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C14–CM–302

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BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2016

DCME—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. State the limitations of Ohm's law.

2. Define the term 'conductivity'.

3. Define active and passive circuits.

4. Find the equivalent delta connection, when the resistances of 6 , 6 and 6 are connected in star.

5. Define self inductance and mutual inductance.

6. Find the value of resistance when the colours on the bands are gray, red, orange and gold.

7. Sketch the V-I characteristics of *p-n* junction diode.

8. Differentiate between *p*- and *n*-type semiconductors.

9. Define conduction band and forbidden energy gap.

10. State the need for stabilizer.

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.

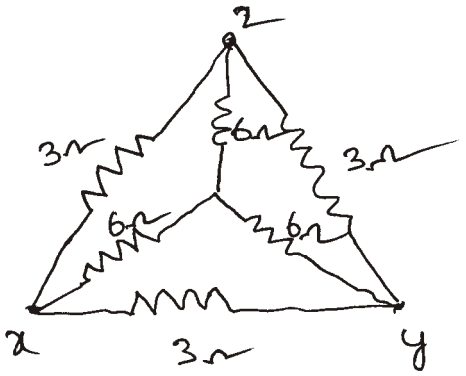
11. *(a)* State the effect of temperature on resistance of pure metals. 4

(b) Derive an expression for total resistance when three resistances are connected in parallel. 6

12. *(a)* Explain the terms of resistance R_t $R_0(1$ $_0t)$ at any temperature t. 4

(b) Calculate the increase in resistance of a coil when its temperature increases from 20 °C to 80 °C. [Take resistance at 20 °C as 50 and $_0$ 0 004] 6

13. Find the equivalent resistance between terminals x and y of the network shown in the figure below : 10



14. *(a)* Explain Kirchhoff's law. 5

(b) State and explain Lenz's law. 5

15. *(a)* State and explain Faraday's law of electromagnetic induction. 5

(b) Explain Fleming's right-hand rule and its application. 5

16. *(a)* Explain the colour coding resistors. 6

(b) Explain NTC resistor and PTC resistor. 4

17. Explain the working of *p-n* junction diode with neat sketch. 10

18. *(a)* Distinguish between intrinsic semiconductor and extrinsic semiconductor. 5

(b) List the specifications of stabilizers. 5

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