XXX TRICENTRAL RAILWAY

WRITTEN EXAMINATION FOR GROUP 'B' AEN (70%) (SUPPLEMENTARY)

DATE: 18.10.2018.
MAXIMUM MARKS: 100

TIME ALLOWED: 3.00 HOURS

INSTRUCTIONS

1. CANDIDATE NOT TO WRITE HIS NAME, ROLL NUMBER, HALL NUMBER, ANYTHING UNRELATED TO THE QUESTION TO BE ANSWERED OR PUT HIS SIGNATURE, ANY IDENDTIFICATION MARKS, ANYWHERE INSIDE THE ANSWER BOOK AND EXTRA SHEET EXCEPT ON THE SHEET AND AT THE SPACE PROVIDED FOR THE SAME, FAILING WHICH THE CANDIDATURE WILL BE CANCELLED.
2. CANDIDATE IS TO WRITE EITHER IN HINDI OR ENGLISH.
3. CANDIDATE IS TO ENSURE SIGNATURE OF OFFICER INCHARGE ON THE ANSWER BOOK AND ALSO ON EXTRA SHEET, IF ANY
4. IN CASE OF USE OF UNFAIR MEANS CANDIDATURE WILL BE FORFEITED.
5. USE OF CALCULATORS/MOBILE PHONES/BOOKS/NOTES/BAGS/ELECTRONIC WATCHES ETC. ARE NOT PERMITTED IN THE EXAMINIATION HALL.
6. IN CASE OF ANY VARIATION IN LANGUAGE, ENGLISH VERSION STANDS GOOD.

SUBJECTIVE QUESTIONS
Part 'A'

1. Attempt any 6 questions in Part 'A'.
2. Each Question carries 15 marks.
3. Question no. 3 is to be replied in Hindi.

1. a) You are posted as AEN in a section having BG track on Main line and are inspecting an LWR during your trolley inspection. Write down the important points of inspection to ascertain the behaviour of LWR and the inferences drawn from them during the inspection for further follow-up action. 10

   b) What are the criteria for realignment of curve as per IRPWM? 5

2. Write short notes on – (3x5)
   a) Precautionary attention as per IRPWM
   a) Criteria for replacement of ERC as per IRPWM
   b) Norms of Annual Bridge Inspection by PWI
   c) Major & important Bridges
   d) Action to be taken for DPWI(R)

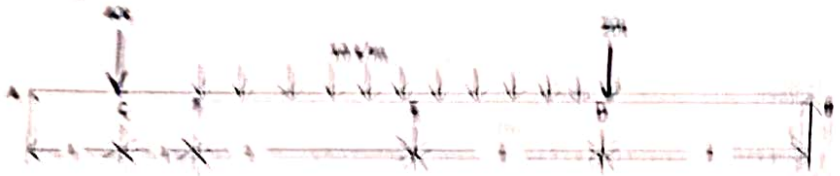
3. a) Write down the schedule of inspection of AEN for the following :- (1x7)
   (i) Point Trolley
   (ii) Level Crossing
   (iii) PCM Machine
   (iv) Curves
   (v) Points & Crossings
   (vi) Water Installations
   (vii) Bridges

   b) List down the Minor and Major Penalties as per D&A Rules. 8

4. Write short notes on (3x5)
   a) Track Laying Equipment (commonly known as PQRS)
   b) Water Recycling Plant
   c) Rural Connects

PAGE 1

5. A simply supported beam 'AB' of 8m length with 'E' as its mid point is loaded as given below:



Calculate-

(i) The reactions at supports A & B — 4
(ii) Bending moment at 'C' — 3
(iii) Bending moment at mid point of beam — 3
(iv) Draw force diagram — 5

6. a) Explain the concept of negative cant. — 5

b) Write short notes on any FIVE of the following: — 5x2=10
(i) Conduct Rules
(ii) Suspension
(iii) Productivity Linked Bonus
(iv) Permanent Negotiating Machinery
(v) Final settlement on superannuation
(vi) Service Record

7. a) What are the various demands of grants for revenue? Which two grants are most relevant for Engineering Department? — 6

b) Explain different methods of tendering for Works Contracts. — 9

8. a) List the works requiring the sanction of Commissioner of Railway Safety. — 6

b) Write 6 important precautions to be taken while carrying out in-situ AT Welding. — 6

c) What is the frequency of OMS recording and classification of track quality based on OMS results for B.G. Track having maximum permissible speed of 110 kmph? — 3

9. Write short notes on the following as per official language rules, 1976- — 3x5
a) Correspondence from an office of Central Govt to an office of State Govt. situated in 'B' region
b) Proficiency in Hindi
c) What are the States and Union Territories in Region 'B'

OBJECTIVE QUESTIONS
PART 'B'

1. **Attempt all questions.**
2. **Each question carries 2 marks.**

1) Track Recording car does not measure
a) Gauge
b) Cross Level

c) Twist
d) Unevenness

2. The maximum permissible cant gradient on a transition curve on B.G track is
a) 1 in 280
b) 1 in 360
c) 1 in 540
d) 1 in 720

3. Which of the following is not a Temporary Engineering Fixed Signal
a) Banner Flag
b) Caution Indicator
c) Stop Indicator
d) T/P Board

4. Which of the following probes is not used in through testing of welds by SRT/DRT
a) 45°
b) 70°
c) 0°
d) 70° NGF

5. 'IMR' defective rail should be replaced by a good rail within
a) 1 day
b) 3 days
c) 5 days
d) 7 days

6. Which of the following is not minimum essential amenity at 'F' class station
a) Waiting hall
b) Platform shelter
c) Urinal
d) Drinking water

7. The frequency of USFD testing of rails for a B.G Route with 15 annual GMT is
a) 2 years
b) 12 months
c) 9 months
d) 6 months

8. The service life of 60 kg 90 UTS rails on GMT Criterion is
a) 525 GMT
b) 650 GMT
c) 800 GMT
d) 925 GMT

9. Value of Twist on 3.6m base for 'C' category track on B.G. Route is
a) 7.5 – 10 mm
b) 10 – 12.5 mm
c) 12.5 – 15 mm
d) none of these

10. Stipulated progress of deep screening by BCM machine per effective hour of working is _____ m.

11. The maximum value of permitted Cant excess on Curve for B.G track is _____mm.

12. The work of provision of washable apron on platform is chargeable to Plan Head _____.

13. The power of General Manager to sanction traffic facility work in Plan Head 16 is Rs._____.

14. The power of acceptance of an open tender for a JAG officer working in the division is _____.

15. The maximum permissible lateral wear for a 52Kg rail laid on a curve in Group 'A' route is _____mm.

16. The frequency of running track recording car on Group 'A' & 'B' Routes on BG track is once in _____ months.

17. Check rail is provided on a Curve of _____degree or more as per SOD.

18. The maximum distance of passenger platform coping from centre of nearest track is _____mm.

19. The maximum permitted gradient in station yards for new works is _____.

20. The minimum vertical clearance for a small bridge in normal circumstances is _____mm.

21. The value of performance guarantee to be deposited by a successful bidder is _____ of contract value.

22. The height of a new 60 Kg rail is _____mm.

23. The frequency of foot plate inspection by In-charge SSE (P.Way) is once in _____.

24. Vertical clearance for FOB in AC electrified section is _____.

25. Clause _____ of current GCC deals with extension of time in Works Contracts.

26. The minimum radius of curve on which LWR can be laid in general is _____

27. Hot weather patrolling is to be carried out on MBC Sleeper track with sleeper density 1660 nos per km when rail temperature exceeds _____.

