

**MASTER OF TECHNOLOGY (ELECTRICAL - POWER SYSTEM) (CBCS - 2015 COURSE)**

**M. Tech. (Electrical-Power System ) Sem-IV :SUMMER- 2022  
SUBJECT : SELF-STUDY PAPER-II:SUBSTATION DESIGN**

Day : Wednesday  
Date : 15-06-2022

**S-14548-2022**

Time : 10:00 AM-01:00 PM  
Max. Marks : 60

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**N. B. :**

- 1) All questions are **COMPULSORY**.
  - 2) Figures to the right indicate **FULL** marks.
  - 3) Answers to both the sections should be written in **SEPARATE** answer books.
  - 4) Draw neat and labeled diagram **WHEREVER** necessary.
  - 5) Assume suitable data, if necessary.
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**SECTION - I**

**Q. 1** Explicate the working principle of Two Post Single Break Isolating Switch with neat sketch. **(10)**

**OR**

Explicate the various Tests carried out on Isolating Switches as per IS- 9921- 1985. **(10)**

**Q. 2** Differentiate between Differential Protection and Distance Protection required for /current Transformer. **(10)**

**OR**

Explicate the various types of Tests carried out for Voltage Transformer as per IS standards. **(10)**

**Q. 3** Explicate the following terms relate with circuit breakers: **(10)**  
i) Rated Short Circuit current ii) Making Current iii) Rated Operating Sequence

**OR**

Explicate how the Insulation Co-ordination amongst Substation Equipments takes place? **(10)**

**SECTION - II**

**Q. 4** Explicate Why the KVA rating of Autotransformer is large as compared to power transformer of the same size? **(10)**

**OR**

Explicate the following Drying out methods related with power transformer **(10)**  
i) Drying out by Internal Heat ii) Drying out by External Heat

**Q. 5** Explicate the various types of control panels. Draw the layout of each panel. **(10)**

**OR**

Differentiate between Electromagnetic Relay and Static Relays with neat sketches. **(10)**

**Q. 6** Explicate how Reactors are used to Limit the Inrush Currents? **(10)**

**OR**

Explicate the following terms related with switchyard lightning **(10)**  
i) Coverage Factor iv) Intensity Factor  
ii) Maintenance Factor v) Beam Spot Area  
iii) Utilization Factor

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