

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

22.07.2012

Maximum Marks: 150

Time allowed : 03 Hours

NOTES:

- (1) **Answer total six Questions. There are three sections in this paper. Answer maximum two questions from each Section.**
- (2) **All questions carry equal marks and as indicated against the questions.**
- (3) **All the questions should be answered only in the Answer sheet and no question is to be answered in Question Paper.**
- (4) **No mobile phone should be in your possession.**
- (5) **Do no write your name in the Answer Sheet or any other identification marks, which if found shall disqualify you.**
- (6) **The answers may be given in Hindi or English.**
- (7) **In case of any ambiguity in the Hindi version the English version is to be considered authentic.**

SECTION - I

Q.1 A

- (1) हिन्दी में 'प्रवीणता प्राप्त' की परिभाषा बताएं। (15)
- (2) राजभाषा की नीति को लागू करने की दृष्टि से भारत को किन-किन क्षेत्रों में बांटा गया है, उदाहरण के साथ बताएं। (3)
- (3) कर्मचारियों को सरकारी कामकाज में हिन्दी का अधिकाधिक प्रयोग करने के लिए प्रेरित करने के उद्देश्य से किन्हीं चार पुरस्कार योजनाओं के नाम बताएं। (4)
- (4) राजभाषा अधिनियम की धारा 3 (3) के अनुसार ऐसे चार प्रकार के कागज-पत्रों का नाम बताएं, जिनमें हिन्दी और अंग्रेजी दोनों का प्रयोग अनिवार्य है। (2)

Q.1 B (i)

Give the full form of the following:

- | | | | |
|-----------|-------------|--------------|---------------|
| (i) RLDA | (ii) UNO | (iii) WHO | (iv) BSNL |
| (v) FOIS | (vi) DFCCIL | (vii) CONCOR | (viii) IRICEN |
| (ix) NHRC | (x) UNESCO | | |

(5)

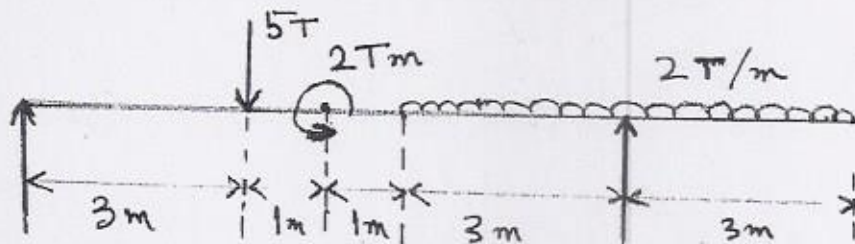
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(1/3)

- Q.1 B(ii) Answer any five:- (5)
- What is the minimum age to qualify for election to the Lok Sabha?
 - What is the term of members of the Rajya Sabha?
 - In which year was the first line of Indian Railways opened?
 - In which city is CAMTECH situated?
 - In which city was the last Olympic held?
 - What is highest speed of train in India?
 - In which State is the longest tunnel under construction in Indian Railways?
- Q.2 A rolled steel joist of I-section has following dimensions; (25)
 overall height :50cm,
 Flanges: 20cm wide and 2 cm thick, Web:1cm thick.
 It is simply supported on a span of 8m and carries uniformly distributed load of 300N per meter.
 Calculate the maximum stress produced in steel due to bending.
- Q.3 Write short note on any five:- (5 x 5)
- Checking of verticality of tubewells.
 - Rainwater harvesting through recharge pit (with sketches).
 - PERT chart and Bar chart.
 - Chlorination of water using chlorine gas.
 - Ready Mix Concrete (RMC).
 - Acceptance Criteria for Concrete.
 - Steps involved in Mix Design of Concrete.

SECTION – II

- Q.4 Draw bending moment and shear force diagram and find maximum and minimum values of bending moment and shear force. (25)



- Q.5 Write short note on any three:- (8.33 x 3)
- "Total station" for surveying – main components and advantage of use.
 - Pile Load Test: method and acceptance criteria.
 - Purpose and use of any two types of "Admixture" used in concrete.
 - Contour Map.

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(2/3)

- Q.6 Answer any three:- (8.33 x 3)
- (i) Method and precautions of laying Vacuum Dewatered Concrete on Railway Platform surface.
 - (ii) Describe two commonly used methods of water proofing of roof with sketches.
 - (iii) Short note on Potability of water.
 - (iv) Describe in short the types of main machines used in construction of earthen embankment.

