

**BACHELOR OF SCIENCE (APPLIED
SCIENCE-ENERGY) (BSCAEY)
Term-End Examination
June, 2026**

**BEY-012 : ELECTRICAL AND ELECTRONICS
SCIENCE**

Time : 3 Hours

Maximum Marks : 70

Note : (i) Attempt any **five** questions.

(ii) All questions carry equal marks.

1. (a) Explain the concept of electrical resistance and resistivity. How does temperature affect the resistance of a conducting material ? 7
- (b) Explain the significance of power factor in AC circuits. How does it affect power consumption and efficiency ? 7

2. (a) Discuss the various types of losses in a transformer. How do these losses affect the efficiency of a transformer ? 7
- (b) What would happen if the core of a transformer were made of wood instead of a ferromagnetic material ? Explain the impact on its efficiency, operation and overall performance. 7
3. (a) Explain the construction and working principle of a DC motor with a neat diagram. 7
- (b) Explain the function of commutator in a DC generator. Which type of material is used to make commutator ? 7
4. (a) Explain torque-slip characteristic of three phase induction motor. Also explain application of induction motor. 7
- (b) Draw and explain V-I characteristic of Zener diode. State any *two* key differences between Zener breakdown and avalanche breakdown. 7

5. (a) Explain the construction and working principle of NPN transistor with a neat diagram. 7
- (b) Compare depletion-mode and enhancement-mode MOSFET with suitable diagrams. 7
6. Draw and explain circuit diagram with truth table of the following : 7+7
- (i) Full adder
- (ii) Full subtractor
7. Write short notes on any *two* of the following : 2×7=14
- (a) Rotary Variable Differential Transformer (RVDT)
- (b) TRIAC
- (c) Faraday's Laws and Lenz's Rule

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