28. Cross slope of formation for laying new track is _____.

29. Additional Clearance to be provided on platforms located on the outside of a Curve is _____.

30. The gap between top edge of the tamping blade and the bottom edge of MBC Sleeper in closed position of the tamping tools should be ____ to ____mm.

-OoO-

CENTRAL RAILWAY
WRITTEN EXAMINATION FOR GROUP 'B' AEN (70%) (SUPPLEMENTARY)

TIME ALLOWED: 3.00 HOURS
DATE: 16.10.2016.
150
MAXIMUM MARKS:

INSTRUCTIONS

1. CANDIDATE NOT TO WRITE HIS NAME, ROLL NUMBER, HALL NUMBER, ANYTHING UNRELATED TO THE QUESTION TO BE ANSWERED OR PUT HIS SIGNATURE, ANY IDENTIFICATION MARKS, ANYWHERE INSIDE THE ANSWER BOOK AND EXTRA SHEET EXCEPT ON THE SHEET AND AT THE SPACE PROVIDED FOR THE SAME, FAILING WHICH THE CANDIDATURE WILL BE CANCELLED.
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SUBJECTIVE QUESTIONS

Sample Answer Key

Part - A

Q 1. a. **You are posted as an AEN in a section having BG track on main line and are inspecting an LWR during trolley inspection. Write down the important point of inspection to ascertain the behavior of LWR and the inferences drawn from them during the inspection for further follow up action.**

Ans: **While trolley inspection I will see that,**

1. Whether Ballast available in track is as per the standard ballast profile
   If sufficient ballast is not available it will provide least longitudinal as well as lateral resistance and may become probable spot for buckling
2. Whether all the fitting such as liner, ERC's grove rubber pad, etc. of the track are intact, at proper place are there or not.

If there is a physical impression of displacement of the relative position of the liner and rail, it indicate that ERC's may not be giving required toe load and may result into the situation that longitudinal rail stresses may not be transferred to the formation through ballast and behavior of LWR may not be proper

3. Whether PSC sleepers are broken, notched or not
If the PSC sleepers are broken/notched it will not give proper grip to the rail in transferring the longitudinal rail stresses to the formation through ballast even if the ERC & liner are capable of giving proper toe load.

4. Whether liner are corroded, broken or not
If liners are corroded/ broken it will result into the lowering of the toe load that is being transferred on the rail foot.

5. Whether there is any open joint in LWR or not
No fish plated joint is permitted in LWR therefore all open joints shall be welded and Replacement of all insulated joints by glued joints have been done

6. Locations over which LWR/CWR cannot be carried through on account of constraints such as bridges having substructure/superstructure in a distressed condition, curves, gradients, points and crossings, unstable formation etc. have been isolated from the remaining portion or not by providing SEJs at either end of such locations.

7. Whether the measuring reference mark have been erected on both side of the track at center of the SEJ's
If the reference pillar/mark is not erected / fixed properly it will lead in wrong measurement of the gap at SEJ's and will lead in wrong assessment of the behavior of the LWR.

8. I will measure the prevailing rail temperature and the gap between the tongue rail and stock rail at SEJ at the prevailing temperature and will see that whether the gap is as per the prescribed in LWR manual.
If the gap at the SEJ is zero or SEJ is jammed or if the gap is very high i.e. more than permissible by LWR manual it indicate the excessive movement of SEJ and need immediate action of distressing.

9. I will see that whether there is any alignment defects / kinks at joints defects seen in the track. Will also check that, when the last distressing of the track is done? And after distressing of LWR whether local distressing has been done during welding of joint in LWR or not?
If kinks / Alignment defects noticed in LWR it is an indication that lot of stress in LWR are accumulating and need immediate distressing of the LWR

10. Whether ballast section is properly maintained, especially on pedestrian & cattle crossings, curves and approaches to level crossings and bridges. Cess level should be correctly maintained or not

Q 1 b. What are the criteria for realignment of curve as per IRPWM?

Ans: Criteria for realignment of a curve (as per IRPWM para 421):

(1) When as a result of inspection by trolley or from the foot plate of locomotive or by carriage or as a result of Track Recording carried out, the running on a curve is found to be unsatisfactory the curve should be realigned.

(2) The running over a curve depends not only on the difference between the actual versine and the designed versine but also on the station to station variation of the actual versine values. This is because it is the station to station variation of versine which determines the rate of change of lateral acceleration, on which depends the riding comfort. Service limit for station to station versine variation for 3 speed group viz. 120 Km/h and above, below 120 Km/h and upto 80 Km/h and below 80 Km/h and upto 50 Km/h, should be considered as tabulated below:

Speed Range	Limits of station to station Variation (mm)
120 Kmph and above	10 mm or 25% of the average versine on circular curve whichever is more
Below 120 Kmph and upto 80 Kmph	15 mm or 25% of the average versine on circular curve whichever is more
Below 80 Kmph and upto 50 Kmph	40 mm or 25% of the average versine on circular curve whichever is more

In case exceedance of the above limit is observed during an inspection, local adjustments may be resorted to in cases where the variation of versines between adjacent stations is only at few isolated locations, at the earliest possible. If more than 20% of the stations are having versine variation above the limits prescribed, complete realignment of the curve should be planned within a month.

Q 2. Write short Notes on

a) Pre tamping attention as per IRPWM

Ans: As per IRPWM **para 226(3)** Pre-tamping attention –
To achieve good results the P.W.I. should carry out the following preparatory work before taking up the tamping:
(a) Ballasting where there is shortage of ballast.
(b) Heaping up of ballast in the tamping zone, to ensure effective packing.
(c) Making up of low cess.
(d) Cleaning of pumping joints and providing additional clean ballast, where necessary.
(e) Attending to Hogged joints before tamping.
(f) Tightening of all fittings and fastenings like fish bolts and keys, splitting of cotters, and replacement of worn out fittings.
(g) Renewing broken and damaged sleepers.

