SOUTH CENTRAL RAILWAY

QUESTION BANK FOR SELECTION OF TECHNICIAN Gr.III (C&W)
IN SCALE Rs.5200-20200(RP) with Grade Pay Rs.1900

FILLING THE BLANKS

1) Buffer height max for wagon is **1105 mm**
2) Minimum buffer height for wagon in loaded condition is **1030mm**
3) Buffer height of coaching stock in tare condition is **1105 to 1090mm**
4) **10 plated** springs are used for BOXC, BCXC wagons
5) BOXN wagon new wheel diameter **1000mm**
6) BOXN wagon wheel condemning diameter is **906mm**
7) Wheel gauge for wagons **1600 +2/-1 mm**
8) What is the difference of wheel diameters permitted between two wheel sets on the same bogie of BCN wagon? **13mm**
9) Variation in wheel diameter of a BOXN wagon can be allowed up to **25 mm**
10) Wheel defects can be checked with **Tyre defect gauge**
11) What is the condemning limit for radius at the root of flange (less root radius) **13mm**
12) Permitted flat faces on BOXN wagon is **63.5 mm**
13) Permitted flat faces on ICF wheel is **50 mm**
14) Condemning limit for sharp flange on wagon is **5mm radius**
15) Condemning limit for deep flange is **35mm**
16) Hallow tyre of wheel tread is **Taper NIL & 5mm deep**
17) Piston stroke for BOXN wagon in Empty is **85±10mm**
18) Piston stroke for BOXN wagon in Load condition is **130±10mm**
19) The minimum thin flange thickness for High speed trains in coaching is **22mm**
20) Wheel gauge for ICF coach wheel **1600 +2/-1 mm**
21) In twin pipe Air brake train the BP pressure readings on Engine and R/SLR is **in Engine 5kg/cm² & in SLR min 4.8 kg/cm²**
22) In twin pipe Air brake train the FP pressure readings on Engine and SLR is **in Engine 6kg/cm² & in SLR min 5.8 kg/cm²**
23) The functioning of DV is tested with **Single Car Test Rig** for a single coach

24) The functioning of DV is tested with **Single Wagon Test Rig** for a single wagon
25) The type of grease used in ICF spherical roller bearings is **Servogem RR3**
26) The dash pot oil level under tare condition is **40mm**
27) Silent block (Rubber bush) has been fitted in bogie components to **reduce noise**
28) Codal life of ICF coach is 25 years
29) Codal life of Open wagon is **30 years**
30) Life of other coaching vehicles (light usage) is **40 years**
31) ICF solid wheel diameter is **915 mm**
32) 'A' schedule to be done once in **one month +/- 3 days**
33) 'B' schedule to be done once in **3 months +/- 7 days**
34) 'IOH' schedule to be done for Express coaches once in **9 months +30 days**
35) All Express/Passenger coaches shall be booked for POH for every **18 months**
36) OCV's other than Mail/Express coaches the POH period is **24 months**
37) Maximum permissible speed during rolling in of a train per the revised coaching manual is **30kmph**
38) What is the permissible minimum percentage of operative cylinders on trains with a maximum speed of 105 kmph & below for the trains that are attended on platform at originating station **100%**
39) **2 Nos** of Fire extinguishers and **2 Nos** of Wooden wedges are to be provided as brake van equipment
40) Maximum limit for accumulation of LAP is **300 days**
41) If an accident takes place in an outstation but the mainline is clear what is the hooter code **3 long**

Objective questionnaire

1) The difference in wheel diameter permitted on the ICF coach is

   a) 10mm b) 5mm c) 13mm d) 25mm [**c**]

2) Axle load of BOXN wagons

   a) 20.3 T b) 16.3 T c) 16.25 T d) 22.9 T [**d**]

3) The minimum brake power to be ensured on BOXN Non-CC rake at originating station is

   a) 85% b) 90% c) 100% d) 80% [**b**]

4) BP pressure to be recorded in the brake van of an Air brake train of 58 BOXN is

   a) 4.8 kg/cm² b) 4.7 kg/cm² c) 5.7 kg/cm² d) 4.6 kg/cm² [**b**]

5) ROH of BOXN wagon is done once in

   a) 18 months b) 22 months c) 21 months d) 20 months [**a**]

6) The permissible variation in wheel diameter on BOXN wagon

   a) 13 mm b) 10 mm c) 25 mm d) 5 mm [**c**]

7) In Air brake system the capacity of CR

   a) 100lts b) 6lts c) 0lts d) 5lts [**b**]

8) Condemning wheel diameter of BCN wheel is

   a) 906mm b) 925mm c) 915mm d) 860mm [**a**]

9) Carrying capacity of BOXN wagon is

   a) 55 tones b) 58.3 tones c) 56.2 tones d) 59.5 tones [**b**]

10) The inclination given on wheel flange is

   a) 1 in 2.5mm b) 1 in 20mm c) 1 in 7.5mm d) 1 in 3.5mm [**a**]

11) Newly built coaches should go for first POH after

   a) 12months b) 18months c) 24months d) 36months [**c**]

12) For detecting a defective locomotive, the Air brake should be tested with a test plate having a leak hole of

   a) 7.5mm b) 8mm c) 8.5mm d) 10mm [a]

13) While testing Air brake goods formation, the leakage on the formation should not Exceed

   a) 0.4 kg/cm² b) 0.25 kg/cm² c) 0.1 kg/cm² d) 0.5 kg/cm² [b]

