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C09–EC–105

3031

BOARD DIPLOMA EXAMINATION, (C–09)

SEPTEMBER/OCTOBER - 2020

DECE—FIRST YEAR EXAMINATION

BASIC ELECTRONICS

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.

(4) Assume suitable data.

1. State Ohm's law. 3

2. Compare the features of carbon and wire-wound potentiometers. 3

3. Define dielectric strength and dielectric constant of a material. 3

4. List any three advantages of PCB. 1+1+1=3

5. State the necessity of a baffle for a loudspeaker. 3

6. Sketch the characteristics of Zener diode. 3

7. Distinguish between *p*-type and *n*-type semiconductors. 3

8. Define alpha and beta of a transistor. 3

9. List any three applications of transformers. 3

10. What is the necessity of a starter for DC motor? 3

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.

(4) Assume suitable data.

11. *(a)* State and explain Coulomb's laws of electrostatics. 6

(b) Describe the working of rheostat. 4

12. *(a)* Find the equivalent capacitance of capacitors connected in series. 6

(b) Define self and mutual inductance. 4

13. What is relay? Explain the performance characteristics of relay. 10

14. Explain the working of carbon microphone with a neat sketch. 10

15. Explain the working of *P-N* junction diode with different biasing voltages and draw its *V-I* characteristics. 10

16. Explain the working of a *P-N-P* transistor. 10

17. Distinguish between lead-acid battery and nickel-iron battery. 10

18. *(a)* Explain the working principle of DC generator. 6

(b) List any four applications of stepper motors. 4

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