



C09-CM-303

**3229**

**BOARD DIPLOMA EXAMINATION, (C-09)**  
**OCT/NOV—2017**  
**DCME—THIRD SEMESTER EXAMINATION**  
**BASIC ELECTRICAL AND ELECTRONICS**  
**ENGINEERING**

*Time : 3 hours ]*

*[ Total Marks : 80*

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**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. When two resistances of 5  $\Omega$  and 20  $\Omega$  are connected in parallel across 240 V supply, calculate the total current and current through each resistance.
2. Write the three limitations of Ohm's law.
3. Three resistances of 10  $\Omega$ , 15  $\Omega$  and 25  $\Omega$  are connected in delta. Find out the equivalent star values.
4. Define (a) phase and (b) phase difference.
5. Define statically induced e.m.f. and given an example.
6. State the specifications of resistors.
7. Find the base current of a CB configuration having emitter current 2 mA and collector current 1.9 mA.

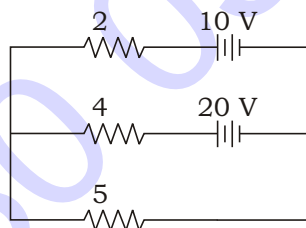
- \* 8. State the specification of P-N junction diode.
- 9. Draw the energy band diagram of conductors.
- 10. State the need of stabilizers.

**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. An aluminium resistor has a resistance of  $43.6 \Omega$  at  $40^\circ\text{C}$ . Find the temperature coefficient of resistance at  $0^\circ\text{C}$  when resistance of the material is  $40 \Omega$  at  $0^\circ\text{C}$ .
- 12. Find the current through  $5 \Omega$  resistor of the network shown below by applying Kirchoff's laws.



- 13. A coil of resistance  $10 \Omega$  and inductance  $5 \text{ mH}$  is connected in series with a capacitor of  $100 \mu\text{F}$ . When the circuit is connected across  $100 \text{ V}$ ,  $50 \text{ Hz}$  a.c. supply. Calculate (a) impedance, (b) the current and (c) the power factor.
- 14. State and explain the specifications of transformers.
- 15. Explain the working principle of transistor with neat sketch.
- 16. Draw and explain the input and output characteristics of CB configuration of transistor.
- \* 17. Describe the operation of P-N junction with forward, reverse bias and no bias.
- 18. (a) List the types of UPS. 5  
 (b) Explain the maintenance of stabilizers and UPS. 5

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