

Code No: R41023

R10**Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February/March- 2018

SWITCH GEAR & PROTECTION

(Electrical and Electronics Engineering)

Time: 3 hours**Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

- 1 a) Explain the terms Recovery voltage, Restriking voltage and RRRV. [8]
b) In a system of 132kV, the line to ground capacitance is $0.01\mu\text{F}$ and the inductance is 5H. Determine the voltage appearing across the pole of a Circuit Breaker. If a magnetizing current of 5 amps (instantaneous value) is interrupted. Determine also the value of resistance to be used across the contacts to eliminate the restriking voltage. [7]
- 2 a) What are the necessary auxiliaries of Air Blast CB? Describe compressed air system for supplying compressed air to the air blast circuit breakers? [8]
b) Discuss about the operation of vacuum circuit breaker. [7]
- 3 a) Distinguish between over current relays and directional relays. [8]
b) With a neat sketch, explain principle of operation of induction cup relay. [7]
- 4 a) Describe how protection is provided in large turbo-alternators against earth-fault in the rotor. [8]
b) Calculate the required value of neutral resistance for a three phase 11 kV alternator, so as to protect 70% of the winding against earth fault by a relay with pickup current of 1 A. The neutral CT has a ratio of 250/5. [7]
- 5 a) What are the different protection schemes normally used for protection of a power transformer from internal faults? [6]
b) A 3-phase transformer rated for 33kV/6.6kV is connected star-delta and the protecting current transformer on the low voltage side have a ratio of 400/5. Determine the ratio of the current transformer on the HV side. [9]
- 6 a) What is the need for bus bars protection? How the bus bars protection scheme is stabilized? [6]
b) Explain with suitable diagram of the principle of working of translay relay for transmission lines. [9]
- 7 a) Explain about the microprocessor based digital relay with neat sketch. [8]
b) How does static relay works and also explain the limitations of a static relay. [7]
- 8 a) Explain about the valve type and zinc-oxide lightning arresters. [8]
b) What do you mean by insulation coordination? Discuss the effects of ungrounded neutral on system performance. [7]