SECTION – III

- Q.7
- (i) What are various "categories" of stations on Indian Railway for provision of Passenger Amenities? Explain the criteria for categorization of station. (5 x 5)
 - (ii) Enumerate Ten Minimum Essential Amenity required at a "B" category Railway station.
 - (iii) What are preferred types of trees and shrubs to be used on Railway platform and station area?
 - (iv) What are safety precautions taken while constructing FOB across track in Electrified area?
- Q.8
- (i) Explain the principle of pre-stressing of concrete. (12½)
Give advantages and disadvantages of using pre-stressed concrete.
 - (ii) (a) What are types of pile foundation? – Explain with sketches. (6½)
 - (ii) (b) When pile foundation is preferred? (6)
- Q.9 Design a RCC Cantilever 3m long beam (projecting from a RCC column) to carry a point load of 5 tonnes at free end (Suitably assume all relevant datas). (25)

K. S. P.

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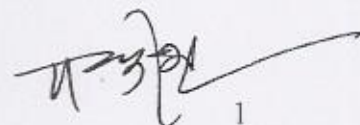
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SECTION – I

- Q.1 (i) (a) Describe in detailed, the procedure for imposing a major penalty for long unauthorized absence of a group 'D' railway employee under Discipline and Appeal Rules. (10)
- (i) (b) Describe the opportunities available to such an employee for appeal and review of the penalty imposed on him. (5)
- (ii) Write short note on:- (5)
- (a) New Pension Scheme (NPS).
- (b) Staff Benefit Fund (SBF).
- (iii) What is the difference between selection, suitability test and trade test? (5)
- Q.2 (i) What are the various works requiring the sanction of Commissioner of Railway Safety? (10)


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- (ii) What are the items of working of CSM track m/c to be checked by Sectional P. Way Inspectors before starting of the work by machine? (7)
- (iii) Describe in brief the guidelines for Tamping by Tie-Tamping machines in 'design mode'. (8)
- Q.3 (i) Why chamfering of bolt holes in rail is required? Describe the method of chamfering in brief. (10)
- (ii) Enumerate the track laying standards to be achieved during primary renewal of track. (10)
- (iii) What are specifications for "physical" properties of ballast for a BG Track? (5)

SECTION - II

- Q.4 (i) (A) For portable accelerometer / OMS2000 (for BG track) what are (3x2)
- (a) Frequency of its recording? (b) Recording limits of defect? and (c) What are classification of track quality?
- (i) (B) How these information are used to plan attention to track? (4)
- (ii) On what factors does the gap in SEJ depend? (5)
- (iii) What are the criteria for planning distressing of LWR during maintenance? (10)
- Q.5 (i) What is "compensation for curvature" in gradient of track and why it is provided? (5)
- (ii) How much a ruling gradient of 1 in 200 should be flattened for curve of 0.5 degree on BG track? (10)
- (iii) A curve of 700m radius on a railway track has a limited transition of 40m length. Find the maximum permissible speed and super elevation on the curve (appropriate data may be suitably assumed). (10)
- Q.6 Draw a neat dimensional sketch of the following :-
- (i) Cross section of a double line BG straight LWR track in 3m deep cutting along with ballast profile, drainage, PRC sleeper and rail. (15)

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- (ii) Sketch showing location of different types of speed boards for BG track on single line for 30 kmph speed restriction imposed on track of 500m length. (10)

SECTION - III

- Q.7 Write short notes on :- (5x5)
- (i) Inspection and maintenance of deep cutting.
 - (ii) Condition rating number (CRN) and overall rating system (ORN) of bridges.
 - (iii) Elastomeric bearings and PTFE bearings in bridges (with sketch).
 - (iv) Replacement of loose rivets and precautions to be taken in replacement in bridges.
 - (v) Periodicity of special inspections of distressed bridges by officers and specific items to be seen during such inspections.
- Q.8 (i) What are the main hydraulic, mechanical and electrical systems in a CSM09-32 Tamping machine? Describe them in brief. (10)
- (ii) What are different schedule/periodicity of inspection and maintenance of UNIMAT points and crossing tamper machine? Describe them in brief. (7)
- (iii) Describe the method of working of a BCM for deep screening of points and crossing in electrified area. (8)
- Q.9 Describe the following:- (5x5)
- (i) Abstract Estimate.
 - (ii) Detailed Estimate.
 - (iii) Revised Estimate
 - (iv) Completion report.
 - (v) Reconnaissance survey