14) The maximum pressure that can be built up in a brake cylinder of BCN wagon is

a) 3 kg/cm² b) 2.5 kg/cm² c) 3.8 kg/cm² d) 5 kg/cm² [**c**]

15) The periodicity of schedule 'A' in coaching stock is

a) 3 months b) 1 month c) 6 months d) 12 months [**b**]

16) Composite brake block condemning thickness for coaching stock

a) 10 mm b) 25 mm c) 20 mm d) 12 mm [**d**]

17) Condemning diameter of ICF wheel

a) 915mm b) 913mm c) 860mm d) 825mm [**d**]

18) SAB 'A' dimension for BCN Wagon

a) 18+2/-0mm b) 20+2/-0mm c) 70+2/-0mm d) 16+2/-0mm [**c**]

19) Empty load lever to be set in loaded position when gross load is

a) 25t b) 42.5t c) 50t d) 60t [**b**]

20) Brake adjustment on CASNUB bogie is to be done for every reduction in wheel diameter of

a) 20mm b) 28mm c) 18mm d) 13mm [**c**]

21) Non AC ICF coach axle load

a) 13t b) 16.5t c) 18t d) 20.3t [**a**]

22) AC ICF coach axle load

a) 16.25t b) 18t c) 13t d) 20.3t [**a**]

23) BMBC Piston stroke for ICF coach

a) 32 mm b) 45 mm c) 28 mm d) 42 mm [**a**]

24) ICF coach buffer capacity is

a) 1105kg-m b) 1030kg-m c) 515kg-m d) 1090kg-m [**b**]

25) Auxiliary reservoir capacity in wagon stock

a) 150lts b) 100lts c) 200lts d) 450lts [**b**]

26) Capacity of auxiliary reservoir in coaching train

a) 200lts b) 100lts c) 150lts d) 450lts [**a**]

27) Air brake train pipe diameter in goods stock

a) 32mm b) 25mm c) 50mm d) 36mm [**a**]

28) On the high speed trains the minimum flange thickness permitted

a) 20mm b) 18mm c) 22mm d) 30mm [**c**]

29) What is the new wheel diameter of ICF coach

a) 915mm b) 813mm c) 1000mm d) 1090mm [**a**]

30) What is the coach intensive cleaning schedule

a) Once in 6months b) Once in 3months c) Once in 1month

d) Once in 4months [**c**]

31) What is the length of the ICF coach from buffer to buffer

a) 22297mm b) 22264mm c) 22400mm d) 23000mm [**a**]

32) Water tank capacity of ICF coach (Each one)

a) 1800lts b) 450lts c) 900lts d) 375lts [**b**]

33) What is the diameter of coaching branch pipe in Air brake stock

a) 10mm b) 15mm c) 20mm d) 18mm [**c**]

34) How much BP pressure to be registered in rear SLR

a) 5kg/cm² b) 6kg/cm² c) 5.8kg/cm² d) 4.8kg/cm² [**d**]

35) Rail wheel factory situated at

a) Yelahanka b) Bangalore c) Chittaranjan d) Patiala [**a**]

36) What gauge is used to measure wheel defects

a) Wheel gauge b) Broad gauge c) Tyre gauge d) Tyre defect gauge [**d**]

37) Where the electric locos are manufactured

a) Varanasi b) Bangalore c) Chittaranjan d) Patiala [**c**]

38) How many DVs are there in Air brake system of a coach

a) 3 b) 2 c) 1 d) 4 [**c**]

39) Which tool is used to measure wheel diameter

a) Out side caliper b) Inside caliper c) Screw gauge d) Wheel gauge

[**a**]

40) What is the distance between two rails of a BG track

a) 1000mm b) 1676mm c) 1766mm d) 1600mm [**b**]

41) Wheel base for BOXN is

a) 12000$\pm$6mm b) 2000$\pm$5mm c) 1266$\pm$2mm d) 2430$\pm$5mm [**b**]

42) Wheel tread is provided with how much taper

a) 1 in 30mm b) 1 in 25mm c) 1 in 12mm d) 1 in 20mm [**d**]

43) BOXN wagon is provided with which type of coupler

a) BT CBC b) HT CBC c) NT CBC d) MT CBC [**b**]

44) Inter communication valve (alarm chain) should be tested with a load of

a) 7 to 10kgs b) 8 to 15kgs c) 9 to 12kgs d) 12 to 24kgs [**a**]

45) Piston stroke of BOXN wagon on empty

a) 75±10mm b) 95±10mm c) 85±10mm d) 60±10mm [**c**]

46) Where the Integral coach factory is situated

a) Mumbai b) Kolkata c) Bangalore d) Chennai [**d**]

47) Indian Railways have how many zones

a) 17 b) 9 c) 10 d) 15 [**a**]

48)Where the Rail Coach Factory (RCF) is situated

a) Lucknow b) Kapurtala c) New Delhi d) Varanasi [**b**]

49) The projection of buffer from head stock for BG ICF coach is maximum

a) 600mm b) 700mm c) 635mm d) 735mm [**c**]

50) ROH periodicity of BRN

a) 24months b) 18months c) 21months d) 36months [**b**]

51)Length over coupler faces of BOXN

a) 15782mm b) 15429mm c) 14450mm d) 10713mm [**d**]

52) In a CASNUB 22 NLB bogie the 22 indicates

a) Year built b) Trolley number c) Axle load d) Tare weight [**c**]

