BOARD DIPLOMA EXAMINATION

DEEE - FIRST YEAR EXAMINATION

EE-106 BASIC ELECTRICAL TECHNOLOGY

Time: 3 Hours Max.Marks:80

PART-A 10x3=30M

Instructions:

1) Answer all questions. Each question carries 3 marks.

2) Answer should be brief and straight to the point and shall exceed five simple sentences.

1. State Ohm's Law (CO1)
2. Define the terms i) Specific resistance ii) Conductance (CO1)
3. Define temperature co-efficient of resistance and give its units. (CO1)
4. Differentiate between active and passive circuits. (CO2)
5. Define Electrical Work and Power (CO3)
6. State Joules's Law (CO3)
7. Define Thermal efficiency (CO3)
8. What do you understand by source transformation (CO4)
9. State the need for network theorems (CO5)
10. State Maximum Power Transfer Theorem (CO5)

PART-B 5x10=50M

Instructions: **1) Answer any Five questions and each question carries Ten marks.**

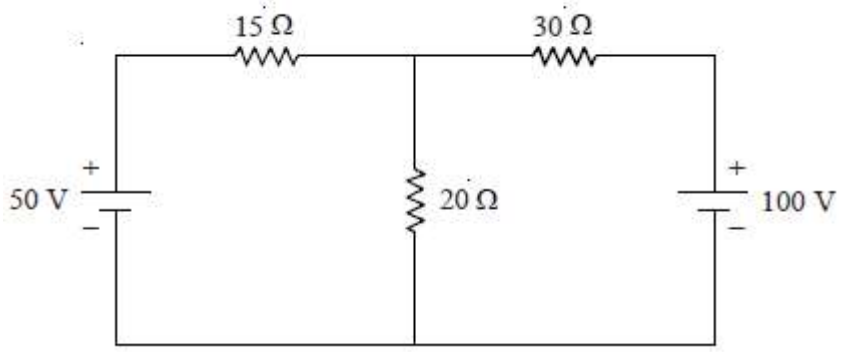
2) The answer should be comprehensive and the criteria for valuation is the content but not the length of the answer.

11. a) Develop the expression for resistance at any temperature as $R_t = R_0 (1+\alpha_0 t)$. (CO1)

    b) The resistance of a conductor at 10°C is 5 ohms and at 100°C is 12 ohms. Find the resistance at 0°C and also find temperature co-efficient at 40°C. (CO1)

12. A resistance of R Ω is connected in series with a parallel circuit consisting of two resistances 4 Ω and 6 Ω respectively. Calculate the value of R if the current in 4 Ω resistance is to be 3A and applied voltage to be 36 V. (CO2)

13. Using Kirchhoff's laws, find the current 20 ohm resistors in the circuit shown in Fig. (CO2)



14. An electric kettle is rated 1.5kW; 230V takes 5 minutes to bring 1kg ofwater to boiling point from 15°C. Find the efficiency of kettle. (CO3)

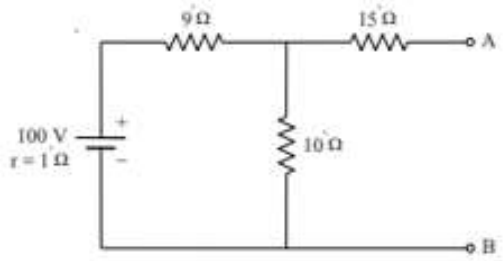
15. Calculate the monthly bill of domestic service with the following loads for a month of 30 days.

(i) 6 lamps of 100 W each used for 6 hours a day.
(ii) 1000 W immersion heater used for 1 hour a day.
(iii) 2 fans of 60W each used for 7 hrs a day.
(iv) One 2 hp motor working at 80% efficiency for 2hrs/day.

The cost per unit of consumption is Rs.1.35/- and a meter rent of Rs.30 per one month. (CO3)

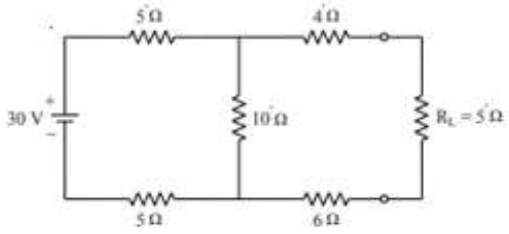
16. Develop transformation formulae for delta to star (CO4)

17. Find the value of load resistance to be connected across terminals A and B to get maximum power delivered in the circuit shown in Fig. (CO5)



FIG

18. In the network shown in Fig. Calculate the current through load resistance R_L by using Norton's theorem. (CO5)



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