PBK-003-1271002 Seat No. _____

M. Sc. (ECI) (Sem. I) (CBCS) Examination

November / December - 2018

Foundation of Electronics : Paper - 2

(New Syllabus)

Faculty Code : 003
Subject Code : 1271002

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions :

(1) Figures on right hand side indicate marks.
(2) Assume suitable data if ncessary.

1 Answer the following : (any seven) **14**

(1) Briefly explain mutual induction.
(2) Write characteristics of a magentic field of a circular coil.
(3) Write about the basic properties of the charge.
(4) Explain electric field intensity due to point charge.
(5) Draw symbol of Resistor, Capacitor and Inductor.
(6) Explain Coulomb's law.
(7) Write about ideal voltage source.
(8) Define volt and voltage.
(9) Write an equation of total resistance of series and parallel combination.
(10) Briefly explain Lorentz's force.

2 Answer the following : (any two)

(1) Explain motional emf for a group of conductors. **7**
(2) Explain Kirchhoff's current and voltage laws with determination of algebraic sign. **7**
(3) Explain following for AC waveform : Amplitude, Frequency, Time Period, Peak Value. **7**

3 Answer the following :

(1) What is resistance ? Discuss resistance of a conductor. **5**

(2) Briefly explain regarding intensity of electric field. **5**

(3) Represent potential difference as negative of line integral. **4**

OR

3 Answer the following :

(1) Explain the voltage divider and current divider rule for resistive networks. **5**

(2) Explain about different factors affecting the capacitance of a capacitor. **5**

(3) Describe series and parallel combination of inductor. **4**

4 Answer the following :

(1) State the Ohm's law and discuss about series and parallel circuits. **7**

(2) For a uniform electric field, prove the relation between E and V is E = V/L. **7**

5 Answer the following : (any two)

(1) Discuss the series and parallel connection of capacitors and derive the relevant formula for both types of connections. **7**

(2) Assume that a current I flows in a circular coil. Prove that the magnetic frield at the centre of the coil is $B = \frac{\mu_0 1}{2a}$ **7**

(3) Derive the equations for the energy stored in a capacitor and inductor. **7**

(4) Discuss the torque experienced by a current loop in a uniform magnetic field. **7**