(h) Squaring of sleepers and spacing adjustment; re-gauging to be done as necessary.
(i) Adjusting creep and expansion gap in rails
(j) Examination of rails for cracks etc.
(k) Realigning of curves which are badly out of alignment.
(l) Clearing of ballast on sleepers to make them visible to the operator.
(m) All obstructions such as signal rods, cables, pipes, level crossing check rails, etc., likely to be damaged by the tampers should be clearly marked and made known to the tamping operator before he starts work. Tight overhead clearance should also be brought to his notice; the beginning and end of transitions should be marked. Super elevation should be marked on every second sleeper so that it can guide the operator for levelling up correctly

b) Criteria for Replacement of ERC as per IRPWM

Ans: As per the IRPWM para 1411 (4) a, The Replacement of ERC shall be based on the toe load of the ERCs. Toe load of elastic rail clip should be measured on 1% of ERCs randomly on every 100 sleepers (all 4 ERCs to be measured on one sleeper). And if 20% or more of sample size records toe load below 400 Kg which is to be confirmed by 5% sample size, proposal of through fastening renewal should be initiated. Also the provisions given above are only for guidance of Railways. The Railways on the basis of the overall condition of track, pattern of traffic and the required level of maintenance should undertake the large-scale replacement of the fastening.

c) Items of annual bridge inspection by PWI

Ans: (As per the para 1101 of the IRBM)
Different Railways follow different practices in regard to the responsibility of annual inspection and maintenance of bridges. The inspection of the items in para (a) below should be carried out by Inspector of Works or P. Way Inspector as per the practice or as approved by the Chief Engineer of the Railway.

a) **By Way/Works Inspectors:** Once a year during the prescribed months prior to the monsoon season, the Inspector shall inspect every bridge including road under/ over bridges in his section.

The inspection shall cover the following:

i) Foundations and substructures,
ii) Protective works
iii) Superstructures of all RCC, PSC slab and masonry bridges
iv) Detailed inspection of steel works of girders less than 12.2 m clear span once in five years, about 20% being done each year,
v) General condition of superstructure of all other types of bridges and their bearings,
vi) Obstruction of waterways.

b) **Specifically by Permanent Way Inspectors**: Once a year during the prescribed months prior to monsoon, the Permanent Way Inspector shall inspect the following:
i) The track and approaches of all the bridges,

ii) Run off frames if any and foot path on bridges.

d) Major and Important Bridges

Ans: (Para 1103 of IRBM)

Bridges are classified based on their water way into three different categories

1. **Important bridges** : are those having a linear waterway of 300 meters or a total waterway of 1000 Sqm or more and those classified as important by the Chief Engineer / Chief Bridge Engineer, depending on considerations such as depth of waterway, extent of river training works and maintenance problems.
2. **Major bridge:** is one which has a total water way of 18 linear metres or more or which has a clear opening of 12 linear metres or more in any one span.

Bridges which do not fall in these classifications are termed as minor bridges.

The Assistant Engineer should carry out the annual bridge inspection of major and important bridges regularly and record his remarks in bridge inspection register and assign each bridge with a unique rating number (URN).

e) Action to be taken in case of DFWR

Ans: **(As per the USFD manual para 8.14)**

In case of DFWR following action will be taken:

a) SSE/JE (P.Way) USFD shall impose speed restriction of 30kmph or stricter immediately and communicate to sectional SSE/JE about the flaw location who shall ensure the following:-

b) Protection of DFWR weld by joggled fish plates using minimum two tight clamps immediately. SR of 30 Kmph can be relaxed to normal after providing joggled fish plates with two far end tight bolts one on each side with champhering of holes. The DFWR weld shall be replaced within three months of detection.

Adequate traffic block should be granted for removal of DFWR welds. In case of non-removal within three months, a speed restriction of 75 kmph for loaded goods train and 100 kmph for passenger train should be imposed.

Q 3 a) Write down the schedule of inspection of AEN for the following

Ans:

(CS 132 of para 107 of IRPWM)

1. **Trolley Inspection** - The entire sub-division should be inspected by trolley once in two months on pro-rata basis systematically covering from one end to other end of his jurisdiction, as much inspection as possible being done by push trolley. Unimportant branch lines having less than 2 GMT traffic should be inspected once in 3 months. On sections having multiple lines running closely parallel, trolley inspection may be carried out on any of the line

2. **Level Crossing :**

(CS 132 of para 107 of IRPWM)

Inspection of Level Crossings - AEN should inspect all the manned level crossings once in six months. He should examine the Gatemen's knowledge of rules, check the equipment, track, road approaches and all other safety aspects.

3. BCM Machine :

(Para 5.3.2 & 5.3.3 of IR Track machine manual)

For Track machine AEN: Once in fortnight
For Open line AEN : Once in a month

4. Curves :

(CS 132 of para 107 of IRPWM)

The Assistant Engineer shall check at least one curve in each SSE/P.Way's jurisdiction every quarter.

5. Points and crossings :

(CS 132 of para 107 of IRPWM)

He shall inspect once a year all points and crossings on passenger lines and 10 percent of the points and crossings on other lines.

6. Water installations :

(Para 2538(C) of IRWWM)

Once in three month

7. Bridges :

All Bridge including Road over / under Bridges: Once in a year after monsoon

Q 3 b) **List down the Minor and Major penalties as per D & A Rules**

Ans: **Minor Penalties –**

(i) Censure;
(ii) Withholding of his promotion for a specified period;
(iii) Recovery from his pay of the whole or part of any pecuniary loss caused by him to the Government or Railway Administration by negligence or breach of orders;
(iii-a) Withholding of the Privilege Passes or Privilege Ticket Orders or both;

(iii-b) Reduction to a lower stage in the time scale of pay by one stage for a period not exceeding three years, without cumulative effect and not adversely affecting his pension;
(iv) Withholding of increments of pay for a specified period with further directions as to whether on the expiry of such period this will or will not have the effect of postponing the future increments of his pay;

Major Penalties –

(v) Save as provided for in clause (iii-b) reduction to a lower stage in the time-scale of pay for a specified period, with further directions as to whether on the expiry of such period, the reduction will or will not have the effect of postponing the future increments of his pay;
(vi) Reduction to a lower time scale of pay, grade, post, or service, with or without further directions regarding conditions of restoration to the grade or post or service from which the Railway servant was reduced and his seniority and pay on such restoration to that grade, post or service;
(vii) Compulsory retirement;
(viii) Removal from service which shall not be a disqualification for future employment under the Government or Railway Administration;
(ix) Dismissal from service which shall ordinarily be a disqualification for future employment under the Government or Railway Administration:

Q 4. Write short note on

a) Track laying Equipment (Commonly known as PQRS)

Ans: It is essentially a semi-mechanised system of track renewal. PQRS consists of self propelled cranes which move on an auxiliary track of 3400 mm gauge having the same centre line as that of track to be relayed. These portal cranes are capable of self loading and unloading from BFRs.