53) What is the full form of LHB?

a) Lower heavy Bogie b) Linke Hofmann-Busch

c) low height Bogie d) None of these [b]

54) What is the length over body of LHB coaches?

a) 23570 mm b) 23545 mm c) 23540 mm d) 23565 mm [c]

55) What is the maximum width over body of LHB coaches?

a) 3260 mm b) 3240 mm c) 3456 mm d) 2356 mm [b]

56) Height of compartment floor from rail level under tare condition of LHB coaches

a) 1320 mm b) 1389 mm c) 1305 mm d) 1345 mm [a]

57) What is the new wheel diameter of LHB wheel?

a) 910 mm b) 915 mm c) 912 mm d) 725 mm [b]

58) What is the condemning limit of LHB wheel diameter?

a) 813 mm b) 839 mm c) 845 mm d) 854 mm [c]

59) How many brake disc on one wheel?

a) One b) Two c) Three d) Four [b]

60) Which type of Roller bearing is used in LHB coaches?

a) Spherical Roller bearing. b) Plain Roller bearing.

c) Cartridge Tapered Roller bearing. d) None of these. [c]

SOUTH CENTRAL RAILWAY

QUESTION BANK FOR SELECTION OF TECHNICIAN Gr.III (C&W) IN SCALE Rs.5200-20200(RP) with Grade Pay Rs.1900

ANSWERS TO ESSAY TYPE QUESTIONS

1) What are the general tools used by the fitters for making jobs?

Ans: - The following tools are generally used by the fitters in work shop for making jobs are as follows: -

1) Hammers:-
    - i) Sledge Hammer
    - ii) Ball peen Hammer
    - iii) Wheel tapping Hammer
2) Chisels: -
    - i) Flat chisels
    - ii) Rod chisels
3) Punches: -
    - i) Pin punch
    - ii) Centre punch
    - ii) Cotter punch
4) Files: -
    - i) Rasp file
    - ii) Rough file
    - iii) Round file
    - iv) Triangle file
    - v) Half round file
5) Scrapers: -
    - i) Flat scrapers
    - ii) Triangle scrapers
    - iii) Half round scrapers
6) Vices: -
    - i) Bench vice
    - ii) Leg vice
7) Spanners: -

i) Single ended spanner

ii) Double ended spanner

iii) Adjustable spanner

iv) Box spanner

v) Torque wrench

8) Drills

9) Other tools used are

i) Tommy bar

ii) Oil syringe

2) What are the general machines available in work shop?

Ans: - The general machines available in work shop are: -

1) Lathe machines
2) Grinding machines
3) Milling machines
4) Welding machines
5) Shapper machines
6) Hydraulic press

3) Explain the system of foundry?

A: Foundry or casting is process of forming metallic products by melting the metal, pouring it into a cavity known as the mould and allowing it to solidify. When it is removed from the mould it will be the same shape as the mould. Almost any article may be cast with proper technique and design and there is practically no limit as to the size and shape of the castings that may be made.

4) What are the things that generally be done in smithy?

A: Smiting is the act or art of working or forging metals, as iron, into any desired shape. In this process relatively small sized jobs are heated in an open fire or hearth and subsequently hammered to get the desired shape. The shop in which the work is carried out is known as the smithy or smithy shop and the various operations are performed by means of hand hammers or small power hammers.

In general the follows tools are made by a smithy:

a) Making a cold chisel, making flat drills, pin punches, making a chain and other items for daily use.

5) Describe various measuring instruments that you use?

A: Measuring instruments:

- Scales (foot rule)
- Tapes
- Wheel diameter measuring gauge or outside caliper
- Buffer height measuring gauge
- Buffer length measuring gauge
- Feeler gauges of differed sizes 16mm, 18mm, 20mm, 24mm, 28mm, 32 mm
- Flange thickness measuring gauge
- Type depot gauge
- Inside caliper
- Vernier caliper
- Micro metre

6) Explain about drilling, shaping, lathe machines.

A. **Drilling :**

Drilling is the process of making holes. In drilling machine holes may be drilled quickly and at a low cost. The hold is generated by the rotating the edge of a cutting tool known as drill which exerts large force on work clamped on the table.

Shaping:

The shaper is a reciprocating type of machine tool intended primarily to produce flat surfaces. These surfaces may be horizontal, vertical or inclined. In general shaper can be produced any surface composed of straight line elements.

There are mainly – Horizontal shaper, vertical shaper, standard or plain shaper.

Lathe:

The main function of a lathe is to remove metal from a piece of work to give it the required shape and size. This is accomplished by holding the work securely and rigidly on the machine and then turning it against a cutting tool which will remove metal from the work in the form of chips. To cut the material properly the tool should be harder than the material of the work piece, should be rigidly held on the machine and should be fed or progressed in a definite way relative to the work.

There are mainly a) Bench lathe b) speed lathe c) engine lathe
d) Tool room lathe e) capstan and turret lathe
f) Automatic lathe

Any lathe consists of mainly Bed, Head stock, tail stock and tool post mounted on an adjustable slide.

7) List out safety devices to be used while attending various types of operation by using machines and various tools?

A: The following safety devices to be used while attending various types of operation by using machines and various tools are: -

1) Aprons
2) Helmets
3) Goggles
4) Industrial shoes/Rubber shoes
5) Weld shields
6) Gloves.

