1455

Code : 15EC-01T

Register Number | | | | | | | |

I Semester Diploma Examination, April/May-2016

CONCEPTS OF ELECTRICAL & ELECTRONICS ENGINEERING

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

Note : (i) Answer any **six** questions from Part-**A**. Each questions carries **5** marks.
(ii) Answer any **seven** questions from Part-**B**. Each questions carries **10** marks.

PART - A

1. State and explain Ohm's law. Mention its limitations. **5**

2. Define electrical power and energy and the meters used to measure them. **5**

3. Define magnetic field and flux density. What is the unit of flux density ? **5**

4. Sketch AC voltage waveform and mark the parameters given below : **5**
   (a) Instantaneous value
   (b) Amplitude
   (c) Time period
   (d) Cycle

5. Differentiate between single phase and three phase AC supply. **5**

6. List the types of transformers and write their applications. **5**

7. What do you mean by a switch ? Classify the switches based on their operation. **5**

8. Define conductors, semiconductors and insulators with examples. **5**

9. What is an Op-Amp ? List the ideal characteristics of OP-AMP. **5**

PART - B

10. (a) Explain open, closed and short circuit. 6
    (b) Define :
        (i) Current
        (ii) Emf and mention their units. 4

11. (a) Explain working principle of a relay. 5
    (b) What is the necessity of earthing ? Write the types of earthing. 5

12. (a) Explain self induced emf and mutually induced emf. 5
    (b) Define inductive reactance and capacitive reactance and mention their units. 5

13. (a) Define the following : 6
        (i) RMS value
        (ii) Average value
        (iii) Form factor
    (b) Bring out the comparison between DC and AC supply. 4

14. (a) Explain pure inductive AC circuit with waveform and vector diagram. 4
    (b) In an R-L series circuit, R = 30 Ω and L = 0.5 H are connected across 230 V, 50 Hz AC supply. Find
        (i) Impedance
        (ii) Current
        (iii) Power factor 6

15. (a) An AC voltage is given by $\upsilon = 100 \sin 314\ t$, what is the maximum voltage and frequency ? 5
    (b) Define power and power factor and write their units. 5

16. (a) Explain the working principle of stepper motor. 5
    (b) Explain intrinsic and extrinsic semiconductor. 5

17. (a) What is a rectifier ? Explain half wave rectifier with a circuit and waveforms. 5
    (b) Sketch and explain V-I characteristics of PN Junction diode. 5

18. (a) Explain transistor as a switch. 5
    (b) What are filters ? List the types of filters. 5

19. (a) Explain working of SMPS with block diagram. 6
    (b) Name different type of batteries and write their applications. 4