The PQRS **machine** generally have the **following components**

i) Side Frames:-The machine contains two vertical side frames that house two vertical sliding frames.
ii) Bridge:- Sliding frames are joined together with horizontal cross frame known as bridge. The Motive Power, hydraulic and electrical assemblies are installed over the bridge. The whole bridge is raised/lowered to facilitate lifting of panels.
iii) Sleeper Gripper:- On the underside of the bridge, grippers to pickup sleepers is provided. Gripping of sleepers by its end is done by two angles welded to the grippers.
iv) Rail Clamps: - On the end side of the frame scissors type clamps are provided to hold the rails/panels.
(v) Turn Table: - To facilitate turning of portal cranes for placing it on the BFR and off tracking in mid section, a turntable is provided. On the BFR a wooden platform is provided to support the turn table.

Earlier, Portal cranes of model PQRS 2000-I has capacity of lifting maximum 5 t load. Maximum length of only 9 meter of prefabricated panel with PRC sleepers can be lifted by one portal crane. The later model PQRS 201 has capacity of lifting upto to 9 t. One such portal crane can lift 13 m long prefabricated panel with PRC sleepers.

Briefly the **sequence of operation** for relaying with PQRS is as under:

- Panels are fabricated with new sleepers and service rails in a Base Depot. These panels are loaded on BFRs in 3 or 4 layers.
- The existing rails in track are cut in lengths of 13 m.
- Auxiliary track is laid to proper line and level with the new rail panels, if rail renewal is also to be carried out as part of track renewal. Otherwise, service rails are used for making auxiliary track.
- PQRS rake is brought to site of relaying after getting proper traffic and OHE block.
- Following three methods of laying of new panels are used depending upon site conditions:
  - Pulling the PQRS rake
  - Pushing the PQRS rake
  - Parting the PQRS rake
- Portals are unloaded on the Auxiliary track.
- Old panels are removed and loaded on PQRS rake, ballast bed is scarified manually and new panels are laid at site by using portal cranes.
- Proper ramp is provided at the beginning and at the end of the day's work

Generally to operate the PQRS machine and to get the desirable progress the traffic block of minimum 3 hours is desirable.

b) Water Recycling Plant

Ans: **Reclaimed water** or **recycled water**, is former wastewater (sewage) that is treated to remove solids and impurities, and used in sustainable landscaping irrigation, to recharge groundwater aquifers, to meet commercial and industrial water needs, and for drinking. The purpose of these processes is water conservation and sustainability, rather than discharging the treated water to surface waters such as rivers and oceans. In some cases, recycled water can be used for streamflow augmentation to benefit ecosystems and improve aesthetics.

The definition of reclaimed water is that, the water that is used more than one time before it passes back into the natural water cycle. Scientifically-proven advances in water technology allow communities to reuse water for many different purposes, including industrial, irrigation, and drinking. The water is treated differently depending upon the source and use of the water and how it gets delivered.

Terms "recycled water" or "reclaimed water" typically mean wastewater sent from a home or business through a pipeline system to a treatment facility, where it is treated to a level consistent with its intended use. The water is then routed directly to a recycled water system for uses such as irrigation or industrial cooling.

There are examples of communities that have safely used recycled water for many irrigation in parks

In spite of quite simple methods that incorporate the principles of water-sensitive urban design (WSUD) for easy recovery of storm water runoff, there remains a common perception that reclaimed water must involve sophisticated and technically complex treatment systems, attempting to recover the most complex and degraded types of sewage. As this effort is driven by sustainability factors, this type of implementation should inherently be associated with point source solutions, where it is most economical to achieve the expected outcomes. Harvesting of storm water or rainwater can be an extremely simple to comparatively complex, as well as energy and chemical intensive, recovery of more contaminated sewage.

e) *Zonal Contract*

Ans: When two or more persons have a common intention communicated to each other to create some obligation between them there is said to be an agreement. "An agreement" which is enforceable by law is a "Contract". According to Section 10 of the Indian Contract Act, 1872 only those agreements are enforceable by law which are made by the free consent of the parties competent to contract, for a lawful consideration and with a lawful object, and are not expressly declared to be void. This is subject to any special law according to which a contract should be in writing and attested by witnesses.
When such contracts are made for the works of ordinary repairs and maintenance and others works of petty nature in a particular zone, or area, such contracts are called the zonal contract

It is often advantageous to allot all minor works and all works of repairs and maintenance in a particular zone for a definite period to one contractor. It may be likewise advantageous to make this contractor who can be called a zonal contractor responsible for the conveyance or supply of engineering materials as and when required, in a particular zone during a specified period. The Executive Officers of the Engineering Department should, therefore, take steps to select suitable contractors for zone contracts which will include-

- (i) New Works, additions and alterations to existing structures, special repair works and supply of building materials subject to the contract value of each such work not exceeding Rs.2 lakh.

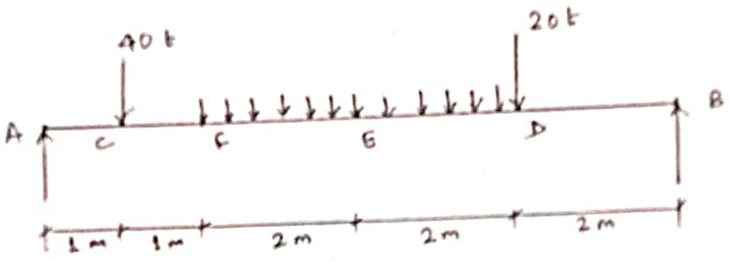
(Authority: Railway Board letter No.2001/CE-I/CT/17 dated 22-11-02)

- (ii) All ordinary repairs and maintenance works; and
- (iii) Conveyance of materials e.g. bricks, lime, sand etc. which are likely to be required in a zone during the year.

The zonal contracts shall be for the period from 1st of July to 30th of June. The contracts for these works or supplies should as a rule, be on a yearly basis. If, however, any special advantage, such as more favourable rate is likely to be secured by giving out contracts for longer periods (as in the case of manufacture or supply of bricks) contracts for more than

a year may, with the concurrence of the Accounts Officer, be entered into. It should be ensured that as far as practicable, no work orders are approved against the old contract after the opening of the new tenders and all works of the old contract are completed by the end of June. Exceptional cases may, however, be dealt on their merits with the approval of the competent authority, taking into account all relevant facts including such information as is available regarding the trend in rates.

