QUESTION PAPER NO. 1

FOR WRITTEN EXAMINATION FOR SELECTION FOR PROMOTION FROM GROUP 'C' TO GROUP 'B' SERVICE TO THE POST OF AEN (GROUP 'B') AGAINST 30% QUOTA IN CIVIL ENGINEERING DEPARTMENT, NORTHERN RAILWAY.

DATE OF EXAMINATION - **11-11-2006**

Maximum Marks : 150 **Time allowed : 03 Hours**

NOTES:

(1) **Attempt any five Questions.**
(2) **Question No.1 is compulsory.**
(3) **All questions to be answered in the Answer Sheet only.**

प्रश्न - 1.(a) हिन्दी की निर्धारित परीक्षा पास करने पर किसी कर्मचारी को क्या-क्या प्रोत्साहन मिलते हैं । 6

(b) राजभाषा कार्यान्वयन समितियों का गठन किस-किस स्तर पर किया गया है । इन समितियों की बैठक कितने समय बाद होती है । 6

(c) हिन्दी शिक्षण योजना के अंतर्गत कर्मचारियों के लिए कौन-कौन सी निर्धारित परीक्षा है और उनका शैक्षिक स्तर क्या है । 6

(d) राजभाषा नियमों के अंतर्गत क, ख तथा ग क्षेत्र से क्या अभिप्राय है । 6

(e) राजभाषा तथा राष्ट्रभाषा में क्या अंतर है । 6

Question 2 Attempt any five of the following:- (30)

(a) What are the various Indicator Boards for temporary restrictions required?

(b) What is the procedure for blocking the track for carrying out normal & emergency repairs to track?

(c) What action is a SSE (P.Way) (PWI Incharge) required to take in case of a derailment on the section where sabotage or miscreant activity is the prima facie cause of accident?

(d) What are the records that a SSE(P.Way) (PWI Incharge) required to carry with him during the rear window inspection of his section by the Principal Chief Engineer?

(e) Briefly describe the string line method of curve realignment.

(f) What are General & Subsidiary Rules of a railway and what are the issues concerning Engg.Deptt. mentioned in the same?

(g) How is the good running on level crossing, points & crossings to be ensured?

(h) What is the difference between push trolley, motor trolley and material lorry? How is the material lorry loaded with rails to be worked out and how is push trolley to be worked in section with limited visibility?

Question 3 Describe in details the duties of ADEN (Open Line) in particular reference for maintenance & upkeep of:- (30)

(a) Railway track
(b) Bridges
(c) Colonies
(d) Expenditure Control
(e) Large scale renewals of track.

Question 4 An open web turnout steel bridge of 250 ft. (76m) span is to be launched from abutment to abutment. There is no intermediate support possible. Describe with sketches the method of launching the same & the main item of checks and cautions to be observed. (30)

OR

Describe in detail the procedure of detailed technical inspection of 7 x 250ft.(76m) open web girder bridge. This open web girder is rivetted and the bearings are cast steel roller & rocker types. (30)

Question 5 (a) What are the main hydraulic, mechanical and electrical systems in a Unimat points & crossing tamper? Give purpose of each in brief. (6)

(b) Describe working of track machines in track circuited and in electrified areas. (6)

(c) What are the daily, weekly and other periodic inspection & maintenance schedules of a CSM 09-32 TT machines. How these are done and who is responsible for the same? (6)

(d) What are the main differences between ballast cleaning machine, shoulder ballast cleaning machine and points & crossings ballast cleaning machine? (6)

(e) Describe the working of T-28 (points & crossings renewals) machines with example of a renewal of one point in single line electrified sections. (6)

Question 6 Indicate the following Schedule of Dimension (SOD). Draw sketch wherever necessary.

(a) Minimum height of a heavy overhead structure (say ROB) above rail level in electrified territory. (5)

(b) What are minimum and maximum clearances between check rails and running rails on a BG level crossing? (4)

(c) Height above rail level for a BG high level and medium level passenger platform. (4)

(d) Horizontal distance between the centre of a track and edge of coping of high level platform on BG. (5)

(e) What is the slope at the end of a high level passenger platform given to taper of the platform? (4)

(f) What is the minimum distance between centre of BG track and the nearest pier or abutment of a ROB in a running track.? (4)

(g) Maximum gradient of track in a BG passenger yard for normal speeding of train? (4)

Question 7. Describe with the help of sketches the prescribed method of carrying out destressing of track for:- (15)

(a) Converting single rail to LWR
(b) For destressing of track required to be done due to unusual occurrences of rail fractures or track spacing to be out of alignment in hot weather. (15)

Question 8 (20)

(a) Describe the following:-
(i) Abstract estimate
(ii) Detailed estimate
(iii) Revised estimate
(iv) Material modification
(v) Completion Estimate

(b) Describe the various elements of Completion Certificate and what are the essential elements to be checked before the same is sanctioned/approved. (10)

Question 9 (a) What is the difference between Engineering & Traffic Level Xings? (6)

(b) How are the categories C, B, A & A 'Spl.' given to a level crossing. What is the criteria? (6)

(c) What are the various parameters according to which manning of unmanned Level Xing is prioritized? (6)

(d) What are the criteria according to which a Level Xing can be considered for replacement by ROB/RUB? (6)

(f) If the road authority at any given location approaches Railways for increasing the width of an existing 7.5m wide Level Crossing to 2 x7.5 m wide manned Level Crossing, then what is the procedure to be followed? (6)

N.Rly.

