4251

BOARD DIPLOMA EXAMINATION, (C–14)
SEPTEMBER/OCTOBER - 2020
DME—THIRD SEMESTER EXAMINATION

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Time : 3 hours]　　　　　　　　　　　　　　[*Total Marks* : 80

PART—A　　　　　　3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define *(a)* magnetic flux and *(b)* reluctance.

2. State Faraday's laws of electromagnetic induction.

3. State units for *(a)* current, *(b)* electric power and *(c)* electric energy.

4. Write the formula for EMF equation in a DC generator.

5. Define *(a)* form factor and *(b)* peak factor.

6. State the relation between phase and line values of voltages and currents in delta connection.

7. State any three applications of single-phase induction motor.

8. Draw symbols for *(a)* P-N diode, *(b)* Zener diode and *(c)* LED.

9. State the need of earthing electric equipment.

10. Draw connection diagram of single-phase energy meter with load.
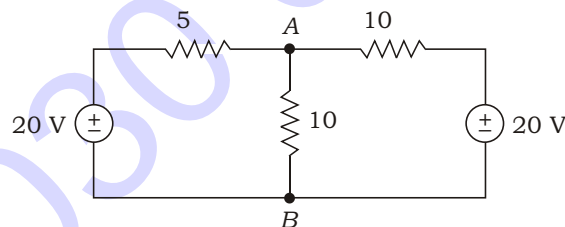
PART—B 10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Derive an expression for lifting power of a magnet.

12. Calculate current through *AB* given in the network below using Kirchhoff's laws :

13. Describe with a neat legible sketch the construction of a three-point starter.

14. *(a)* Classify DC generators based on excitation and draw their schematic diagrams.

(b) Explain with a legible sketch working of DOL starter for a three-phase induction motor.

15. A coil resistance of 10 is connected in series with an inductance of 0·02 H is connected across a 230 V, 50 Hz AC mains. Calculate *(a)* impedance, *(b)* current, *(c)* power factor, *(d)* voltage across resistance and *(e)* voltage across inductance.

16. Explain the construction of a three-phase squirrel cage induction motor with a neat diagram.

17. *(a)* Explain the formation of *P-N* junction diode.

(b) Draw input and output characteristics of CB and CE configurations.

18. Explain the construction and working principle of moving coil ammeter with neat sketch.

★ ★ ★