Q 5. A simply supported beam 'AB' of 8 m length with E as its midpoint is loaded as given below:



Calculate:-

1. **The Reaction at support A & B**
2. **Bending moment at 'D'**
3. **Bending moment at Midpoint of Beam**
4. **Draw Force Diagram**

Ans:

1. Reaction at Support A & B

Reaction at B

$Rb \times 8 + 40 \times 1 + (10 \times 4) \times 4 + 20 \times 6 = 00$

$Rb = 320/8$

$Rb = 40$ t

And

Reaction at A

$Ra + Rb = 40 + 20 + (10 \times 4)$

$Ra = 100 - 40 = 60$

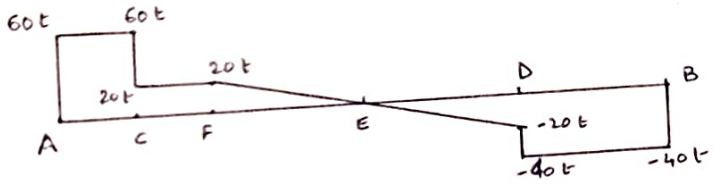
$Ra = 60$ t

2. **Bending Moment at D**
   Md = Rb x 2
   Md = 40 x 2 = **80 t-m**

   Or

   Ra x 6 – (40 x 5) – (10 x 4 x 2)
   60 x 6 – 200 – 80
   360-280 = **80 t-m**
3. **Bending moment at Mid-Point**

   = 60 x 4 – 40 x 3 – 10 x 2 x 1
   =100 t-m
4. **Shear force diagram**



Q 6. a) Explain the concept of negative cant

Ans: Cant or super elevation is the amount by which one rail is raised above the other rail. It is positive when the outer rail on a curved track is raised above inner rail and is **negative** when the inner rail on a curved track is raised above the outer rail.

On curves branch line meets the main line at certain places. The outer rail of main line on curves meet the inner rail of branch line. As the super elevation is provided on the main line, the outer rail of main line is at higher level than the inner rail. The inner rail of branch line will have to be kept at higher level than inner rail. But here as the outer rail in branch line is at lower level than inner rail, the super elevation is known as 'Negative super elevation' or 'Negative cant'

Q 6. b) Write short note on any five of the following

(i) Conduct rules

Ans: Conduct Rule

1. Railway Services (Conduct) Rules 1966 applicable to Railway employee and are revised based on recommendations of Santhanam Committee.
2. Prescribe standards of conduct expected of a Railway employee and members of his family.

Guiding Rules

- Every Railway employee shall at all times-

(i) Maintain absolute integrity;
(ii) maintain devotion to duty; and
(iii) do nothing which is unbecoming of a Railway employee.

- Every Railway employee holding a supervisory post shall take all possible steps to ensure the integrity and devotion to duty of all Railway employees for the time being under his control and authority,
- No Railway employee shall, in the performance of his official duties, or in the exercise of powers conferred on him, act otherwise than in his best judgment except when he is acting under the direction of his official superior.
- The direction of the official superior shall ordinarily be in writing, and where the issue of oral direction becomes unavoidable, the official superior shall confirm it in writing immediately thereafter.
- A Railway employee who has received oral direction from his official superior, shall seek confirmation of the same in writing as early as possible, whereupon it shall be the duty of the official superior to confirm the direction in writing.

Promptness and Courtesy

- No Railway employee shall -
(a) in the performance of his official duties, act in a discourteous manner;
(b) in his official dealings with the public or otherwise adopt dilatory tactics or wilfully cause delays in disposal of the work assigned to him.

Observance of Government's policies

- Every Railway employee shall, at all times
(i) act in accordance with the Government's policies regarding age of marriage, preservation of environment, protection of wildlife and cultural heritage;
(ii) observe the Government's policies regarding prevention of crime against women.

Gifts

- Include free transport, boarding/lodging, Dowry etc.
- They may be accepted from near relatives or personnel friends having no official dealings subject to the following limits.

Trade and Business

- Not to raise subscription.
- Not to secure job for relations.
- Group A employees should not permit their sons to work in firms having official relations with them
- Not to engage in any trade etc.
- Not to engage in social/charitable work.
- Not to borrow/lend where official dealings are there.

Demonstrations/Associations

- No Railway employee shall join an association or Union or participate in any demonstration the objects or activities of which are prejudicial to the interest of the sovereignty and integrity of India or public order or morality.
- Not to allow in their family members to participate in any movement/activity subversive of Government, established by law.
- Railway employee should not accept complimentary/valedictory address except on transfer etc.
- Officers are not permitted to join trade unions.

Indebtedness

- Avoid habitual indebtedness.
- Report insolvency proceedings to Government.

Ensure impartiality

- Do not take part in in politics/elections.
- Voting in an election is not prohibited.
- Not to criticise Government.

Drinking

- Prohibited in Dry areas, public places, on duty or in excess.
- Marriage when a spouse is living. Permitted if permitted by personal law, Government approval is needed.
- Politics or other influence should not be used.
- Should not neglect wife or family in an unbecoming manner.

- Railway employee responsible for delay in disposal of matter deliberately will be liable to Disciplinary action.
- No Railway employee shall employ child below 14 years old.

Filing Returns

- Initial All except Group D employees.
- Annual Group A , B & Group C employees with GP 4600 or above.
- Special returns – may be asked anytime.
- No transaction with foreigners without prior permission.

Immovable property

- Previous sanction is necessary if not purchased through a reputed dealer. Otherwise previous knowledge of Government is enough.

Movable Property

- Must be reported if the value exceeds Rs.20000 for Group A & B and Rs. 15000 for others.
- Previous sanction is necessary if official dealings are involved.

(ii) Suspension

Ans: Suspension, in the context of disciplinary proceedings, may be defined as temporary withdrawal of duties from a government servant, pending inquiry into his/ her conduct, with simultaneous reduction in pay and withdrawal of some rights/ privileges. Suspension, though not a penalty, is to be resorted to sparingly. Whenever a Govt. Servant is placed under suspension not only does the Govt. lose his services but also pays him for doing no work. It also has a stigma attached to it. Therefore the decision to place a Govt. servant under suspension must be a carefully considered decision and each case would need to be considered on merits. A Govt. servant may be placed under suspension, in the following circumstances:

1. (a) Where, a disciplinary proceeding against him is contemplated or is pending:

Or

(b) Where, in the opinion of the competent authority, he has engaged himself in activities prejudicial to the interest of the security of the state:

Or

(c) Where, a case against him in respect of any criminal offence is under investigation, inquiry or trial.

(2) A Railway servant shall be deemed to have been placed under suspension by an order of the competent authority- (a) with effect from the date of his detention, if he is detained in custody whether on a criminal charge or otherwise, for a period exceeding forty-eight hours. (b) With effect from the date of his conviction, if in the event of a conviction for an offence, he is sentenced to a term of imprisonment exceeding forty-eight hours and is not forthwith dismissed or removed or compulsorily retired consequent to such conviction.

(iii) Productivity Linked Bonus (PLB)

Ans: The payment of Bonus to persons employed in certain establishments of the basis of profits or on the basis of production or productivity and for matters connected therewith has been assured by the payment of Bonus Act 1965

It extends to the whole of India and is applicable to every factory and to every other establishment where 20 or more workmen are employed on any day during an accounting year

Eligibility for Bonus

Every employee receiving salary or wages upto RS. 3,500 p.m. and engaged in any kind of work whether skilled, unskilled, managerial, supervisory etc. is entitled to bonus for every accounting year if he has worked for at least 30 working days in that year.

However employees of L.I.C., Universities and Educational institutions, Hospitals, Chamber of Commerce, R.B.I., IFCI, U.T.I. Social Welfare institutions are not entitled to bonus under this Act.

