BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – B.Tech.(CSE)-2024/B.Tech.(CSE)-AIR-2024/B.Tech.(CSE)-2025/B.Tech.(CSE)-AIR-2025
Course Name – Basic Electrical and Electronics Engineering
Course Code - BES00002
(Semester II)

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) Select the unit of reactive power;
a) VA b) Watt
c) VAR d) Ohm

(ii) Select the Unit of inductive reactance;
a) Henry b) mili-Henry
c) Weber d) Ohm

(iii) Choose from the following the law on which KCL is based:
a) Law of conservation of charge b) Law of conservation of energy
c) Law of conservation of mass d) None of these

(iv) Choose the rating of transformer;
a) KVA b) KW
c) HP d) KVAR

(v) Predict the right choice. Laminating the stator core of a three-phase induction motor lowers the
a) Eddy current loss b) Hysteresis loss
c) Both of these d) Weight of the stator

(vi) Select the no-load speed of the following DC motor that will be highest.
a) Shunt motor b) Series motor
c) Cumulative compound motor d) Differentially compound motor

(vii) A sine wave has a frequency of 50 Hz. Indicate the value of angular frequency;
a) 31.4 rad/s b) 314 rad/s
c) 3.14 rad/s d) None of these

(viii) Select the unit of electrical charge from the following:
a) Coulomb b) Joule

c) Volt
d) Watt

(ix) Select the principle behind electromagnetic induction-

a) Faraday's Law
b) Coulomb's Law
c) Ohm's Law
d) Kirchhoff's Law

(x) Indicate, Which of the following expressions doesn't represent the correct formula for Drift current density.

a) $J = \sigma E$
b) $J = qn\mu E$
c) $J = \mu E$
d) None

(xi) Select the cut-in voltage of a Si diode :

a) 0.3 V
b) 0.7 V
c) 0.3 mV
d) 0.7 mV

(xii) Select the band gap of a Silicon

a) 1.1 eV
b) 2.1 eV
c) 0.72 eV
d) 0.82 eV

(xiii) Identify the doping level associated with Zener breakdown in a Zener diode.

a) Lowest
b) Moderate
c) High
d) Low

(xiv) State the ripple factor for a half-wave rectifier.

a) 2
b) 1.21
c) 0.482
d) 0.877

(xv) State full form of PIV

a) Peak Voltage
b) Peak Inverse Voltage
c) Peak Inverse Volume
d) None of these

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Explain the construction of PNP and NPN transistor with diagram. (3)

3. Compare a half-wave and a full-wave rectifier. (3)

4. Explain the need for a starter in a DC motor. (3)
5. Explain superposition theorem. (3)
6. Distinguish between Electric and Magnetic circuits. (3)

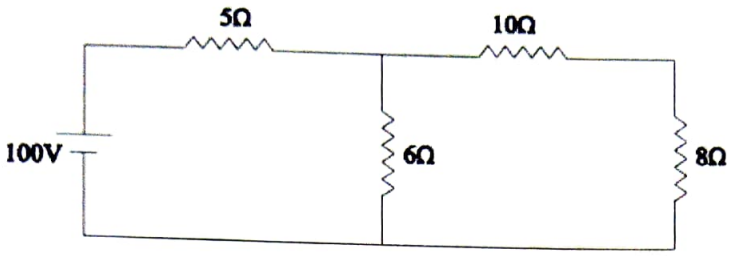
OR

Explain the phenomenon of drift and diffusion of current carriers in a semiconductor (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Describe different types of losses occurring in a transformer. Define the process to reduce eddy current loss (5)
8. Calculate the current through 8 ohm resistance using thevenin's theorem. (5)



9. Define node, junction, loop and mesh of a circuit. (5)
10. Explain the Drift current and Diffusion current in a semiconductor device. (5)

11. Compare in between BJT and FET. (5)

12. Analyze the V–I characteristics of a PN junction diode under forward and reverse bias and justify the deviation from ideal behavior. (5)

OR

Compare Zener and avalanche breakdown mechanisms with respect to doping concentration and electric field intensity. (5)

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