

**Code : 15EC01T**

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**I Semester Diploma Examination, Nov./Dec. 2018**

**CNCPT OF ELE & ELECTRONICS ENGG.**

**Time : 3 Hours ]**

**[ Max. Marks : 100**

**Instructions :** (1) Answer any **six** questions from Part – A. Each question carries **5** marks.

(2) Answer any **seven** questions from Part – B. Each question carries **10** marks.

**PART – A**

1. State and explain Kirchoff's current law.

**BETA CONSOLE**



**5**

2. Obtain the equivalent resistance of resistors in a series circuit.

**5**

3. State Faraday's laws of Electromagnetic Induction.

**5**

4. Draw a sinusoidal waveform and mark the following :

**5**

(i) Amplitude

(ii) Time period

5. Calculate the RMS and average value of an AC voltage  $e = 20 \sin 30 t$ .

**5**

6. Explain the construction of step-up and step-down transformer.

**5**

7. Explain the need of Fuse as a protective device in a circuit.
8. Explain P-type and N-type semiconductors.
9. State the ideal characteristics of an Op-Amp.

**PART – B**

10. (a) State the applications and limitations of Ohm's law. 5  
(b) A resistance of  $10\ \Omega$  is connected in series with a parallel combination of  $20\ \Omega$  and  $20\ \Omega$ . The total combination is connected across 100 V supply. Find  
(i) the effective resistance  
(ii) Total current drawn from the supply 5
11. (a) An electric stove consumes a current of 10 A when connected to 230 V power supply. Find the power consumed by the stove. 5  
(b) Define the following with their units 5  
(i) Voltage  
(ii) Current  
(iii) Resistance
12. (a) Explain with a neat diagram mutually induced emf. 5  
(b) A power transformer has 100 primary turns and 600 secondary turns. If a primary voltage is 120 V and full load primary current is 12 A find 5  
(i) Secondary voltage  
(ii) Secondary current

6. A coil and inductance 10 H is connected in series with a resistance of 100  $\Omega$ . This series circuit is connected to 230 V, 50 Hz supply find 10

- (i) impedance
- (ii) current
- (iii) power factor
- (iv) power
- (v) form factor

14. (a) Define the following:

- (i) frequency
- (ii) form factor
- (iii) power factor

5

(b) Explain with a circuit and waveform the relation between voltage and current in pure inductive circuit. 5

15. (a) Derive the expression for impedance of an RLC series circuit. 5

(b) Explain the terms capacitive reactance and inductive reactance with expression and unit. 5

16. (a) Explain the principle of operation of an Electromagnetic relay. 5

(b) Explain with a neat diagram pipe earthing. 5

17. (a) With a neat diagram show how a diode can be used as a half wave rectifier. 5

(b) Explain the block diagram of an Op-Amp circuit. 5

18. (a) Explain how Op-Amp can be used as a Non-inverting Amplifier. 5  
(b) List different types of switches with their symbols. 5
19. (a) Explain the operation of transistor as switch. 5  
(b) Explain the criteria for selection of UPS. 5

