Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech.**
PCEE4402

8th Semester Regular / Back Examination 2017-18
POWER SYSTEM PROTECTION
BRANCH : EEE, ELECTRICAL
Time : 3 Hours
Max Marks : 70
Q.CODE : C290

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1. **Answer the following questions :** **(2 x 10)**

a) What is the meaning of under reach of a relay?
b) What is arc resistance? How is it found out?
c) If a certain relay has a plug setting of 1.5 A, what will be the value of PSM for a fault current of 1000 A, provided the CT has a ratio of 400/1?
d) What is an incipient fault? What is its adverse effect?
e) What do you understand by time and distance grading? Give an example.
f) What is the difference between circulating current principle type and balanced voltage type relays?
g) What is the role of summation transformer?
h) A particular fault has the sequence currents I_1 = -1.5 p.u., I_2 = 0.8 p.u., and I_0 = 0.7 p.u. What type of fault has occurred in the system?
i) What do you understand by current chopping?
j) What do you understand by RRRV? Give an expression.

Q2. **a)** How to detect an inter-turn fault in case of generator? Draw circuit diagrams to illustrate it. **(5)**
b) A three phase transformer rated 33/11 kV, 500 kVA Δ/Y, has a CT rating of 20/1 on the H.V. side in each phase. What will be the rating of the CT on the L.V. side so that it won't respond to any through fault? **(5)**

Q3. **a)** Illustrate the working of a numerical relay with proper block diagram. **(5)**
b) What do you understand by cosine type phase comparator? Explain its working. **(5)**

Q4. **a)** What do you understand by zones of protection in reference to distance protection? How would you implement the mho relay in context to different zones of protection? **(5)**
b) Find the expression for finding out the region of trip operation for offset mho relay **(5)**

Q5. **a)** How would you implement the static relays for different distance protection schemes? **(5)**
b) What is earth fault protection? What are the different methods of implementation of the same? **(5)**

Q6. **a)** What protection schemes are implemented for prime mover failure and loss of excitation in case of generators? **(5)**

b) What is auto reclosing? Explain briefly. **(5)**

Q7. Find the expression of fault current in a) L-L-G and b) L-G for a system with neutral impedance and fault impedance present. **(10)**

Q8. **Write short answer on any TWO :** **(5 x 2)**

a) Inrush current protection in transformer

b) Vacuum Circuit breaker

c) Translay scheme of feeder protection

d) Induction type relays and its torque equation