DISQUALIFICATION FOR BONUS

Notwithstanding anything contained in the act, an employee shall be disqualified from receiving bonus, if he is dismissed from service for fraud or riotous or violent behavior while in the premises of the establishment or theft, misappropriation or sabotage of any property of the establishment.

Minimum/Maximum Bonus Payable

MINIMUM BONUS

The minimum bonus which an employer is required to pay even if he suffers losses during the accounting year or there is no allocable surplus is 8.33 % of the salary or wages during the accounting year, or

Rs. 100 in case of employees above 15 years and Rs 60 in case of employees below 15 years, at the beginning of the accounting year, Whichever is higher

MAXIMUM BONUS

If in an accounting year, the allocable surplus, calculated after taking into account the amount 'set on' or the amount 'set of' exceeds the minimum bonus, the employer should pay bonus in proportion to the salary or wages earned by the employee in that accounting year subject to a maximum of 20% of such salary or wages. However in case of Railway employee Railway Ministry decides and declare about the maximum bonus to be paid to employee every year.

TIME LIMIT FOR PAYMENT

The bonus should be paid in cash within 8 months from the close of the accounting year or within one month from the date of enforcement of the award or coming into operation of a settlement following an industrial dispute regarding payment of bonus.

However if there is sufficient cause extension may be applied for.

(iv) Permanent Negotiating Machinery (PNM)

Ans: It was founded by shri. V.V.Giri in the year 1951 when Shri. Lal Bahadur Shastri was the Railway minister of India.

Object:

With a view to maintain the contact with organized labor and to settle differences and disputes arising between organized labor and Railway administration a machinery has been setup and is called as permanent negotiation machinery.

PNM was on three-tier basis

1. The Railway level
2. The Railway Board level
3. The Ad-hoc tribunal level

1. **The Railway Level:**

At Railway level there are further two levels

i) The divisional level/ store depot level/ workshop level

ii) The Zonal Railway level

i) The divisional level/ store depot level/ workshop level:

a) DRM/ Dy. COS/ CWM works as its chairman and the Sr. DPO/ DPO/ SPO/ APO works as its sectary.

b) Subject agenda must be circulated one month in advance. Out of agenda items may also be discussed with permission of chairman and chairman can discussed any item out of agenda.

c) Meeting: once in two month separately with representatives of NRMU & CRMS.

d) Matters discussed which comes within the powers of DRM/ Dy. COS/ CWN.

ii) Zonal Railway Levels:

a) Chairman- GM, Secretary - CPO.

b) Subject agenda must be circulated one month in advance. Out of agenda items may also be discussed with permission of chairman and chairman can discussed any item out of agenda.

c) Meeting: once in three months separately with representatives of NRMU & CRMS

d) Matters discussed which comes within the powers of GM or which could not be settled at the divisional level.

2. The Railway Board Level:

a) Chairman- Member staff

Secretary - Dy. Director Establishment

b) Subject agenda must be circulated one month in advance. Out of agenda items may also be discussed with permission of chairman and chairman can discussed any item out of agenda

c) Meeting: once in three months separately with representatives of NFIR & AIRF.

d) Matters discussed which comes within the powers of Railway Board or which could not be settled at the Zonal Railway level.

3. Ad-hoc Tribunal Level:

a) The matter of important nature on which no agreement is reached up to the Railway Board level.

b) Chairman would be retired judge of High court or Supreme Court having his own staff, and equal representatives of labor and administration.

c) The award given by the tribunal is not binding. The government may accept, reject or modify the award of the tribunal.

d) The matter settled by the tribunal or decision of tribunal once accepted by the government shall not be opened by unions for a period of two years.

e) Where the government reject or modify the decision of the tribunal then the same items may be raised at the end of the year by the union.

(v) Final Settlement on superannuation

Ans: A Government employee at the time of retirement after completing the eligible service shall get all retirement benefits due to him. These benefits includes

1. Pension

The minimum eligibility period for receipt of pension is 10 years. A Central Government servant retiring in accordance with the Pension Rules is entitled to receive superannuation pension on completion of at least 10 years of qualifying service.

In the case of Family Pension the widow is eligible to receive pension on death of her spouse after completion of one year of continuous service or before even completion of one year if the Government servant had been examined by the appropriate Medical Authority and declared fit for Government service.

2. Commutation of Pension

A Central Government servant has an option to commute a portion of pension, not exceeding 40% of it, into a lump sum payment with effect from 1.1.1996. No medical examination is required if the option is exercised within one year of retirement. If the option is exercised after expiry of one year, he/she will have to undergo medical examination by the specified competent authority.

3. Death/Retirement Gratuity

1. Retirement Gratuity
This is payable to the retiring Government servant. A minimum of 5 years qualifying service and eligibility to receive service gratuity/pension is essential to get this one time lump sum benefit. Retirement gratuity is calculated @ 1/4th of a month's Basic Pay plus Dearness Allowance drawn before retirement for each completed six monthly period of qualifying service. There is no minimum limit for the amount of gratuity. The retirement

gratuity payable is 16½ times the Basic Pay, subject to a maximum of Rs. 10 lakhs.

2. Death Gratuity
This is a one-time lump sum benefit payable to the widow/widower or the nominee of a permanent or a quasi-permanent or a temporary Government servant, including CPF beneficiaries, dying in harness

4. Service Gratuity
A retiring Government servant will be entitled to receive service gratuity (and not pension) if total qualifying service is less than 10 years. Admissible amount is half month's basic pay last drawn for each completed 6 monthly period of qualifying service.

5. General Provident Fund and Incentives

6. Contributory Provident Fund

7. Leave Encashment
Encashment of leave is a benefit granted under the CCS (Leave) Rules and not a pensionary benefit. Encashment of Earned Leave/Half Pay Leave standing at the credit of the retiring Government servant is admissible on the date of retirement subject to a maximum of 300 days.

Central Government Employees Group Insurance Scheme

(vi) Service Record

Ans: A Service book of Government Employee is maintained for every employee from the date of his first appointment. Every step in official life is recorded in it. All the pensionary benefits are sanctioned mainly on the basis of entries in the Service Book. Hence, it plays a prominent role in timely settlement of pension cases and proper maintenance of Service Book eliminate delay in sanctioning and payment of pensionary benefits.

The Service book of Government Employee consists of 2 volumes.

VOLUME-I: Volume I of the Service Book is meant for recording the bio-data of the employees and various events of his service.

VOLUME-II: The purpose of Volume-II of the Service Book is to place different types of nominees, declarations, pay fixation memos etc.

The Service book of Government Employee contains following information of an employee

1. Appointment and joining.
2. Grant of increment or withholding of increment.
3. Grant of Selection Grade.
4. Crossing of efficiency bar.
5. Fixation of pay.
6. Grant of leave.
7. Deputation/ transfer
8. Suspension or interruption in service along with details of the period thereof.
9. Reinstatement.
10. Resignation
11. Termination of service along with its reasons.
12. Promotion.
13. Compulsory / Premature/ Voluntary Retirement.
14. Removal or dismissal from service.
15. Reversion.
16. Reduction in rank or pay along with the precise reasons thereof viz. Whether reduction is on account of inefficiency or reduction in establishment or abolition of the post held by the employee.
17. Retirement on superannuation.

