**1188**

**Code : 15EC01T**

*Register Number* | | | | | | | |

**I Semester Diploma Examination, Nov./Dec. 2017**

# CONCEPTS OF ELECTRICAL & 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. Define electric current, voltage and resistance. Write their SI units. **5**

2. State and explain Kirchoff's current law. **5**

3. Define : **5**
   (i) MMF
   (ii) Reluctance

4. Explain RMS value and average value. **5**

5. An alternating current has a maximum value of current is 25 A. Find RMS value, average value, form-factor and crest-factor. **5**

6. Explain the construction of transformer. **5**

7. Explain the need of spike busters for protection of computers. **5**

8. Define conductor, semi-conductor and insulator. **5**

9. Explain the working of C-filter. **5**

## PART-B

10. (a) Distinguish between series and parallel resistor circuits. **5**

(b) Two resistors of 10Ω and 20Ω are connected in series across 20 V supply. Find : **5**

(i) Effective resistance of the circuit.

(ii) Total current in the circuit.

11. (a) Compute the total resistance of parallel combination of resistors. **5**

(b) Three resistance of 2Ω, 4Ω, 16Ω are connected parallel across 50 V supply. Calculate total resistance and total current. **5**

12. (a) Distinguish between electric circuit and magnetic circuit. **5**

(b) Write the applications of the stepper motor. **5**

13. (a) Define the following terms with respect to sinusoidal wave : **6**

(i) Phase-difference

(ii) In-phase

(iii) Out-off-phase

(b) Calculate capacitive reactance and power factor in RC series circuit with $C = 10\ \mu F$, $R = 100\ \Omega$ & $f = 50$ Hz. **4**

14. (a) Define power factor and impedance with respect to AC. Write their units. **5**

(b) Compute the expression that, the current I leads the voltage V by $90^{\circ}$ $(\pi/2)$, when AC flows through capacitor. **5**

15. Analyze the behaviour of series RLC circuit for AC input. **10**

16. (a) What is necessity of earthing ? Mention its type. **5**

(b) Explain working principle of relay. **5**

17. (a) List ideal characteristics of Op-Amp. **5**

(b) With a neat circuit diagram, explain the working of Op-Amp inverting amplifier. **5**

18. (a) What is transistor ? Mention different types of transistor with their symbols. **4**

(b) Explain V-I characteristics of forward biased PN junction diode. **6**

19. (a) Explain UPS with block diagram. **6**

(b) Name different type of batteries. **4**