* 5029 *

C16–EC—105

5029

BOARD DIPLOMA EXAMINATION, (C–16)

MARCH/APRIL—2018

DECE—FIRST YEAR EXAMINATION

BASIC ELECTRONIC COMPONENTS AND MATERIALS

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

PART—A 2×15=30

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

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

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

1. List three superconducting materials.

2. Identify the value of the resistance whose 4-band colour code is yellow, violet, brown and gold.

3. List any three applications of wire wound resistors.

4. Mention various core materials used in the construction of inductors.

5. Mention the losses in capacitors.

6. State the relationship between voltage ratio, current ratio and turns ratio of a transformer.

7. List different types of transformers.

8. List three important applications of transformer.

9. Draw the ISI symbols of any three switches.

10. List the types of laminates used in PCBs.

11. List any three types of screw driver used in the electronic workshop.

12. List three types of soldering joints for joining electrical conductors.

13. List the ratings of condenser microphone.

14. Mention the use of woofers and tweeters.

15. Sketch the energy level diagrams for conductors, semiconductors and insulators.

16. Draw the forward and reverse bias characteristics of semiconductor diode.

17. Draw the symbols of *P-N-P* and *N-P-N* transistors.

18. Sketch the input characteristics of CE transistor configuration.

19. Give the expressions of efficiency for half-wave and full-wave rectifier circuits.

20. Mention the need for a filter circuit in power supplies.

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.

21. *(a)* Define the following mechanical properties of materials : 6

(i) Stress

(ii) Strain

(iii) Ductility

(b) Define soft and hard magnetic materials and give three examples of each. 4

22. Explain the constructional details of wire wound resistors with necessary diagrams.

23. Explain the construction and working of general purpose electromagnetic relay.

24. *(a)* Write the steps involved in screen printing for making PCBs. 6

(b) Explain the use of surface mount technology (SMT). 4

25. *(a)* Explain the working of carbon microphone. 5

(b) Explain the principle of operation of PMMC loudspeaker. 5

26. *(a)* Distinguish between intrinsic and extrinsic semiconductors. 5

(b) Explain the characteristics of Zener diode. 5

27. *(a)* Explain the working of *P-N-P* transistor. 4

(b) Compare the performance characteristics of transistors in CB, CE and CC configurations. 6

28. Explain the working of bridge rectifier circuit with waveforms.

★ ★ ★