Seat No: _____   Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech., Winter 2017 - 18 Examination

Semester: 1   Date: 05/01/2018
Subject Code: 03106101   Time: 02:00 pm to 04:30 pm
Subject Name: Fundamentals of Electrical Engineering   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions   **(15)**

1. If supply frequency is increase, what is effect on Xc.
   (A) Increase.   (B) Decrease   (C) Same.   (D) All of above.

2. What is the unit of reactive power?
   (A) Volt   (B) Ampere   (C) VAR   (D) joule

3. Average Power of pure inductive circuit is …………..
   (A) Zero   (B) Unity   (C) Infinite   (D) None of these

4. Ampere-second is the unit of ……..
   (A)Power   (B)Energy   (C) EMF   (D) Charge

5. The electrical potential V=……..
   (A) W/Q   (B)R/I   (C) Q/t   (D) PI

6. In Capacitive circuit what is the value of average power?

7. What is the equation of energy store in capacitor?

8. Which type of wiring is used for domestic purpose?

9. Give names of Protecting device for house application.

10. Give RMS value of sinusoidal waveform of current.

11. The Form factor value of sine wave is_____.

12. In series RL circuit R=10Ω and XL=10 Ω, than the phase angle is _____.

13. Voltage in case of short circuit is _____.

14. If the frequency is 50Hz, the time required to complete one cycle is _____.

15. The Cosine of angle between voltage and current is known as_____.

Q.2 Answer the following questions. (Attempt any three)   **(15)**

A) Derive the equivalent resistance of Series and Parallel circuit.

B) Derive an expression for energy stored in capacitor.

C) Define Cycle, Amplitude, Instantaneous Value, Time period, and Frequency.

D) Explain magnetic hysteresis loop.

Q.3 A) A resistor of 40Ω, an inductor of 250 mH and a capacitor of 30 µF are connected in series across **(07)** 110V, 50Hz supply. Calculate (1) XL (2) XC (3) impedance (4) current (5) power factor (6) voltage drop in R, L and C (7) power loss in circuit.

B) Derive the equation of charging and discharging of capacitor? Sketch the graph of capacitor **(08)** voltage and current w.r.t time.

OR

B) List of the methods to solve parallel AC circuit, Explain Admittance method. **(08)**

Q.4 A) Explain Two-wattmeter method to find power and power factor in 3ph Star connected load. **(07)**

OR

A) Comparisons between electric Circuit and Magnetic Circuit **(07)**

B) In the network shown in figure, Determine the resistance between A and F by using Star & Delta **(08)** transformation and find current.