QUESTION PAPER NO. 11

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DATE OF EXAMINATION - **11-11-2006**

Maximum Marks : 150 **Time allowed : 03 Hours**

NOTES:

(1) **Attempt any five Questions.**
(2) **All Questions carry equal mark.**
(3) **All questions to be answered in the Answer Sheet only.**

Question 1 (a) What are A, B, C, D, E, D Spl. & E Spl. categories of track? (4)

(b) What are criteria for sanctioning a track renewal in an existing running line? (4)

© Describe TSR, TRR, CTR, TWR, TBTR, TFR in brief and also describe which of these can be done with second hand serviceable material? (4)

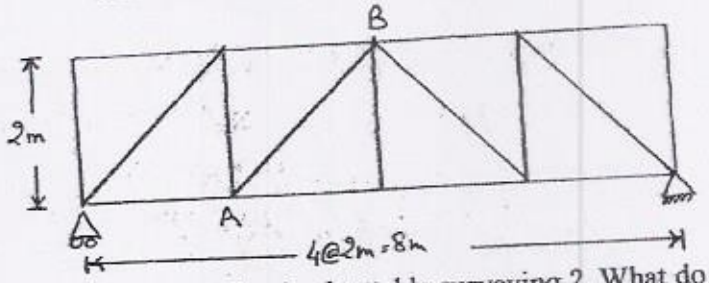
(d) What are mechanical methods of carrying out TSR, CTR, Pts. & Xings renewals? What are the machines in use on IR at present? (4)

(e) Describe with sketch the layout & working of PQRS Depot. (5)

(f) Describe the disposal of released material in a CTR(P) of track with CST-9 sleepers with 52Kg. 72 UTS rails. (4)

(g) Describe with sketch the various speed restrictions imposed to carry out CTR(P) work with PQRS in a double line section which is being attended with machine tampers. (5)

Question No.2 For a pin jointed steel truss for a Foot over Bridge as shown below. Draw the influence line for member A – B. 30



Question No.3 (a) What is plane table surveying ? What do you understand by radiation method, intersection and traversing methods of plan tabling ? 10

(b) What is fly leveling ? How are reduced levels worked out in fly leveling and what are the arithmetic checks for ensuring correctness of the same. 10

(c) Describe the procedure for setting out of work for a block of two Type-I quarters, also mentioning the checks to be exercised. 10

Question No. 4 (a) Design a simply supported rectangular reinforced concrete beam of span 6 m. The beam has to carry a load of 8000 N/M including self weight. Show by sketch the reinforcement required. 20

(b) What is slenderness ratio in a column and describe what is effective length of a column. 10

Question No.5 (a) Describe controlled concrete and also the procedure of designing concrete mix for a particular strength say M.40 10

(b) How is prestressed concrete different from plain reinforced concrete. Give in brief merits & demerits of both and the main usages of prestressed concrete. 10

(c) How is water cement ratio important in any type of concreting ? How can we achieve high workability of

concrete with low water cement ratio and under what circumstances is this needed. 10

Question No. 6 (a) For water supply arrangements what is chlorination of water and super chlorination of water. 8

(b) Describe with sketches the difference between a tube well and a Ranney well (infiltration galleries) 8

(c) Describe with sketch the most commonly adopted type of bio-latrine & also a bio-gas plant (unit). 7

(d) Show with sketches the differences between P trap & S trap in a European type water closet (WC). 7

Question No.7 (a) Describe with sketch the method of conducting plate load test to determine the bearing capacity of the soil at a certain depth. 10

(b) Briefly describe the SPT (Standard Penetration Test) and what characterstics of the soil it can determine. 10

(d) What are the main features of the blanket material required for a railway embankment and what are the most essential aspects to be complied with before it is allowed to be used as per present guidelines. 10

Question No. 8 Describe in brief the following. Use sketches wherever necessary.

(a) Difference between roller & rocker and rocker bearing in a simply supported open web steel girder. 6

(b) Camber given in a open web steel girder. 6

(c) Submerged arc welding for the manufacture of a welded girder. Bring out the main advantages of the same and the necessary precaution to be taken. 6

(d) Procedure for metalising (sheradising) a welded plate girder and the advantages of metalising over normal painting. 6

(e) What is a Dye Penetration test & how is it useful in the inspection/testing of welded steel structure. 6

Question No. 9 (a) Describe procedure of land acquisition for constructing a colony for 1000 units of houses. The land required is about 40 hectares of agricultural land. 9

(b) What are main features of a Item rate tender documents and what is the procedure of such tender processing. 10

(c) What are the most important items to be taken care while preparing tender documents for the design & construction of Road Over Bridge (ROB) fully on viaduct. 10