1303

Code : 15EC01T

Register Number | | | | | | | |

I Semester Diploma Examination, Nov./Dec. 2016

CONCEPTS OF ELECTRICAL AND ELECTRONICS ENGINEERING

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

Note : (i) Answer any **six** questions from Part – **A**.

(ii) Answer any **seven** questions from Part – **B**.

PART – A

1. Define the following and write their SI units : **5**

   (i) Electric current

   (ii) EMF

2. State Kirchhoff's laws. **5**

3. Define the following with SI units : **5**

   (i) Amplitude

   (ii) Time period

4. List out the differences between single phase and three phase ac supply. **5**

5. A 10 kVA, 2200/220 Volts, single phase transformer has 60 turns on secondary. Determine the **5**

   (i) No. of turns on primary and

   (ii) Secondary current

6. Explain the method of protecting computer from power transients. 5

7. Differentiate conductors, insulators and semiconductors. Give one example for each. 5

8. Explain UPS with a block diagram. 5

9. State Faraday's laws of electromagnetic induction. 5

PART – B

10. (a) A resistance of 6 Ω is connected in series with a parallel combination of 30 Ω and 20 Ω resistances. This combination is connected across 36 V supply. Calculate : 7

    (i) Total resistance

    (ii) Branch currents

    (iii) Total current

    (b) Explain open, close and short circuit conditions. 3

11. (a) Explain self induced emf. 5

    (b) Explain generation of alternating current. 5

12. (a) If an alternating current is given by i = 100 sin 314 t find 5

    (i) Maximum value

    (ii) Frequency

    (iii) RMS value

    (iv) Average value

    (b) Define : 5

    (i) RMS value

    (ii) Average value of an alternating current

13. (a) For a series RC circuit connected across ac supply. Write the sketch of circuit diagram and vector diagram. Also, write the expressions for voltage, current, impedance and power factor. **6**

(b) For a series RLC circuit with L = 60 mH, C = 50 μF and R = 6 Ω. Calculate the impedance of the circuit. Assume f = 50 Hz. **4**

14. (a) A series RL circuit with R = 20 Ω, L= 20 mH is connected across 230 V, 50 Hz ac supply. Determine the values of : **8**

(i) Impedance

(ii) Current

(iii) Power factor

(iv) Power

(b) Define power factor. **2**

15. (a) Explain : **5**

(i) Current Ratio and

(ii) Voltage Ratio of single phase transformer

(b) What is an earthing ? Explain its necessity. List the types. **5**

16. (a) Explain the necessity of antistatic device and write the types of antistatic devices for protection of computers. **5**

(b) Explain the criteria for selection of UPS. **5**

17. (a) Explain VI characteristics of PN junction diode. **5**

(b) List the types of transistors. Write their symbols and mention applications. **5**

18. (a) Explain with a neat sketch the operations of Bridge rectifier. Also, draw the input and output waveforms. **6**

(b) List out the characteristics of Op-Amp. **4**

19. (a) Explain with a neat sketch the operation of transistor as a switch. **6**

(b) Explain the procedure to maintain a battery. **4**