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Total No. of Pages : 02

Total No. of Questions : 18

**B.Tech. (EE) (Electrical & Electronics Engg.) (2012 Onwards)/**  
**B.Tech. (Electrical Engineering & Industrial Control)( 2012 to 2017)**  
**(Sem.-6)**

**POWER SYSTEM-II**  
**(Switch Gear & Protection)**  
**Subject Code : BTEE-602**  
**M.Code : 71148**

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. What are the different types of faults in power system transmission line?
2. What type of relay is best suited for generator protection?
3. What is the role of metal oxide arresters in overvoltage protection?
4. Give the types of circuit breakers.
5. Write any two advantages of SF<sub>6</sub> circuit breakers.
6. What is breaking capacity of circuit breaker?
7. List out the application of static relay.
8. What is differential protection?
9. What is the effect of power system faults?
10. Differentiate between a fuse and a protective relay.

**SECTION-B**

11. Briefly describe the different types of testing schemes of circuit breakers.
12. Discuss the role of protective relays in a modern power system.
13. Explain current chopping phenomenon.
14. Explain the construction and operating principle of over current relay with directional scheme.
15. A three phase power transformer has a voltage ratio of 33/6.6 kV and is star delta connected. The protective CTs on the 6.6 kV side have a current ratio of 100:1. What must be the ratio of protective CTs on the 33 kV side.

**SECTION-C**

16. Discuss recovery rate theory and energy balance theory of arc interruption in a circuit breaker.
17. Explain the principle of a distance relay, stating clearly the difference between electromagnetic version of an impedance relay and a mho relay.
18. In a 132kV systems, the reactance and capacitance up to the location of the circuit breaker is 5 Ohm and  $0.02\mu\text{F}$  respectively. A resistance of 500 Ohm is connected across the contacts of the circuit breaker. Determine :
  - a) Natural frequency of oscillations.
  - b) Frequency of damped oscillations.
  - c) Critical value of resistance.
  - d) The value of resistance which will give frequency of damped oscillations which is equal to 1/4th the natural frequency.

**NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC against the Student.**