1735 **Code : 15EC-01T**

Register Number | | | | | | | |

I Semester Diploma Examination, April/May-2017

CONCEPTS OF ELECTRICAL AND ELECTRONICS ENGINEERING

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

Note : (i) Answer any **six** questions from a set of **9** 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. Define : (i) Electric current **5**
   (ii) EMF. Write their units.
2. State and explain Kirchoff's current law. **5**
3. Define : (i) Amplitude
   (ii) Frequency
   (iii) RMS value
   (iv) Average value
   (v) Time period **5**
4. Define : (i) Self induced emf **5**
   (ii) Mutually induced emf
5. What is rectifier ? List different types. **5**
6. Explain the function of a relay and list its applications. **5**
7. Write the block diagram of OP-AMP. **5**
8. What is the necessity of earthing ? List its types. **5**
9. Define switch. List types of switches with their symbols. **5**

PART – B

10. (a) Define intrinsic semiconductor and extrinsic semiconductor. **5**
    (b) Explain the transistor as a switch. **5**

11. (a) State and explain Ohm's law. What are its limitations ? **6**
    (b) Explain : (i) Open circuit **4**
    (ii) Closed circuit.

12. (a) Deduce an expression for effective resistance of two resistors connected in parallel. **5**

(b) A 100 watt lamp is used for 6 hours a day. Calculate

(i) Energy consumed per month

(ii) Cost of energy, if each unit costs ₹ 2.00 **5**

13. (a) State and explain Faraday's laws of electromagnetic induction. **5**

(b) Two resistances of 15 Ω & 10 Ω are connected in series, across a 50 V supply. Calculate

(i) Effective resistance

(ii) Total current in the circuit. **5**

14. (a) Explain series R-L circuit. **5**

(b) Explain pure resistive circuit connected to A.C. source with waveform. **5**

15. (a) Explain series R-C circuit. **5**

(b) Explain pure inductive circuit with waveform. **5**

16. (a) Explain series R-L-C circuit and derive an expression for impedance. **6**

(b) A circuit consists of a resistance of 10 Ω and an inductance of 0.2 H. Find **4**

(i) Inductive reactance

(ii) Impedance of the circuit, at 50 Hz frequency.

17. (a) Explain the working principle of transformer. **5**

(b) List the applications of transformer and stepper motor. **5**

18. (a) Explain the operation of diode and draw VI characteristics. **6**

(b) Write the block diagram of UPS. **4**

19. (a) Explain OP-AMP as inverting amplifier. **5**

(b) What are the precautions to be taken in the maintenance of lead acid battery ? **5**