

1170**Code : 15EC01T**Register
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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.

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1. State and explain Kirchoff's current law.



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



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3. State Faraday's laws of Electromagnetic Induction.

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4. Draw a sinusoidal waveform and mark the following :

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(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.

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7. Explain the need of Fuse as a protective device in a circuit.

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8. Explain P-type and N-type semiconductors.

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9. State the ideal characteristics of an Op-Amp.

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PART – B

10. (a) State the applications and limitations of Ohm's law.

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(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

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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.

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(b) Define the following with their units

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(i) Voltage

(ii) Current

(iii) Resistance

12. (a) Explain with a neat diagram mutually induced emf.

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(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

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(i) Secondary voltage

(ii) Secondary current

13. A coil and inductance 10 H is connected in series with a resistance of 100 Ω . 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 : 5
- (i) frequency
 - (ii) form factor
 - (iii) power factor
- (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
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