lucknow

158. SardarVallabbai Patel International Airport is at (D)
A) Kolkata B)Guwahati C) Srinagar D) Ahmedabad

159. Sri Gururamdasji International Airport is at (C)
A) Srinagar B) Tiruchunapalli C) Amritsar D) Coimbatore

160) Ambedkar Airport is at (A)
A) Nagpur B) Mumbai C) Lucknow D) Ahmedabad