8) Add the following:

16 2/3 + 4 1/2+ 5 1/3+ 11 1/4

$$\frac{16 \times 3 + 2}{3} + \frac{4 \times 2 + 1}{2} + \frac{5 \times 3 + 1}{3} + \frac{11 \times 4 + 1}{4}$$

$$\frac{48+2}{3} + \frac{8+1}{2} + \frac{15+1}{3} + \frac{44+1}{4}$$

$$\frac{50}{3} + \frac{9}{2} + \frac{16}{3} + \frac{45}{4}$$

9) Add the following

a) 3871 + 63 + 452 + 99

b) 2, 43, 532 + 73, 526 + 179 + 52, 134 + 4, 793 +65

9a. A)

3, 871
63
452
99
4, 485

9b. A)

2, 43, 532
73, 526
179
52, 134
4, 793
65
3, 74, 229

10) Subtract the following

a) 42, 783 – 24, 821

b) 8, 76, 342 – 6, 52, 924

c) 7, 00, 000 – 5, 43, 168

10a. A)

42, 783
– 24, 821
17, 962

10b)

8, 76, 342
– 6, 52, 924
2, 23, 418

10c)

7, 00, 000
– 5, 43, 168
1, 56, 832

11) Multiply the following

12 x 12 x12 x 12 x 12

12 x 12=144 x 12 = 1728 x 12=20736 (Answer)

12) Multiply the following

3.58 x 12.743

12.743

x 3.58

101944

63715

38229

45.71994 Answer

13) A banana costs Rs. 2 ½ what is the cost of 3 ½ dozen bananas

Rs. 2 ½ = Rs. 2.50 p

1 Rupee = 100ps

Rs. 2 ½ = 200+50 = 250ps = Rs.2.50

1 dozen = 12

3 ½ dozen = $\frac{7}{2}$ x 12 = 42

1 Banana cost = Rs. 2.50

42 Bananas cost = 42x2.50 = 105

Cost of 3 ½ dozen Bananas = Rs.105/- Answer

14) A station master has issued 25 tickets of Rs. 15 each and 15 tickets of Rs.45 each. How much amount will he collect by the sale of tickets?

1 ticket = Rs. 15

25 tickets= 25x15 = 375

1 ticket = Rs. 45

15 tickets= 15x45 = 675

Total Amount collected by station master = Rs. 375+ Rs 675

= Rs. 1050 Answer

15) An Express Guard receives grass salary of Rs. 48,000/- per month. In that contribution towards CGIS is Rs. 30/- PF Rs. 400/- CCS Rs. 1500/-, CCS loan recovery Rs. 2500/-Quarter's rent Rs. 750/- Electricity Rs. 250/-LIC premium Rs. 2675/- what is the net salary will be received?

Ans:

Gross salary of Express Guard = Rs. 48000/-

Contribution towards CGIS - Rs. 30/-

PF - Rs. 4000/-

CCS - Rs. 1500/-

CCS Loan - Rs. 2500/-

Qts. Rent - Rs. 750/-

Ele. Bill - Rs. 250/-

LIC - Rs.2675/-

Total Contribution - Rs. 11705/-

Net Salary = Gross Salary- Total Contribution = 48,000/- – 11705/-

= Rs. 36,295/-

Net Salary received by Express Guard = Rs. 63,295/-

16) A work man took a loan of Rs.1000-/ from a lender at the interest of 10% PA. At the end of one year how much he has to pay?

A. Loan taken = Rs. 1000/-

Interest rate =10% per year.

No.of years = 1 year

Interest to be paid after 12 months(1 year) $= 1000 \times \frac{1 \times 10}{100}$

$= 100$

Total amount is paid after one year is 1000+100 = Rs.1100/- to be paid.

17) Find the volume of cube side each 3'.

A. Volume of cube = l^3

$l = 3^1$

Then volume of cube = 3^3 or $3^1 \times 3^1 \times 3^1$

= 27 Cubic feet

18) How many zones are there on Indian railways? Write them with their head quarters.

Ans: There are 17 zones on Indian railways.

Sl.No	**Railway**	**Head quarters**
1	Central Railway	Mumbai (CST)
2	Eastern Railway	Kolkata
3	Western Railway	Mumbai (Church gate)
4	Northern Railway	Delhi
5	Southern Railway	Chennai
6	South Central Railway	Secunderabad
7	South Eastern Railway	Kolkata
8	North Eastern Railway	Gorakhpur
9	North Frontier Railway	Guwahati
10	North Western Railway	Jaipur
11	South Western Railway	Hubli

12	North Central Railway	Allahabad
13	East Central Railway	Hajipur
14	West Central Railway	Jabalpur
15	South East Central Railway	Bhilaspur
16	East Coast Railway	Bhubaneshwar
17	Kolkata Metro	Kolkata

19) How many divisions are there on SC Railway and what are they?

Ans: There are six divisions on SC Railway, they are

1. Secunderabad division
2. Vijayawada division
3. Guntakal division
4. Hyderabad division
5. Naned division
6. Guntur division

20) What are the various gauges on Indian Railways and what is the inter distance between rails?

