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Code : 15EE01E

Register Number | | | | | | | | | | |

I/II Semester Diploma Examination, Oct./Nov.-2019

BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** questions from PART – A, each question carries **5** marks.
(ii) Answer any **seven** questions from PART – B, each question carries **10** marks.

PART – A

1. Mention any five effects of electric current with an example for each. **2½ + 2½ = 5**
2. Define the following & mention their units : **2½ + 2½ = 5**
   (i) Electric current
   (ii) Electric power
3. Explain with sketch mutually induced e.m.f. **5**
4. State five advantages of three-phase power supply over single phase power supply. **5**
5. What is a DC motor ? List the any three types of DC motor. **2 + 3 = 5**
6. List out the any five various applications of fractional horse power motors. **5**
7. State any five general electrical safety precautions. **5**
8. What is semiconductor ? Give one example. List any two types of diodes. **2 + 1 + 2 = 5**
9. List any three applications of transformer and two applications of AC generator. **5**

PART – B

10. (a) State Ohm's law & mention its limitations. **5**
    (b) A 100 W lamp is used for 4 hrs and 60 W lamp is used for 6 hrs a day find : **5**
    (i) Energy consumed per month.
    (ii) Cost of energy, if each unit costs ₹ 5.00

11. (a) Determine the equivalent resistance of three resistances R_1, R_2 & R_3 when connected in parallel across the supply voltage of V volts. **5**
    (b) Three resistances of 6 Ω, 3 Ω & 9 Ω are connected in parallel across a supply of 100 V, find
    (i) effective resistance of the circuit.
    (ii) total current in the circuit.
    (iii) current through each resistance. **5**

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12. (a) Define the following with their units :
    (i) Flux density
    (ii) Inductance 2 + 2
    (b) State Faraday's I & II laws of electromagnetic induction. 3 + 3

13. (a) Define : (i) R.M.S. Value.
    (ii) Average value 2 + 2
    (b) An alternating current of 60 Hz has a maximum value of 120 A.
    (i) Write down the equation for Instantaneous value of current.
    (ii) Find the time taken to reach 90 A for the first time. 3 + 3

14. (a) Draw sinusoidal waveforms and mark on it the following :
    (i) Peak value
    (ii) Instantaneous value
    (iii) Time period 4
    (b) A resistance of 10 Ω is connected in series with an inductance of 0.05 H. If this is connected to 200 V, 50 Hz supply, find inductive reactance, impedance, power factor and current. 1 + 2 + 1 + 2

15. (a) Explain the need of mechanical enclosures. List the types of mechanical enclosures. 3 + 3
    (b) List the name plate details of three phase induction motor. 4

16. (a) State the necessity of starter for three phase induction motor and list the types. 5
    (b) Explain the operation of Zener diode as a voltage regulator. 5

17. (a) What is fuse ? List the types. 2 + 3
    (b) Differentiate primary & secondary cells. 5

18. (a) Explain the necessity of electrical earthing. List the types earthing normally used. 3 + 2
    (b) With a neat circuit diagram, explain the working of half wave rectifier. 2 + 3

19. (a) What is a SCR ? List the applications of SCR. 2 + 2
    (b) Draw the logic symbol, write the truth table & Boolean expression for the following logic gates :
    (i) NAND
    (ii) EX-OR 3 + 3