

22633

12425

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Figures to the right indicate full marks.
 - (3) Assume suitable data, if necessary.
 - (4) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

10

- (a) State the value of Earth Resistance as per IE Rule for
 - (i) 11 kV substation
 - (ii) Power station (32.220 kV)
- (b) State the need of pole mounted distribution substation.
- (c) State the function of CT and PT in 33/11 kV substation.
- (d) State any one type of battery trouble, its cause, maintenance to be taken.
- (e) Write any four needs of 132 kV/33 kV substation.
- (f) State the essential parts of GIS.
- (g) List any two properties of SF₆ gas in GIS.

2. Attempt any THREE of the following :

12

- (a) Explain any four general safety rules to be followed to minimize the risk of electrical hazards in substation.
- (b) Draw the layout of a pole mounded 11 kV/400 V substation & enlist any eight equipments of it.
- (c) Distinguish between system earthing & equipment earthing.
- (d) Illustrate any eight reasons of major five risks within 132 kV/33 kV substation.



- 3. Attempt any THREE of the following : 12**
- (a) List any four safety rules to be followed while working in a substation.
 - (b) Draw & explain working diagram of earth tester.
 - (c) Draw single line diagram of a 33 kV|11 kV substation & enlist any eight equipments of it.
 - (d) Illustrate with relevant fig. the following :
 - (i) Transfer potential
 - (ii) Touch potential
 - (iii) Make potential
- 4. Attempt any THREE of the following : 12**
- (a) Describe the construction & working of drop out fuse.
 - (b) Enlist any eight routine test to be carried out on 11 kV|400 V distribution transformer.
 - (c) Explain fire fighting equipment for the different situations in the substation.
 - (d) Explain maintenance schedule of GIS substation.
 - (e) Distinguish between AIS and GIS.
- 5. Attempt any TWO of the following : 12**
- (a) Prepare a tabular form to show maintenance schedule of a power transformer above 1000 kVA capacity.
 - (b) With neat labelled diagram illustrate standard procedure to be carried out of Break Down Voltage (BDV) test on power transformer oil.
 - (c) Explain with neat sketch functioning of :
 - (i) PLCC
 - (ii) Wave Trap
- 6. Attempt any TWO of the following : 12**
- (a) Explain partial discharge phenomenon in detail.
 - (b) Describe the causes of hot spot formation in transformer & state the methods of identification.
 - (c) Illustrate Visual, Minor & Major maintenance plan of Gas Insulated Substation (GIS).
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