Ans: There are three gauges on Indian Railway, they are

1. Broad gauge
2. Meter gauge
3. Narrow gauge

The inter distance between rails are:

1. Broad gauge – 1.676 meters - (5’.6”)
2. Meter gauge – 1.000 meters - (3’.3”) (3’.8”)
3. Narrow gauge – 0.762 meters – (2’.6”) , 0.610 meters (2’.0”)

21) Name the following:-

1) Chairman Rly.Board: - Sri A.K.Mital
2) Member Mechanical Rly Board: - Sri Hementh Kumar
3) GM SC.Railway - Sri Ravindra Gupta
4) DRM NED/Division. - Sri A.K. Sinha
5) CME SC.Railway - Sri P.Somkuwar
6) CWE SC.Railway - Sri P.Somkuwar
7) CRSE SC.Railway. - Sri S.S Misra

22) Q 5. Name the Following

1) President of India : Sri Pranab Mukarjee
2) Prime minister of India : Sri Narendra modi
3) Railway Minister : Sri Suresh Prabhakar Prabhu
4) Chief Minister of AP : Sri Nara Chanra Babu naidu
5) Vice President of India : Sri Hameed Ansari
6) Chief Justice of India : Sri T.S.Takur
7) Chief Election Commissioner of India : Sri Achal k.Jyothi

23) Name the following

1) Capital of Russia : Masco
2) Capital of U.S.A. : Washington, D.C
3) Capital of Gujarat : Gandhinagar or Ahmedabad
4) Capital of Nagaland : Kohima
5) Capital of Andaman & Nicobar Island : Port Blair

24) Indicate where the following are located

1) ICF	:	Integral Coach Factory	Permbur
2) DLW	:	Diesel Locomotive Works	Varanasi
3) RCF	:	Rail Coach Factory	Kapurthala
4) CLW	:	Chittaranjan Locomotive Works	Varanasi
5) RSC	:	Railway Staff College	Baroda
6) IRISET	:	Indian Railway Institute of Signal Engineering and Tele communications	Secunderabad

25) Expand the following

1) MRT	:	Medical Relief Train
2) CONCOR	:	Container Corporation of India Ltd.
3) ART	:	Accident Relief Train
4) ICF	:	Integral Coach Factory
5) RCF	:	Rail Coach Factory
6) RWF	:	Rail Wheel Factory
7) CAMTECH	:	Centre for Advanced Maintenance Technology

26) Write about divisional organization?

A. Divisional Organizations:-

- Each railway zone is geographically divided into various divisions
- Each division of railway zone is headed by intermediate administrative officer and is designated as Divisional Railway Manager (DRM).

- Under the DRM - Additional DRM and Divisional officers designated as follows:-
    - Sr.DOM , Sr.DME, Sr.DCM, Sr.DEN, Sr.DEE, Sr.DPO, DSTE, DMO, DSC, DMM & Sr.DFM.
- The Divisional officers are responsible for successful functioning of their respective branches in their divisions and are assisted by Assistant Divisional Officers.
- Although the divisional officers are under the administrative control of DRM, yet they are responsible for the technical efficiency of their respective branch to the Chief's of departmental heads.

27) Write about your depot organization and activities?

A. Mechanical carriage and wagon depot, Nanded is headed by CDO (Coaching Depot Officer) who is In-charge of the depot and under his control the following subordinate to assist to maintain the nominated trains and are assisted by several technicians and Khalasis and other different categories of staff as follows.

SSE's/SE's , JE-II's, Sr.Technicians, Tech.Gr.I,Tech.Gr.II, Tech.Gr.III, KHP's, S/wala's & Ministerial staff

28) What are the preventive schedules and their periodicity for coaching stock?

ANS:

Periodicity

1) Trip schedules – Attended on every round trip.

2) Schedule 'A' or Monthly examination. - Attended on every 1 Month ± 3 days.

3) Schedule 'B' or Quarterly examination - Attended in every 3 Months ± 7 days

4) IOH (Intermediate over Hauling

- For Express coaches 9 Months + 30 days (Unit exchange of Trolleys)

- For passenger coaches- 9 Months +30 days (Same trolley)
- Newly built Coach/MLR coaches- 12 Months+30 days (Same Trolley but wheels to be replaced)

29) List out passenger amenity items in coaches (write any 10)?

Ans: - 1) Hand rails 2) Foot steps 3) Main door 4) Benches, Berths, Seats with cushion/Foamed Rexene. 5) Window shutters-Venison shutters, Glass shutters & L.F.Glass shutters 6) Berth chains 7) Luggage racks 8) Ventilators 9) Window bars 10) Vestibule door11) Mirror & Mirror shelves 12) Soap dish 13) Tumbler holder 14) Coat hooks 15) Folding table/Fixed table 16) Wash basins 17) Push cocks 18) Flushing valve 19) Wall protector 20) Shower rose 21) Magazine poach 22) Dust bin 23) Ring below the birth for securing luggage 24) Lights & 25) fans

30) What are the important records that are to be maintained in TXR's office (Write any ten)

Ans: -

1) RS- 1 Over all detention register.
2) RS- 5 Register for incoming train
3) RS- 6 Brake Power Certificate (BPC)
4) RS- 7 Train examiner Register
5) RS-16 Sick memo
6) RS-17 Fit memo
7) RS-18 Report of damages caused by theft mischief Etc.,
8) RS-67 Single car test Performa
9) RS-68 Lable damage not to go
10) RS-69 Details rake maintenance
11) RS-71 History card

12) RS-72 Trip schedule card.

13) RS-73 book to shops for POH repairs.

14) RS-74 `A' Schedule card.

15) RS-75 'B' Schedule card

16) RS-76 'C' Schedule card.

