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Code No. : 12026 AS N/O (A)

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (CBCS) II-Semester Advanced Supplementary Examinations, July-2019

Basic Electrical Engineering
(Civil, EEE, Mech. & IT)

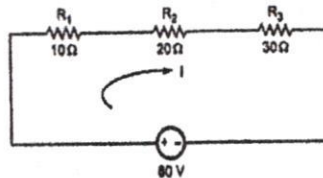
Time: 3 hours

Max. Marks: 60

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

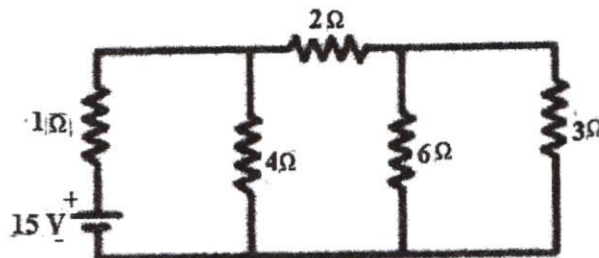
1. Define Kirchhoff's current & voltage laws
2. Find the voltage across each resistor in the given circuit



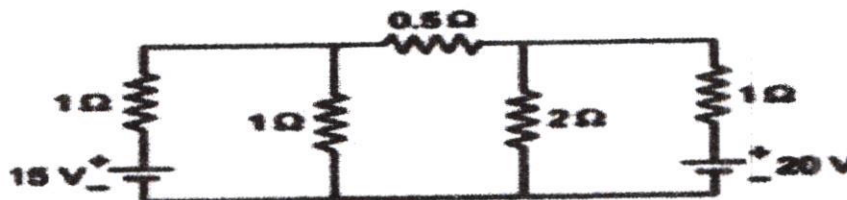
3. Define active, reactive and true powers in an AC circuit.
4. Draw the phasor diagram of 1-phase R-L circuit and write the power factor in terms impedance parameters.
5. List and give the applications of different types of DC motors
6. What is the necessity of commutator in a DC motor?
7. Draw the phasor diagram of 1-phase ideal transformer with resistive load.
8. Write advantages of MCB over fuse
9. Write any two applications of 3-phase induction motor.
10. Write any two advantages of stationary armature winding over rotating armature winding.

Part-B (5 × 8 = 40 Marks)

11. a) Find the current delivered by the voltage source. [4]



- b) Find the current through each resistor of the circuit shown in the figure using nodal analysis [4]



12. a) Define RMS value and find the Form Factor of the sinusoidal waveform. [3]
- b) An alternating current varying sinusoidally with a frequency of 50 Hz, has RMS value of 20A. [5]
Write the equation for the instantaneous value and find this value at (i) 0.0025s, (ii) 0.0125s, (iii)
At what time measured instantaneous current will be 14.14A from origin.
13. a) With a neat sketch explain the construction and working principle of DC motor. [4]
- b) A 250 V, DC shunt motor has an armature resistance of 0.025Ω and field resistance of 125Ω . On load [4]
it takes line current of 22A and runs at 750 RPM. Find the back emf (E_b) of the motor.
14. a) Explain about different types of safety devices used in electrical LT switchgear. [4]
- b) A 400 KVA, 5000/320 V transformer has copper losses of 2KW and iron losses of 2.5KW. If the [4]
power factor of the load is 0.85 lag. Determine the efficiency of the transformer on (i) full load (ii) half
load.
15. a) Derive EMF equation of synchronous generator. [3]
- b) A three phase 6-pole induction motor runs at 960rpm on the full load. It is supplied from a 4-pole [5]
alternator running at 1500 rpm. Calculate (i) the full-load slip of the motor, (ii) slip at standstill
condition (iii) frequency of IM rotor current at full load slip.
16. a) Explain the steps involved in applying [4]
i) Nodal Analysis
ii) Mesh Analysis method for analyzing the circuits.
- b) Explain the performance of a pure capacitive circuit when sinusoidal AC source is connected [4]
17. Answer any *two* of the following:
- a) Write about the applications of DC shunt, series and compound motors [4]
- b) Draw the equivalent circuit of transformer referred to its secondary [4]
- c) Explain about rotating magnetic field in three phase induction motor [4]
