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I Semester Diploma Examination, April/May-2019

**BASICS OF ELECTRICAL AND ELECTRONICS
ENGINEERING**

Time : 3 Hours]

[Max. Marks : 100

- Instructions :**
- (i) Answer any six questions from Part – A. ($5 \times 6 = 30$ marks)
 - (ii) Answer any seven full questions from Part – B. ($7 \times 10 = 70$ marks)

PART – A

1. Expression given $I = \frac{V}{R}$ AMP. State law for this expression and its limitations and applications. 5
2. Design a circuit when three resistors connected in parallel and derive equivalent resistance. 5
3. Define :
 - (a) Electric charge
 - (b) Electric flux 5
4. State and explain Lenz Law. 5
5. Define :
 - (a) Amplitude
 - (b) Time period 5
6. An AC series circuit consists of $R = 20 \Omega$, $L = 0.07 \text{ H}$, if this is connected to a 200 V, 50 Hz supply, find
 - (a) Impedance
 - (b) Current 5
7. Classify transformers based on frequency. 5
8. Explain the construction of metal film resistors. 5
9. Explain the principle of operation of LDR. 5

PART - B

10. Define cell and list the precautions to be taken in lead acid battery. 10
11. (a) State and apply K.C.L. for a simple circuit. 6
(b) Define :
(i) Resistance
(ii) Potential difference 4
12. (a) State and explain coulombs first and second law. 6
(b) Three capacitors of $3\ \mu\text{F}$, $4\ \mu\text{F}$ and $6\ \mu\text{F}$ are connected in
(i) series
(ii) parallel
Calculate the effective capacitance in each case. 4
13. (a) Define Inductive Reactance. 2
(b) Compute the equation when inductors are connected in series. 8
14. Analyse the behaviour of RLC series circuit with phasor diagram. 10
15. (a) Explain the principle of operation of transformer. 6
(b) Derive the EMF equation of transformer. 4
16. Describe the principle of operation of DC motors. 10
17. (a) Derive the equation of RC series circuit. 5
(b) An AC circuit consists of $R = 50\ \Omega$, $C = 100\ \mu\text{F}$, when this is connected to $250\ \text{V}$, $50\ \text{Hz}$ supply find
(i) Impedance
(ii) Current
(iii) Power factor 5
18. Explain the principle of 10
(a) V.D.R.
(b) Thermistor
19. Classify capacitors based on dielectric and explain
(a) Mica
(b) Ceramic capacitor 10