OTHER'S

1) GI.5.B- Issue ticket store requisition form.

2) T.352.B/rev- Line block form

31) What are the various types of wheel defects, mention the condemning limit of each defect?

A.

WHEEL DEFECTS: -	**NEW**	**COND.**
1) Radius too small at the root of flange	14mm R	13mm R
2) Sharp flange.	14.5mm R	5mm R
3) Thin flange.	29.4, 27, 25 & 22mm	16mm for Passi 22mm for Exp
4) Deep flange	28.5mm	35mm
5) Hallow tyre	1 in 20 tapper	Tapper nil & 5mm deep
6) Thin tyre.	63.5mm	6.5mm
7) Flat places on tyre	Nil	50mm for ICF 60mm for BOXN
8) Wheel loose on axle		
9) Shelled tread.		
10) Thermal cracks.		
11) Heat checks		

12) Spread rim.

13) Shattered rim.

32) What are the safety precautions to be taken while working while doing the work at C&W depot?

Ans: - The following safety precautions to be taken while doing the work at C&W depot

1) Before starting the work line block signature to be taken.
2) Both sides of the working line Danger board/Danger light to b e provided and locked.
3) Do the work with concentrate and safely.
4) Do not work in shortcut methods.
5) Do the work on machines with full knowledge.
6) In working place there should be free of air flow.
7) Do not use with unsharpened tools.
8) Keep tools in good working conditions.
9) Before starting the work keep all materials ready.
10) While doing work in nights at pit lines and yards use light.
11) While doing work in pit lines use rubber shoes.
12) While working on Oxygen and Acetylene gas cylinders keep away the molten metal away with Electricity.
13) Welders while doing welding work must and should use Aprons, Goggles and Glass shield.
14) The staff working in shop should wear Helmets to avoid Head injuries caused by the EOT cranes.
15) Wheel lathe section staff should not stand before the running wheel where the metal pieces can fall in eyes.
16) While moving the wheels to the other places use Gloves.
17) While wheel lathe is running do not keep your handle on the running wheel.
18) While doing the grinding use Goggles.
19) Before giving release memo to operating department ensure no staff is working underneath the under gear of the train or pit line.

33) List out brake van equipments in guard compartment?

Ans: - 1) Wooden wedges- 2 nos
2) Fire extinguishers- 2 nos
3) Portable control phone
4) ETL box
5) Stretcher
6) Telephone poles.

34) List out the important parts of the Air brake system on coaching stock?

Ans: - The important parts of the Air brake system on coaching stock are: -

1) Palm end
2) M.U.Washer
3) B.P Air Hose
4) Cut off angle cock
5) BP Main pipe
6) BP Branch pipe
7) BP Isolating cock
8) BP Dirt collector
9) DV (Distributor Valve)
10) Quick Release valve
11) DV Isolation handle
12) Control Reservoir CR
13) Auxiliary Reservoir AR
14) Brake Cylinder
15) FP Air hose
16) FP Cut Off Angle Cock
17) FP Main pipe
18) FP Branch pipe
19) FP Isolation Cock
20) FP Dirt Collector
21) Non return valve

22) Guard Emergency valve GEV
23) Passenger Emergency Valve PEV
24) Passenger Emergency Alarm Signal Devise PEASD

35) What is rolling examination, and what are its advantages?

Ans: -All terminating and through passing trains are given a rolling in examination while entering a station with a train examining depot. To carry out this examination, the train examiner and his staff should take up position on both side of the lines short of the normal halting place on which the train is to be received following inspection is carried out during the rolling in examination.

- Look out for any loose or dangling components.
- Observe whether there are any flat spots on the tyres of any wagons.
- Detect broken springs.
- Abnormal behavior of any of the vehicles or any other observation which may relate to unsafe working condition.

.

36) List out any 10 Mechanical items of a coach that attracts public complaints?

Ans: -

1) No Water in toilets
2) Coach cleaning is very bad
3) Toilets are dirty
4) Berths are uneven
5) Train is not stopped even by pulling the Alarm chain.
6) Coaches with leaky roof
7) Dirty upholstery in AC coaches
8) Jammed Door and Windows
9) Un-usual sounds coming from coach under gear.
10) Coaches with rodents.

37) Explain the following?

a) ACP – Alarm Chain Pulling.

b) ISO – International Standard Organization.

c) CTRB – Cartridge Tapered Roller Bearing.

d) RWF – Rail Wheel Factory.

e) IOP – In Operative Piston.

f) PEAV – Passenger Emergency Alarm Valve.

g) AR – Auxiliary Reservoir.

h) CBC – Centre Buffer Coupler.

i) BOBR – Bogie Open Bottom Rapid discharge.

j) WGSCZ – Vestibule Self Generation Second class Chair car.

k) ICF – Integral Coach Factory.

l) RDSO – Research Design & Standard Organization

m) RCF – Rail Coach Factory.

n) PEASD – Passenger Emergency Alarm Signal Device.

o) DV – Distributor Valve.

38)

1. What is Bio-Toilet?
Ans: A toilet in which biological degradation of human waste by inoculums takes place

2. How does biodegradation of human waste take place?
Ans: Inoculums digests the human waste converting it into water & gases in the process.

3. What is the name of Bio-toilet Bacteria?
Ans: Anaerobic Bacteria

4. What is the life of Anaerobic bacteria?
Ans: Their survival is linked with the availability of nutrients/ feed material. Even if the feed material is not available, bacteria survive but do not multiply/reproduce. And as soon as nutrients are available they again start multiplying.

