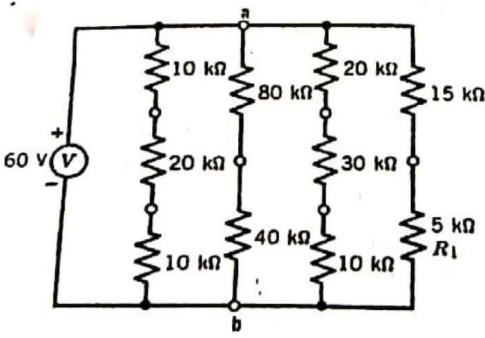


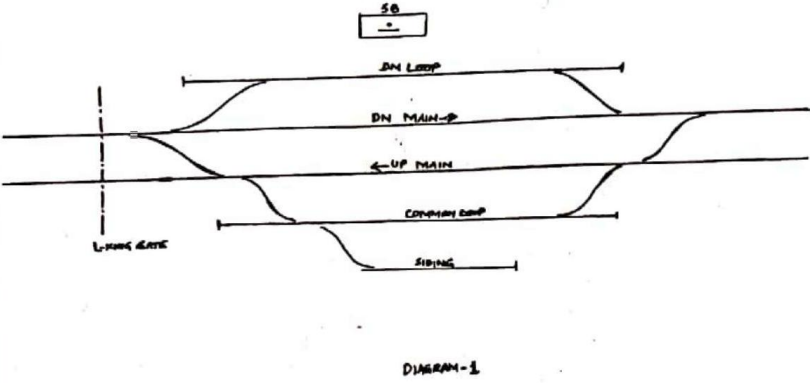
North Eastern Railway

**Question Paper for Main Written Examination for the Selection of Group
'B' ASTE Post (LDCE-30%) in Signal & Telecommunication Department**

Date: 09/04/2021	Maximum Marks: 100 marks
Time Allowed: 03 Hours	

	Instructions for Candidate
1.	Attempt any 10 questions. Each question carries 10 marks. Marks of Part questions are mentioned against each part.
2.	Candidates should not write their name, Roll No., initial, designation, signature, address or any other identification mark anywhere on the answer paper except on the sheet on the space provided, as this will disqualify them for the selection.
3.	Candidate should not use multi-colour pen/sketch pen etc. Use of these may lead to cancellation of the candidature.
4.	Candidate should check the page numbers of the answer sheets before writing their roll number, name etc. on the fly leaf.
5.	Candidate should ensure signature of invigilator/ officer in-charge on Answer Book and also on extra sheet(s), if any used. Extra sheets should be taken after completion of main answer book only and should be attached to the last page of answer sheet.
6.	On completion of examination, answer sheet should be submitted to invigilator.
7.	In case any unfair means are adopted, the candidature will be forfeited.
8.	All parts of a question should be answered before attempting another question, otherwise, part of question interposed by answer of another question may not be evaluated.
9.	Any blank space in the answer book and extra sheets if any should be scored out by drawing a diagonal line.
10.	Question paper is being given both in English and Hindi languages. In case of any ambiguity in the two versions, English version will be considered as authentic. The candidate has the option to answer the questions in any of the two languages. All answers should be either English or in Hindi.

Question No.	Description of Question	Marks
Q1(i). ✓	What are the various classifications of level crossing gates and criteria for their classification? How census of traffic at level crossing gate is calculated?	5 marks
Q1(ii). ✓	What are the criteria for provision of Double Distant Signals? What are the various aspect controls of Distant, Inner Distant, Home, Main Line Starter, Loop Line Starter & Advance Starter of a station in Double Distant Territories?	5 marks
Q2(i). ✓	What are the various signalling modification works to be carried out at a PI station to make it suitable for 25KV AC traction?	5 marks
Q2(ii). ✓	What are the various classifications of accidents in Railways? Describe them briefly.	5 marks
Q3. ✓	Write short notes on any five of the following: ✓(i) ✓ PTCC & PTCC Clearances (ii) ✓ WPC & SACFA Clearances (iii) ✓ ISDN (iv) ✓ Cross Protection in Signalling Circuit (v) ✓ Fuse Auto Changeover System (FACS) (vi) ✓ Approach Locking & Dead Approach Locking (vii) RTIS	2 marks each
Q4(i). ✓	For the circuit given below, calculate the a. Single equivalent resistance of the complete circuit. b. Total current & power drawn from the supply. c. Current in, voltage across and power dissipated by R ₁ . 	6 marks
Q4(ii). ✓	What is GPON? Explain with schematic diagram.	4 marks
Q5(i). ✓	What are various stages of protection against lighting & surges for electronic signalling equipments?	5 marks

Q5(ii). ✓	Draw the symbols of (i). Exclusive OR gate, (ii). AND gate, (iii). Exclusive NOR gate, (iv). NAND gate & (v). NOT gate along with their truth tables.	5 marks
Q6. ✓	For the yard layout of double line station given below in Diagram-1, prepare the Signalling Interlocking Plan (SIP) as per NER practices, numbering all the gears, showing aspect control charts, crank handle group.	10 marks
	 Diagram-1	
Q7. ✓	Write the selection table of all the routes of UP & DN Home Signals of SIP given in Diagram-1 above.	10 marks
Q8(i). ✓	Describe Electronics Interlocking System with block diagram. What are the various input & output functions of EI system?	5 marks
Q8(ii). ✓	What are the various modules of K5BMC Electronic Interlocking System (Kyosan make)? Describe them briefly.	5 marks
Q9(i). ✓	What are the differences between inter signal cascading, intra signal cascading & red lamp protection in 4 Aspect Automatic Signalling? Explain with the circuit diagrams.	5 marks
Q9(ii).	What are the essentials of lock & block system? Draw the LSS control circuit in double line section equipped with SGE type block instruments & explain feature of one line clear & one train.	5 marks
Q10	What are the various sub-systems in GSM-R? Describe their brief function along with schematic of Network Infrastructure.	10 marks
Q11(i). ✓	Describe the implementation scheme of IP-MPLS technology on Indian Railways.	5 marks
Q11(ii). ✓	Describe the IP Based CCTV System for a Railway Station.	5 marks

Q12(i). ✓	What are the various steps & measures taken in jointing & termination of Optic Fibre Cable?	5 marks
Q12(ii) ✓	Describe the physical construction of 6 quad cable.	5 marks
Q13(i).	What are the various classifications of manufacturing processes adopted in a workshop for metal product? Describe them briefly.	5 marks
Q13(ii).	What are different forms of Gear most commonly used in the industry? Describe them briefly.	5 marks
Q14(i). ✓	What are the major parts of Q-series relays? Describe various production stages of Q-series relays.	5 marks
Q14(ii). ✓	What are the various parts of IRS Electric Point Machine? Describe them briefly. What are the advantages of clamp type point lock?	5 marks