Q.7. a) What are the various demands of grants for revenue? Which two are most relevant for engineering department?

Ans: INDIAN RAILWAY FINANCE CODE VOLUME • II • APPENDICES

APPENDIX I *(See Paragraph 701)*

CLASSIFICATION OF REVENUE EXPENDITURE

EXPLANATORY MEMORANDUM

Sr. No.	Abstract	Particulars
(1)	Abstract 03 'A'-	General Superintendence and Services.
(2)	Abstract 04 'B'-	Repairs and Maintenance of Permanent Way and Works.
(3)	Abstract 05 'C'-	Repairs and Maintenance of Motive Power.
(4)	Abstract 06 'D'-	Repairs and Maintenance of Carriages and Wagons.

(5)	Abstract 07 'E'-	Repairs and Maintenance of Plant and Equipment.
(6)	Abstract 08 'F'-	Operating Expenses-Rolling Stock and Equipment.
(7)	Abstract 09 'G'-	Operating Expenses-Traffic
(8)	Abstract 10 'H'-	Operating Expenses-Fuel.
(9)	Abstract 11 'J'-	Staff Welfare and Amenities.
(10)	Abstract 12 'K'-	Miscellaneous Working Expenses.
(11)	Abstract 13 'L'-	Provident Fund, Pension and other retirement benefits.
(12)	Abstract 14 'M'-	Appropriation to Funds
(13)	Abstract 12 'N'-	Suspense.
(14)	Abstract " O"	Government Contribution for Defined Contribution Pension Scheme

The two grants are most relevant for engineering department are

1) 04 (B) Repairs and Maintenance of Permanent Way and Works.
2) 11 (J) Staff Welfare and Amenities.

Q.7. b) Explain the various methods of tendering for works contract

Ans: In order to accomplish any work, tenders can be called in various modes, which may be selected as per need of the hour. The tenders may be open/global/advertised, limited or single. The details are as under.

(a) **Open/Advertised/Global Tenders**: These modes are open to all eligible parties and are advertised in national and local newspapers of repute for informing all concerned that the particular work is to be done on a contract basis. Normally, this mode is adopted for high value tenders, because the cost of advertisement is quite high and the economy expected from publicity should be always more than the expenditure likely to be incurred on publication. Besides, the stipulated notice period has to be given, which also entails certain inevitable delay. It has been noticed that tender notices are sometimes advertised indiscriminately without any regard to the economics of the case, causing financial loss to

Indian Railways. The newspapers in which such notices are to be published should be selected very carefully, taking into account their circulation to the likely tenderers. While releasing the advertisements, one should be careful to see that the newspapers are of repute and are widely circulated.

(b) **Limited tenders**: Under this system, every railway unit is supposed to have an approved list of contractors/suppliers/manufactures. Tender forms are sent to only approved parties, for which, they are short-listed and registered after screening by a committee available at the divisional and headquarters level. An accounts officer is always one member of the committee. The financial position and past experience of the parties is examined before registration. After due verification of all the credentials submitted by them, they may be registered under various categories based the on value of work. They are required to submit standing earnest money with railways and are not required to submit earnest money with each and every tender separately. Selection of the party is comparatively easier in this system because the tender committee has to concentrate only on the rate portion, as the credentials are already verified. However, the capacity of the tenderer has to be kept in view.

(c) **Single tender**: This system is adopted only when the work is of petty nature and going for limited or open tender will be economically unviable, or the work is of special nature and there is only one party, who can do it, or the work is to be completed very urgently and there is no time for tendering. Normally the rates are higher than other modes and as such this should be an exception rather than rule. Also this requires higher sanction and typically, higher level tender committee, as per respective SOP.

Q.8. a) List the works requiring the sanction of Commissioner of Railway safety

Ans: As per the para **1302 IRPWM following works are requiring the sanction of Commissioner of Railway Safety and Notice therefor**

(1) Under section 23 of Railways Act, 1989 (24 of 1989) and chapter VII of the "Railways (Opening for Public Carriage of Passengers) Rules, 2000", the sanction of Commissioner of Railway Safety is required for the execution of any work on the open line, which will affect the running of trains carrying passengers and any temporary arrangement necessary for carrying it out, except in cases of emergency
(2) For the commencement and opening of the following works, when they are connected with or form part of Railway already opened, the sanction of the Commissioner of Railway Safety shall be obtained:
(a) Additions, extensions or alternations to running lines.
(b) Alterations to points and crossings in running lines.
(c) New signaling and interlocking installations or alterations to existing installations.
(d) New stations, temporary or permanent.
(e) The construction (but not the removal) of an ash pit on a running line.

(f) Heavy regrading of running lines involving lowering/ raising of track in excess of 500mm.
(g) New bridges including road over and under bridges, foot over- bridges, strengthening, raising, reconstruction or extension of existing bridges, addition or replacement of existing girders, including, provision of temporary girders
(h) Provision of new level crossing, shifting of existing level crossing on running lines, demanning and downgrading of level crossing, manning of unmanned level crossings, upgrading of level crossing involving changes in the method of working or operation (such as interlocking) and closing down of manned level crossings.
(i) Permanent diversion (deviation) more than 2 km in length without any station in between
and irrespective of length, when a new station is involved.
(k) Temporary diversion irrespective of length, except those laid for restoration of through
Communication after accident.
(l) Addition or alterations to the electrical installations of tracks equipped for electrical traction.

Q.8. b) Write six important precautions to be taken while carrying out in situ AT welding

Ans: While carrying out welding at site, the following precautions shall be observed:-

i) It should be ensured that the portion being used Matches with type and chemistry of rail.

ii) Rail ends should be square,

iii) Alignment of rail ends should be perfect as checked by straight edge,

iv) Rail ends should be properly cleaned with kerosene oil and wire brushes.

v) Stop watch should be provided to the welding supervisor at each welding site.

vi) Pressure in the tanks/cylinder should be properly maintained during pre-heating.

vii) Correct gap between rail ends at head, web and foot shall be ensured.

viii) Correct preheating time for rail ends shall be ensured.

ix) Tightness of clips fitted with hose connections to compressor tank and burner shall be checked before commencing preheating.

x) Nozzles of burners shall be cleaned periodically to avoid back-fire.
xi) The compressor tank shall be kept at least 2 to 3 metres away from the burner to prevent fire hazard.
xii) The tapping shall be done within the time specified for that particular technique.
xiii) Arrangements for giving first aid shall be available at site.

xiv) Welders should be provided with gloves and coloured glasses.
xv) Boiling portion shall be out tapped.
xvi) No moist portion/torned portion bag shall be used for welding.
xvii) Dampness in moulds can lead to porosity and early fatigue failure of welds.
xviii) Only those contractual agencies as have clearance from the RDSO Railway Board can execute welding work. Supply of portions must be from sources approved by RDSO/Railway Board.
xiv) Many weld failures show evidence of badly cut rail ends. The evenness and verticality of a rail cut depends solely upon the skill of the welder. With portable disk cutters, very little skill is required to produce good cut.