39)

1. What is the doubling period for bacterial population ?
Ans: Doubling time of bacteria in the biodigester vary from 30 minutes to 16 hours among the bacteria involved in different steps of bio-degradation.

2. How much quantity of inoculum is charged initially in the Bio-Toilet tank?

Ans: 120 Lts Inoculum

3. What is the weight of empty Bio-Toilet Tank?
Ans: Approx. 115 Kg.

4. What is the total volume of Bio-Toilet tank?
Ans: 400 Lts.

40)

1. What is the effective volume of Bio-Toilet tank?

Ans: 300 Lts.

2. What is the height of Bio-Toilet tank from Rail level?

Ans. 225 mm

3. What is the identification of Bio-Toilet Coach?

Ans. Green band on exterior below toilet glass

41) What are the factors responsible for brake binding in CASNUB trolleys?

Ans. Brake binding is caused due to various reasons like engine defects, defective brake system, hand brake in ON position, improper working of empty load box, bent control rod, defective slack adjuster, bent pull rod, etc. wagon is released after rectifying all the defects and in case of non rectification the wagon is released after isolating by removing the pull rod pin. Brake binding is caused due to following defects in CASNUB trolley.

i) Bending of pull rod, push rod and End pull rod.
ii) Bending of brake beam.
iii) Fitment of wrong sized/defective pins in brake gear fittings.
iv) Sticking of brake beam in the pocket.
v) Sticking of brake block after bending with the wheel.
vi) Use of different sizes of brake block.
vii) Wrong adjustment of brake gear.

42) Describe the procedure of under gear examination of coaches on pit lines?

Ans:

- Air brake testing of rakes for any defects in brake system and Alarm chain pulling mechanism.
- Inspection of all under gear fittings including brake gear draw gear and buffing gear & spring gear.
- All wheels tyre profile must be checked for defects to ensure rejectable defects with tyre defect gauge.
- Inspection of general condition of under frame, bogies components and other safety fittings.
- Testing of air brake system with RTR.

43) What are the common defects arising in passenger emergency alarm safety device?

Ans: Following are the common defects arising in passenger emergency alarm safety device.

- Pulling of alarm chain does not operate the device.
- Defective passenger emergency relay.
- Working out of springs, turning off of spindle and damage of locating piece on main stem lead to failure of PEASD.

44) Write the design future of bogie mounted brake system?

Ans: In bogie mounted brake system external slack adjuster have been eliminated.

A total of four number of 8" size brake cylinder two per bogie have been used. These cylinders have built in single acting slack adjusters for taking up slack created between wheel and bake block. Mounting of the cylinder has been done on either side of bogie frame in between central longitudinal members connecting the bogie transoms to the headstocks. Each cylinder controls the braking on one wheel set. High friction composition brake blocks of 'K-type have been used in the system.

45) How is rake tested with Rake Testing Rig (RTR)? Describe briefly.

Ans: Rake Testing Rig is essential equipment required during the maintenance of passenger rakes. Testing procedure of coaching rake with RTR is as under.

- Visually inspect all the bake pipes, feed pipes, hose couplings, suspension brackets and other air brake equipments. Also check anti pilferage devices. If any item is found defective, replace or repair it.
- Connect the BP & FP of first coach with BP and FP of test rig.
- Ensure that the angle cocks and isolating cocks of all the coaches are in open condition. Only the rear angle cocks of the last coach should be in closed condition.
- By opening the supply cock of air compressor, BP and FP should be charged to 5 kg/cm2 and 6 kg/cm2 respectively through testing and wait for 4 to 5 minutes.
- Close the isolating cock of BP & FP of testing to stop supply of compressed air.
- Monitoring the drop of pressure due to leakage in the system for 3 minutes and note down the drop of pressure. If the pressure drop is more than 0.2kg/cm2, it indicates system leakage. The leakage is checked by inspecting all the coaches

carefully. Leakages can be detected with the help of hissing sound or soap solution and the rectify it.

- After rectifying the leakages, charge the system by opening the isolating cock of FP & BP of test rig. Apply full service application by dropping BP pressure to 1.5kg/cm2.
- Ensure that all the pistons are in braking condition and measure the piston stroke.
- Recharge the system for releasing the brakes. All the brake cylinder pistons should come to release position after releasing of brakes. If any cylinder is not released and some defect/breakage is found, replace or repair it.

46) Write down the procedure of testing a coach with single car test rig?

Ans: Connect BP & FP of the single car test rig (SCTR) with FP & BP of the coach. Close the BP & FP of the coach at the other end. Put pressure gauges on brake cylinder, auxiliary reservoir and control reservoir. Note down the test results on specified proforma.

1. Leakage Test:

- Charge BP to 5 kg/cm2 and FP to 6 kg/cm2 for 5 minutes.
- After closing the cock of test rig, note down pressure drop in BP & FP pressure gauges for 3 minutes.
- Drop should not be more than 0.2 kg/cm2 in one minute. If it is more than detect the leakage and rectify it.

