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**MODEL QUESTION PAPER
Entrance Examination for Ph.D Admission(March 2012)**

Duration: 90min

Max marks: 40

PART-A

Answer all the questions by encircling the correct option. (10x 1 =10) Marks

1. When n resistances each of value r are connected in parallel, then resultant resistance is x . When these n resistances are connected in series, total resistance is
a) nx b) rx c) x/n d) n^2x
2. Resistance of a wire is r ohms. The wire is stretched to double its length, and then its resistance in ohms is
a) $r/2$ b) $4r$ c) $2r$ d) $r/4$
- 3 A copper wire of length l and diameter d has potential difference V applied at its two ends, the drift velocity is V_d . If the diameter of wire is made $d/3$, then drift velocity becomes
a). $9V_d$ b). $V_d/9$ c) $V_d/3$ d) V_d
- 4). A network has 4 nodes and 3 independent loops. What is the number of branches in the network?
a). 5 b). 8 c). 7 d). 6.
- 5). If there are b branches and n nodes the number of equations will be
a). $b-n+1$ b). b c). $b-n$ d). $n-1$
- 6). An electric circuit with 10 branches and 7 nodes will have
a). 3 loop equations b). 4 loop equations c). 7 loop equations d). 10 loop equations
- 7). Which of the following statements is true about two wattmeter method?
a) Power can be measured using 2 wattmeter method only for star connected 3phase
b) When 2 wattmeter show identical reading the power factor is 0.5
c) When power factor is unity and one of the wattmeter reads 0
d) When reading of 2 wattmeter are equal but of opposite sign the power factor is 0
- 8). A temperature sensitive transducer is subjected to a sudden temp change it takes 10 sec for the transducer to reach the equilibrium condition, the time takes by the transducer to rate half of the temperature will be nearly

- a) 8.62 b) 5 c) 1.38 d) 1

9). A cumulatively compounded dc generator is supplying 20A at 200volts now if the series field winding is short circuited the terminal voltage

- a) Will shoot up to a very high level
b) Will rise to 220 v
c) Will remain unattended at 200v
d) Will become less than 2000 volts

10). The following controls are considered for dc motors

- 1) Control of flux
2) Armature resistance control
3) Supply voltage

Which of the above controls play a specific role in the speed control of dc motors?

- a) 1 and 2 b) 2 and 3 c) 1 and 3 d) All

PART - B

Answer any 6 out of 12

(6x5 =30) Marks

1. Explain fuzzy logic with a general block diagram.
2. Explain in detail any one control scheme using ANN.
3. Explain in detail about the digital PID controller.
4. Explain the concept of controllability and observability.
5. Explain the algorithm for fast decoupled power flow
6. Discuss the constraints of unit commitment.
7. Explain the principle and operation of any one type of inverter.
8. Write about the characteristics of SCR.
9. Write the advantages and disadvantages of HVDC and HVAC transmission.
10. List down the advantages and disadvantages of various types of controllers.
11. Compare and contrast the features of FIR and IIR filters.
12. State and prove any two properties in Z-transform.