

20/05/19 (AM)

B.E./B.Tech (Full Time) End Semester Examinations, April/May 2019
Fourth Semester
Computer Science and Engineering

EE 8407- ELECTRICAL ENGINEERING & CONTROL SYSTEMS

Time: Three hours

Max: 100 marks

(Regulation 2012)

Answer ALL Questions

PART-A

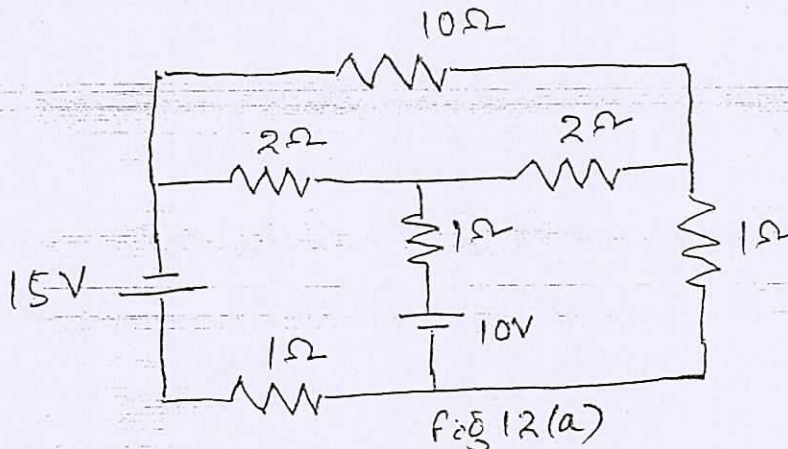
(10 x 2 = 20 Marks)

1. Describe matrix formulations by inspection for node-voltage analysis of circuits.
2. State Kirchoff's Laws
3. Draw the circuit model of a DC Machine.
4. What are the methods of excitation in DC Machine?
5. What are stray and dielectric loss?
6. Draw the cross-sectional view of a 2-pole cylindrical rotor synchronous machine.
7. How do you classify Systems?
8. State Mason's formula.
9. What is corner frequency?
10. State the advantages of State space method.

PART-B

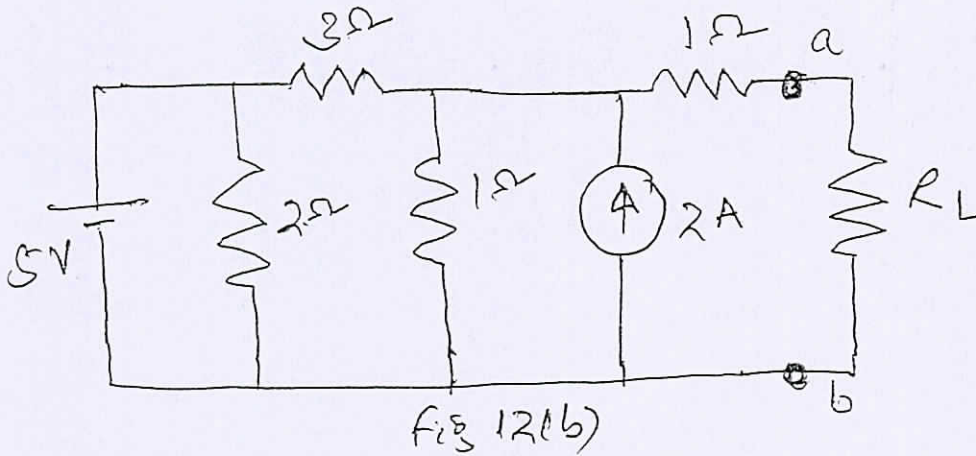
(5 x 16 = 80 Marks)

11. Explain the basic principle of operation of a single phase induction motor with the help of double field revolving theory. Enumerate the various starting methods of it.
- 12(a) For the network shown in the fig12(a), write the loop current equations and node voltage equations. Also find the current and its direction in 10 ohm resistance.



(OR)

- 12(b) State and explain Superposition and Maximum Power Transfer theorem. Find the load resistance R_L for maximum power transfer in the circuit shown in fig12(b). Calculate the maximum power also.



13(a) Describe the constructional features, principle of working and performance characteristics of DC Generator.

(OR)

13(b) Describe the various types of DC motors, their characteristics, speed control and applications.

14(a) For the control system represented as a block diagram given in fig 14(a), obtain the transfer function using block diagram reduction technique.

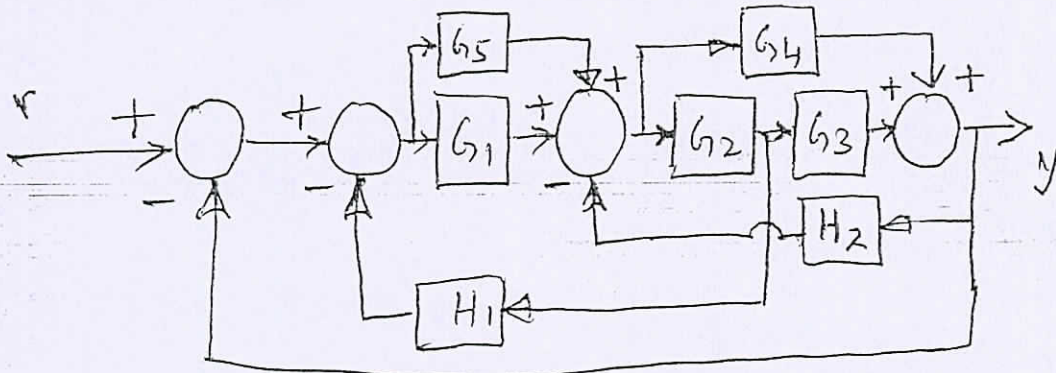


Fig 14(a)

(OR)

14(b) Convert the system shown in fig 14(a) to an equivalent signal flow graph and obtain transfer function using Mason's Formula.

15(a) Derive an expression for the step response of a II order underdamped systems.

(OR)

15(b) Sketch the Bode plots for a control system whose loop transfer function is $G(s) = 500(s+2)/[s(s+1)(s+5)(s+20)]$.