2. Check Brake cylinder filing time from 0 to 3.6 Kg/Cm2 -3 to 5 seconds.
3. Check Brake cylinder release time i.e. 15 to 20 seconds.
4. Check sensitivity and insensitivity of Distributor valve.
   Sensitivity: Drop pressure 0.6 Kg/Cm2 brake should apply within 6 Seconds.
   Insensitivity: Drop pressure 0.3 Kg/Cm2 brake should apply within 60 Seconds.
5. Emergency brake application and release test:

   Charge the system BP to 5 kg/cm2 and FP to 6 kg/cm2, drop BP pressure 1.5 kg/cm2 and check maximum brake cylinder pressure to 3.8 kg/cm2. Again charge the system and brake cylinder should get fully released.
6. Check graduated application and release.
7. Check passenger alarm emergency system with pulling and resetting of ACP.
8. In case of SLR, check functioning of Guard emergency valve by operating handle to exhaust the BP pressure and brake should apply.
9. Check Manual release of brakes by pulling DV's Quick release valve.

47) Write down the test procedure of passenger emergency valve?

Ans:

1. Charge fully BP Pressure to 5 kg/cm2.
2. Pull alarm chain from inside a coach.
3. Check whether the alarm disc fitted on the end panel of the coach is rotation or not.
4. Check the whispering sound from PEV fitted on the end panel along with exit of BP air to atmosphere.
5. Brake blocks should be in braking position.
6. Re-set alarm signal equipment with resetting key.

48) Describe briefly the procedure of isolating air brake cylinder?

Ans: If the brakes of particular trolleys are not getting released due to defective brake cylinder or defective slack adjuster or defect in brake gear system, the brake cylinder of that trolley can be isolated. This can be done by manually releasing the affected trolley and the removing the isolating cock handle from locking system fitted on branch pipe between brake cylinder and DV & putting it perpendicular to the branch pipe. With this arrangement, brakes of other trolley will apply as applied earlier.

49) Write down the procedure of isolating complete coach?

Ans:

1. Bring DV isolating cock R-Charger handle parallel to surface by lifting it manually. DV will stop working.
2. Close the isolating cock fitted on the branch line between feed pipe and auxiliary reservoir.
3. Finally release brakes by manually pulling the DV release lever.

It must be ensured that the brakes are fully released while isolating brake cylinder or complete coach.

50) Describe briefly the procedure of setting ACP?

Ans: whenever a passenger pulls the chain, operating spindle connected with PEASD fitted on the end panel of the coach is lifted and rotates the disc rod. With rotation of disc rod, the red disc fitted on its corner becomes perpendicular to the surface. This gives a signal of the coach from which the chain is pulled with the lifting of operating spindle, PEASD opens the passenger emergency valve. BPs air exists to atmosphere through a 8 mm choke provided in the valve, resulting in drop of BP pressure. Driver also gets an audio visual indication in the engine through a micro switch and red light will also lit outside the coach. Accordingly driver /guard will reset the ACP apparatus by pulling the resetting wire rope downward of particular coach. As soon as the resetting, hissing sound will stop and brakes gets released.

51) Write down the procedure of checking passenger Emergency alarm system on Pit lines?

Ans: The system should be checked in each coach of the train before the departure the train. It is inspected by pulling the chains provided on the corners of the coach walls. Passenger emergency alarm signal device should get operated by applying a pulling force of 7-10 kg on the chains. Pulling force is checked with the help of a spring balance. System is assumed to be functional only if the signal disc is operating properly and hissing sound is heard from the passenger emergency valve. To bring it in normal position resetting the PEASD is turned right by lifting the signal disc and the hissing sound is stopped.

52) Write down the IOH procedure of coaches?

Ans: After detaching of coach for IOH following procedure to be followed.

1. Clean the coach intensively.
2. Check the condition of coach shell visually for damages.
3. Coach should be placed in IOH shed for lifting the body.
4. Visually examine centre pivot mounting bolts and attend if needed.
5. Check condition of head stock/sole bar.
6. Examine trough floor, turn under and other under frame members from underneath for corrosion.
7. Bogie, Bogie to be run out during IOH and sent to w/s and overhauled bogie supplied by w/s should be fitted.
8. Lifting the coach body.
9. Running out bogie.
10. Check overhauled bogie for any defect/deficiency.
11. Check oil level in side bearer oil-bath and oil filling cap, top-up oil if needed.
12. Place over hauled bogies and lowering the coach body maintaining body/bogie clearances.
13. Check oil level in dash pot, add specified grade of oil in dash pot if needed.
14. Conduct brake test as per SCTR and attend leakages and defective components if any.
15. Visually inspect for damage on brake pipe, feed pipe and hose coupling.
16. Visually inspect suspension bracket for air brake equipment and anti pilferage device for any defect and rectify.
17. Check passenger alarm by pulling the chain with spring balance with 6.4 kg to 10 kg force.
18. Carry out manual brake release test to ensure proper function of release lever.
19. Check and adjust brake gear to achieve correct piston stroke.
20. Service application, release test of every coach of the rake to ensure full brake power.
21. Carry out guard van valve test to ensure proper functioning of guard van valve.

22. Examine slack adjuster for damage and mal functioning and subsequent replacement.
23. Examine draw hook, draw bars, rubber pads for damages.
24. Check condition of the screw coupling and its components and replace if required.
25. Examine visually draft key locking pins.
26. Visually examine buffer plungers for damage/drooping/stroke length.
27. Ensure the length is within 584-635mm.
28. Inspect buffer plunger face plate for wear and profile, if face plate is worn out by more than 5 mm the plunger assembly to be replaced.
29. Examine buffer mounting bolts and attend if necessary.
30. Examine visually buffer casing for cracks/damages.

****