



Ref No:

Ex/EE/5/T/422/2017 (Old)

**B.E.ELECTRICAL ENGG. (PART TIME) EXAMINATION 4<sup>TH</sup> YEAR, 2<sup>ND</sup> SEMESTER 2017 (Old)**

**SUBJECT: - POWER SYSTEM PROTECTION & SWITCHGEAR**

Time: Three hours

Full Marks: 100  
(50 marks for this part)

5)	a)	What are the advantages of using SF <sub>6</sub> gas as an arc interrupting medium in circuit breakers?	(8)
	b)	What are the advantages and disadvantages of oil circuit breakers?	(8)

BACHELOR OF ELECTRICAL ENGINEERING  
(EVENING) EXAMINATION, 2017

(4<sup>TH</sup> Year, 2<sup>ND</sup> Semester)

POWER SYSTEM PROTECTION & SWITCHGEAR

Time: 90mins

Full Marks: 50

PART-II

Answer any 3 questions

( 2 marks reserved for neatness)

- Q1.(a) Draw a single phasing preventer circuit for 3 phase induction motors using negative sequence filter and explain its working. 6 marks
- (b) Explain the carrier current phase comparison for the protection of transmission lines. 10 marks
- Q2.(a) Draw the Inverse, More Inverse, Extremely Inverse, Definite relay characteristics and explain PSM and TSM 8 marks
- (b) Determine the time of operation of a 5A, 3sec overcurrent relay having a current setting of 125% and a time setting multiplier of 0.6 connected to a supply circuit through a 400/5 CT when the circuit carries a fault current of 4000A. (Characteristic gives operating time of 3.5 sec for PSM of 8 and TSM 0.6) 8 marks
- Q3. (a) Draw a simple diagram to realize any solid state distance relay. 6 marks
- (b) Derive the Universal Relay torque equation. 10 marks
- Q4. (a) Explain how arc resistance affects a plain impedance distance relay. 6 marks
- (b) Explain in details how the relay may be modified to overcome the above problem. 10 marks
- Q5. (a) Draw the functional block diagram of a digital relay. 8 marks
- (b) A 3 phase 220/11000V star delta transformer is protected by the Merz Price system. The CT's on the lv side have a ratio of 500/5. Find the ratio of the CT's on the hv side. 8marks

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