BRAINWARE UNIVERSITY

Term End Examination 2023
Programme – B.Tech.(CSE)-2019
Course Name – Basic Electrical Engineering
Course Code - ESC(CSE)101
(Semester I)

Full Marks : 60   **Time : 2:30 Hours**
[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question)   1 x 15=15
1. *Choose the correct alternative from the following :*

(i) Identify the condition for which the mechanical power developed by a DC series motor is maximum?.

a) Back Emf is equal to half the applied voltage

b) Back Emf is equal to applied voltage

c) Back Emf is equal to zero.

d) None of above.

(ii) Identify the reason for which thin laminations are used in a machine

a) in order to reduce eddy current losses

b) in order to reduce hysteresis losses

c) in order to reduce both a & b

d) in order to reduce copper losses

(iii) Identify which of the following does not change in an transformer

a) Voltage

b) Frequency

c) Current

d) transformation ratio

(iv) A transformer has voltage rating of 220/110 volt. Identify the correct option

a) step down transformer

b) step up transformer

c) step down / step up transformer

d) none of these

(v) A resistor is omited from a series circuit, what happens to the total resistance ?

a) Increases

b) Decreases

c) Remains same

d) It becomes zero

(vi) Identify the correct option for a transformer

a) it is a static machine

b) it is a rotating machine

c) it is not a machine

d) none of these

(vii) Predict the flow of charge through a capacitor when we apply a dc voltage across it

a) Charge cannot flow

b) charge can flow

(viii) Identify the passive element in a circuit from the following options.

a) Current Source

b) Voltage Source

c) Capacitor

d) Resistor

(ix) A 10mH inductor carries a sinusoidal current of 1 A rms at a frequency of 50hz. Calculate the average power dissipated by the inductor.

a) 0.25 W

b) 0 W

c) 0.5 W

d) none of the above

(x) What causes the depletion region?

a) doping

b) diffusion

c) barrier potential

d) ions

(xi) What is the current gain for a common-base configuration where I_E = 4.2 mA and I_C = 4.0 mA?

a) 16.80

b) 1.05

c) 0.20

d) 0.95

(xii) In a practical magnetic circuits, the airgap is kept

a) very small

b) large

c) very large

d) none of the above

(xiii) A half cyclle average voltage of 12v is equal to what rms voltage

a) 6v

b) 24v

c) 13.33v

d) 10.5v

(xiv) Identify that an Electric circuit having nither an emf source nor an energy source is

a) Active circuit

b) Passive circuit

c) Unilateral circuit

d) bilateral circuit

(xv) Barrier potential in a PN junction is caused by

a) Flow of drift current

b) Diffusion of majority carriers across the junction

c) Migration of minority carriers across the junction

d) Thermally-generated electrons and holes
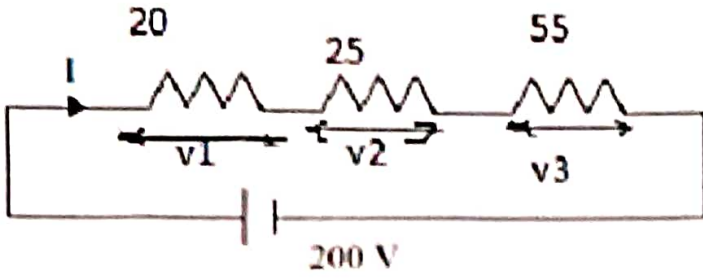
Group-B
(Short Answer Type Questions)

3 x 5=15

2. Describe with necessary diagram current division rule. (3)
3. Describe about the BH curve. (3)
4. Distinguish between avalanche breakdown and Zener breakdown. (3)
5. Explain the working of NPN and PNP transistor (3)
6. Calculate the current suppliiued by the battery in the given circuit. (3)
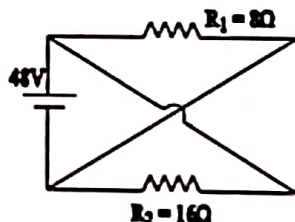
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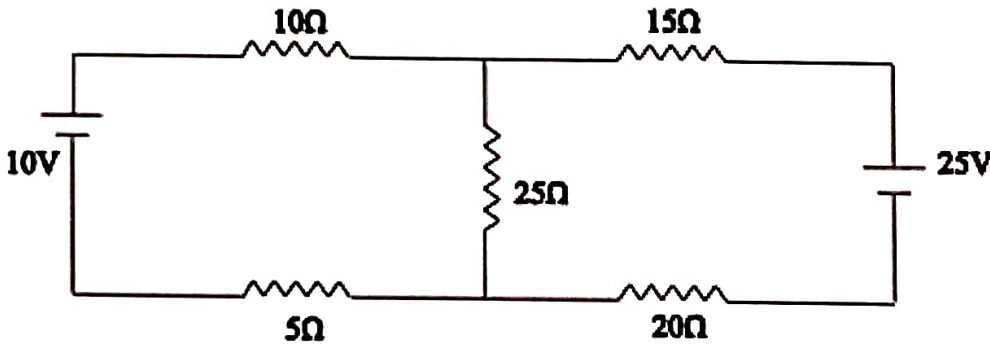
Evaluate the current through each resistors,

(3)

20   25   55

v1 v2 v3

200 V

Group-C
(Long Answer Type Questions)
5 x 6=30

7. Describe the working principle of transformer. (5)
8. Describe and prove that input and output power of transformer is same. (5)
9. Explain the center-tap Full wave rectifier with a neat diagram. (5)
10. Draw and explain the input and output characteristics of a transistor in CC configuration. (5)
11. Support by a phasor diagram show that the sum of the three-phase balanced currents is zero (5)
12. Calculate the branch current using 15 ohm resistance. (5)

OR

Evaluate the valur of R in the circuit (5)

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