Q.8. c) What is frequency of OMS recording and classification of track quality based on OMS result for BG track having maximum permissible speed of 110 kmph

Ans:

1. Frequency of Recording:

   Broad Gauge when Speed above 100 Kmph : Once every month.

2. Classification of Track Quality - To classify a continuous section's (PWI's jurisdiction/sub-division/division) track quality, the following criteria is to be used (average total number of peaks per km.):

	Very Good	Good	Average
High Speed	Less than 1.0	1 - 2	Greater than 2
Others	Less than 1.5	1.5-3.0	Greater than 3

The above criteria are for judging the quality of track. However, if the average number of peaks of vertical
and lateral accelerations exceeding 0.30g is more than 0.25 per km or more than one in any particular kilometer,
The track will need attention: At locations where peaks of lateral and vertical accelerations exceed 0.35g, the
Track will have to be attended to urgently.

Q.9. Write short notes on following as per official language rules, 1976

a) **Correspondence from office of Central Government to an office of state Govt situated in B region**

Ans: Communication from a Central Government Office: — (a) to a State or Union territory in Region B or to any office (not being a Central Government office) in such State or Union territory shall ordinarily be in Hindi and if any communication is issued to any of them in English, it shall be accompanied by a Hindi translation thereof. Provided that if any such

State or Union territory desires the communications of any particular class or category or those intended for any of its offices, to be sent, for a period specified by the Government of the State or Union territory concerned, in English, or in Hindi with a translation in the other language, such communication shall be sent in that manner;
(b) To any person in a State or Union territory of Region B may be either in Hindi or English.

b) Proficiency in Hindi

Ans: Proficiency in Hindi: An employee shall be deemed to possess proficiency in Hindi if—
(a) he has passed the Matriculation or any equivalent or higher examination with Hindi as the medium of examination;

Or

(b) He has taken Hindi as an elective subject in the degree examination or any other examination equivalent to or higher than the degree examination;

Or

(c) He declares himself to possess proficiency in Hindi in the form annexed to these rules.

c) What are the states and union Territories in Region "B"

Ans: Region B" means the States of Gujarat, Maharashtra and Punjab and the union territory of Chandigarh

OBJECTIVE QUESTIONS
PART 'B'

1. **Attempt all questions.**
2. **Each question carries 2 Marks.**

1) Track recording car does not measure
   a) Gauge
   b) Cross Level
   c) Twist
   d) Unevenness

Ans: b) Cross Level

2) The maximum permissible cant gradient on a transition curve on B. G. track is
   a) 1 in 280
   b) 1 in 360
   c) 1 in 540
   d) 1 in 720

Ans: b) 1 in 360

3) Which of the following is not a Temporary Engineering Fixed Signal
   a) Banner Flag
   b) Caution Indicator
   c) Stop Indicator
   d) T/P Board

Ans: a) Banner Flag

4) Which of the following probes is not used in through testing of welds by SRT/DRT
   a) 45°
   b) 70°
   c) 0°
   d) 70° NGF

Ans: a) 45°

5) 'IMR' defective rail should be replaced by a good rail within
   a) 1 day
   b) 3 days
   c) 5 days
   d) 7 days

Ans: b) 3 days

6) Which of the following is not minimum essential amenity at 'F' class station
   a) Waiting hall
   b) Platform shelter
   c) Urinal

d) Drinking water

Ans: c) Urinals

7) The frequency of USFD testing of rails for a B. G. Route with 15 annual GMT is
   a) 2 years
   b) 12 months
   c) 9 months
   d) 6 months

Ans: d) 6 months

8) The service life of 60 kg 90 UTS rails on GMT Criterion is
   a) 525 GMT
   b) 650 GMT
   c) 800 GMT
   d) 925 GMT

Ans: c) 800 GMT

9) Value of Twist on 3.6 m base for 'C' category track on B. G. Route is
   a) 7.5 -10mm
   b) 10 -12.5mm
   c) 12.5-15mm
   d) None of these

Ans: a) 7.5 – 10 mm

10) Stipulated progress of deep screening by BCM machine per effective hour of working is _____M.

Ans: 200 meter

11) The maximum value of permitted Cant excess on curve for B. G. track is _____mm.

Ans: 075 mm

12) The work of provision of washable apron on platform is chargeable to Plan Head _____.

Ans: Plan Head 53 - Passenger Amenity

13) The power of General Manager to sanction traffic facility work in Plan Head 16 is Rs._____.

Ans: 01 crore

14) The power of acceptance of an open tender for a JAG officer working in the division is _____.

Ans: 04 crore

15) The maximum permissible later wear for a 52kg rail laid on a curve in Group 'A' route is _____mm.

Ans: 08 mm

16) The frequency of running track recording car on Group 'A' & 'B' Routes on B. G. track is once in _____ months.

Ans: i) Routes with existing speeds above 130 kmph – Once in a two month

ii) Routes with existing speeds above 110 kmph and upto 130 kmph. - Once in 3 months

iii) Other Group 'A' and 'B' routes - Once in 4 months

17) Check rail is provided on a curve of _____ degree or more as per SOD.

Ans: 08 Degree

18) The maximum distance of passenger platform coping from centre of nearest track is _____mm.

Ans: 1680 mm

19) The maximum permitted gradient in station yards for new works is _____.

Ans: 1 in 1200

20) The minimum vertical clearance for a small bridge in normal circumstances is _____mm.

Ans: 600 mm

21) The value of performance guarantee to be deposited by a successful bidder is _____ of contract value.

Ans: 05 % of the contract value

22) The height of a new 60 kg rail is _____mm.

Ans: 172 mm

23) The frequency of foot plate inspection by in-charge SSE (P.Way) is once in _____.

Ans: Once in a month

24) Vertical clearance for FOB in AC electrified section is _____.

Ans: 6525 mm

25) Clause _____ of current GCC deals with extension of time in Works Contracts.

Ans: Clause 17 of GCC

26) The minimum radius of Curve on which LWR can be laid in general is _____.

Ans: Four Degree

27) Hot weather patrolling is to be carried out on MBC sleeper track with sleeper density 1660 nos. per km. when rail temperature exceeds _____.

Ans: Td + 20 degree

28) Cross slope of formation for laying new track is _____.

Ans: 1 in 30

29) Additional Clearance to be provided on platforms located on the outside of a Curve is _____.

Ans: 25 mm

30) The gap between top edge of the tamping blade and the bottom edge of MBC Sleeper in closed position of the tamping tools should be _____ to _____ mm

Ans: 10-12mm