

OCTOBER 2021

Time: Three hours

Maximum Marks: 75

- Note:
1. Answer ALL the questions in PART-A (1 mark each)
 2. Answer any ONE question from each unit in PART-B (3 marks each)
 3. Answer any ONE question from each unit in PART-C (10 marks each)
 4. The question paper contains TWO Pages

PART-A (1x10=10)

1. Define flux.
2. Define resistivity.
3. Define node.
4. Draw the Norton's Equivalent circuit.
5. What is the power of the pure indicator?
6. Define Admittance.
7. What is the condition of series resonance?
8. Mention the two types of connection in a 3 phase circuit.
9. State one use of limit switch.
10. Define AH efficiency.

PART-B (3x5=15)

UNIT-I

11. State Coulomb's law of electrostatic.
12. State Kirchoff's laws.

UNIT-II

13. State Thevenin's theorem.
14. Obtain star equivalent resistance from a given delta network of R12, R23, R31.

UNIT-III

15. Define the following (a) Cycle (b) Frequency.
16. Derive the expression for the impedance of RC series circuit.

UNIT-IV

17. Compare series resonance with parallel resonance.
18. Obtain relationship for a line current and phase current of a 3 phase balanced delta connected system.

UNIT-V

19. State any two advantages of Nickel-iron & Nickel-Cadmium Cells.
20. Draw the symbol of push button (On and Off) SPST, SPDT.

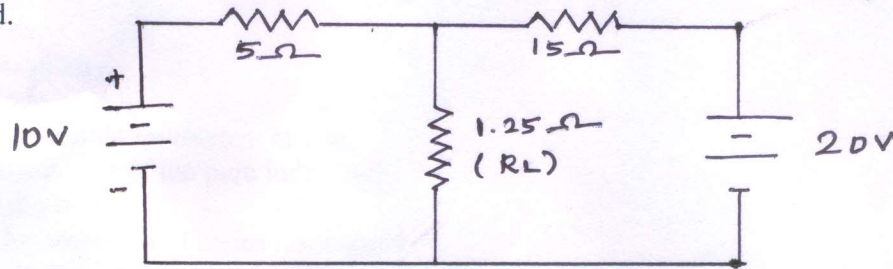
PART-C (10x5=50)

UNIT-I

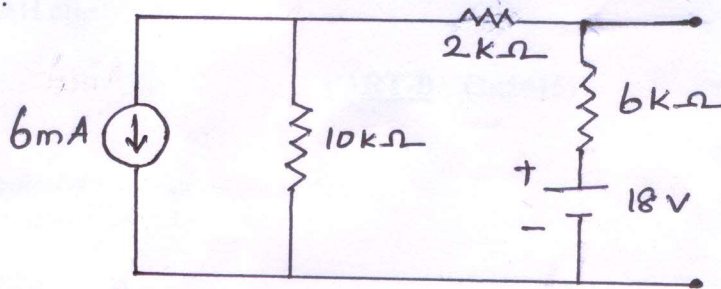
21. A coil has a resistance of 5.2 ohms. The resistance has to be reduced to 50 ohms by connecting a shunt across the coil. If the shunt is made of manganese wire of diameter 0.025 cm. find the length of wire required if the resistivity of manganin is 47×10^{-8} ohm-m.
22. A current of 15 Amps flows through two ammeters A and B joined in series. Across A the voltage drop is 0.15V and B is 0.3V. Find how the same current will divide between A and B when they are connected in parallel.

UNIT-II

23. In the circuit shown below, find the current in load resistance of 1.25Ω by mesh current method.



24. Using super position theorem, find the current in the $2K\Omega$ resistance of the circuit given below.



UNIT-III

25. A coil of resistance 8Ω and an impedance of $0.1H$ is connected in series with a capacitor of 75 MHD across a $240V, 50\text{Hz}$ supply. Find a) Inductive reactance b) Capacitive reactance c) Circuit Current d) Power factor e) Power.
26. A coil of resistance of 8Ω and an inductive reactance of 6Ω is connected in parallel with a resistance of 10Ω . If the voltage across the combination is $200V \text{ AC}$. Find the total current taken from the mains.

UNIT-IV

27. A series RLC circuit has $R=5\Omega$ and $L=10\mu H$ and $C = 1 \mu F$ with an applied voltage of $110 V$ variable supply. Find the resonant frequency circuit and voltage across inductor and capacitor. Find also bandwidth and Q factor.
28. Three identical coils having a resistance of 20Ω and reactance of 20Ω are connected in star across a $400V$ supply. Calculate the reading on each of the two wattmeters connected to measure the power.

UNIT-V

29. Explain the following
 - a) Limit Switch
 - b) Micro Switch.
30. Explain with a neat sketch the construction of lead acid battery.

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