2656

Code : 15EC01T

Register Number | | | | | | | |

I Semester Diploma Examination, Nov./Dec. 2015

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 a set of **10** questions from Part – **B** each question carries **10** marks.

PART – A

1. Define electric power and energy. Mention their practical units. **5**

2. State Ohm's law and write the three equations of Ohm's law. **5**

3. State and explain Faraday's laws of electromagnetic induction. **5**

4. Draw an AC waveform and mark, instantaneous values, amplitude, time period and frequency on it. **5**

5. Define a power factor and explain lagging and leading power factor. **5**

6. A single phase 50 Hz, 11000/440 V transformer has 100 turns on the secondary, find the primary turns and it draws 10 Amps of current from supply, find the secondary current. **5**

7. Explain protection of computer systems against power transients. **5**

8. What is a transistor and mention the types of transistor with symbols. **5**

9. Define an Op-Amp and explain Op-Amp as an inverting amplifier. **5**

[Turn over

PART – B

10. (a) Define electric current, EMF and resistance with their units. 6

(b) Derive an equation for equivalent resistance, when three resistors are connected in parallel. 4

11. (a) A resistance of 5 Ω is connected in series with another resistance of 20 Ω. Find the effective resistance and total current in the circuit, if it is connected across a 200 V supply. 4

(b) Define the following and mention their units : 6

- Magnetic flux
- MMF
- Reluctance

12. (a) Differentiate between single phase and three phase AC supply. 5

(b) Show that power consumed by a pure capacitive circuit is zero, along with waveforms and vector diagram. 5

13. (a) Define impedance, inductive reactance and capacitive reactance. 6

(b) An AC circuit consists of a resistance of 10 Ω, an inductance of 0.15 H in series. If this is connected across an AC supply of 250 V, 60 Hz, find the power consumed. 4

14. (a) List the applications of a stepper motor and spindle motor. 6

(b) Define RMS value and average value of an AC voltage. 4

15. (a) What is a switch and list the types of switches with symbols. 6

(b) What is a fuse ? Mention the types and ratings of fuse. 4

16. (a) Define conductors, semiconductors and insulators with an examples. 6

(b) Explain intrinsic and extrinsic semi conductors. 4

17. (a) What is a rectifier ? Explain the working of a centre tapped full-wave rectifier with waveforms. 6

(b) What is a filter ? Explain 'C' type filter. 4

18. (a) Explain the operation of a PN-junction diode with neat sketches. 5

(b) List the characteristics of an ideal Op-Amp. 5

19. (a) Define UPS and explain the block diagram of UPS. 5

(b) Explain the maintenance of a battery. 5
