

1383**Code : 15EC01T**Register
Number

--	--	--	--	--	--	--	--	--	--

I Semester Diploma Examination, Oct./Nov.-2019**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. Define electrical power and energy. Write their units. 5
2. State and explain Kirchoff's current law. 5
3. Define : 5
 - (i) Self induced EMF
 - (ii) Mutually induced EMF
4. Define : 5
 - (i) RMS value
 - (ii) Form factor for sine-wave
5. An alternating current is represented as $i = 30 \sin 100 t$. Find maximum value, RMS value, average value, frequency and time. 5
6. Explain types of transformers based on core and frequency. 5
7. Explain the need of antistatic device for protection of computer components. 5

8. Define conductor, semiconductor and Insulator.

9. Explain necessity of filter. List the types of filter.

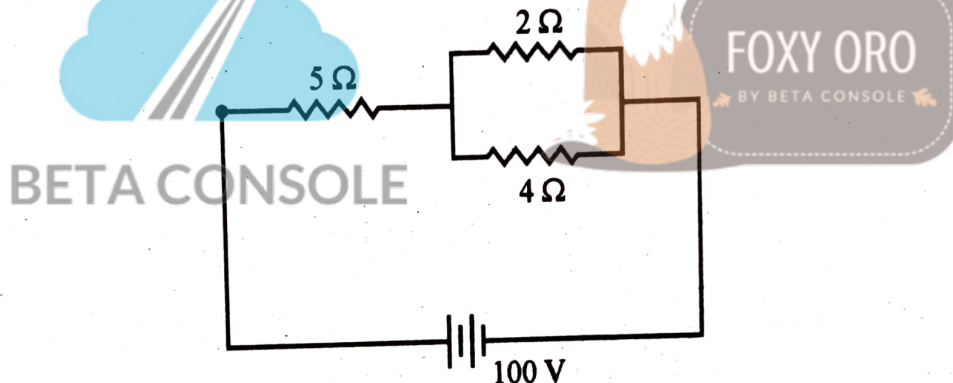
PART - B

10. (a) Distinguish between AC and DC current.

(b) List the applications and limitations of Ohm's law.

11. (a) Derive total resistance of three resistors connected in series.

(b) A $5\ \Omega$ resistance is connected in series with a parallel combination of two resistors of $2\ \Omega$ and $4\ \Omega$. A 100 V supply is connected across this combination. Find the effective resistance and total current.



12. (a) State and explain Faraday's Laws of electromagnetic induction.

(b) Write the applications of brushless DC motor and spindle motor.

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

(i) Instantaneous value

(ii) Amplitude

(iii) Cycle

(iv) Time period

(v) Frequency

(b) A RL series circuit has a values of $R = 10\ \Omega$, $L = 2\text{ H}$. If this is connected to 250 V , 50 Hz supply. Calculate inductive reactance, impedance and current.

- (a) Define power factor and impedance with respect to AC. Write their units. 5
- (b) Explain pure inductive AC circuit with waveform and vector diagram. 5
5. Analyze the behaviour of series RLC circuit for AC input. 10
6. (a) What do mean by a switch ? Classify the switches based on their operation. 5
- (b) Explain the working principle of Relay. 5
17. (a) List the ideal characteristics of Op-Amp. 5
- (b) With a neat circuit diagram, explain the working of Op-Amp non-inverting amplifier. 5
18. (a) Define : 5
- (i) Intrinsic semiconductor
- (ii) Extrinsic semiconductor
- (iii) Doping
- (b) Explain the working of half-wave rectifier. 5
19. (a) Explain UPS with block diagram. 6
- (b) Explain briefly about battery maintenance. 4

