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Total No. of Pages : 02

Total No. of Questions : 18

**B.Tech. (Electronics & Electrical Engg.) (2012 to 2017)/**  
**(Electrical & Electronics Engg.) (2013 Onwards)**  
**(Sem.-5)**

**POWER SYSTEM – II**  
**Subject Code : BTEE-502**  
**M.Code : 70567**

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

**SECTION-A****Answer briefly :**

1. Write and explain common arrangements of bus-bars in a substation.
2. Explain various ratings associated with a fuse.
3. What are the two types of protection such as equipment protection and system protection?
4. What are the functions of a relay and a circuit breaker?
5. Explain the principle of differential protection for transmission line protection.
6. Show how restriking transients can be damped by connecting a resistance across the contacts of a circuit breaker.
7. Explain various schemes of neutral grounding.
8. Explain carrier current protection of transmission lines.
9. Explain the operation of Buchholz relay.
10. Write a short note on SF<sub>6</sub>CB.

**SECTION-B**

11. Explain characteristics of electromagnetic and thermal relays.
12. What are the different faults in a transformer? Explain protection schemes for transformers.
13. Describe and compare three generation of relays such as electromagnetic relays, solid state relays and numerical relays.
14. Give a brief introduction to lightning protection. Explain various devices used for protection against overvoltage.
15. Explain the uses of oil CB, air blast CB, and vacuum CB.

**SECTION-C**

16. Explain principle of operation of a circuit breaker. Derive an expression for rate of rise of restriking voltage (RRRV) and explain the effect of this on the operation of circuit breaker under fault condition.

The data of a 50 Hz generator is given : Line to ground voltage 7.5 kV, reactance of generator and connected system 4 ohm, distributed capacitance to neutral 0.01 micro farad, and negligible resistance. Find :

- a) The maximum voltage across the contacts of circuit breaker when it breaks short circuit current while passing through zero.
  - b) The frequency of the transient oscillation.
  - c) The average rate of rise of voltage up to first peak of oscillation.
17. Explain various faults in generators. Explain various schemes for stator and rotor protection.
  18. Explain the protection schemes deployed for the protection of transmission lines.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**