

### Question Bank (G scheme)

Name of subject: ELECTRICAL ENGINEERING

Subject code: 17318

Semester: III

Unit Test: I

Course: EJ/IE/IS

### Chapter – 1 (A.C.Fundamentals) (30M)

#### 3 marks

- 1) List out advantages of AC over DC .
- 2) Define peak factor, form factor, RMS value and average value.
- 3) Define wave form, instantaneous value, time period, frequency.
- 4) An alternating current given by equation  $i = 142.14 \sin 628 t$ . Find
  - i) RMS value
  - ii) Average Value
  - iii) Frequency
- 5) Draw the Phasor diagram to represent the following voltages:  
 $V_1 = 50 \sin \omega t$  ,  $V_2 = 75 \sin \omega t$  ,  $V_3 = 200 \sin (\omega t + \pi/3)$  ,  $V_4 = 100 \sin (\omega t + \pi/4)$ .
- 6) Define power factor in 3 different ways .and give its significance.

#### 4 marks

- 7) For RC circuit i) Draw the circuit diagram ii) write the voltage & current equations.  
iii) Draw the vector diagram. iv) Draw the impedance triangle.
- 8) A coil of resistance  $10 \Omega$  and inductance  $0.1 \text{ H}$  is connected in series with a capacitor of  $150 \mu\text{F}$  across  $200 \text{ V}$ ,  $50 \text{ Hz}$  supply. Calculate
  - i) Inductive reactance
  - ii) Impedance
  - iii) Capacitive reactance
  - iv) Current
- 9) A coil having a resistance of  $10 \Omega$  and inductance of  $0.2 \text{ H}$  is connected to  $100 \text{ V}$ ,  $50 \text{ Hz}$  supply. Calculate
  - i) Impedance of the coil
  - ii) Current taken
  - iii) Reactance of the coil
  - iv) Phase difference between current and applied voltage
- 10) Draw a power triangle for inductive load. Define active power, reactive power and apparent power in A.C. Circuits
- 11) A Series R-L-C circuit has  $R = 25 \Omega$ ,  $L = 25 \text{ mH}$  and  $C = 25 \mu\text{F}$ . Find Inductive and Capacitive reactance, Impedance, Current, Power factor of the circuit. Across  $230 \text{ V}$ ,  $50 \text{ Hz}$  supply. Also comment on the nature of circuit. Draw phasor diagrams.
- 12) Draw the graph of resonance in RLC series circuit. Write conditions for series resonance.
- 13) Compare series resonant circuit with parallel resonant circuit.

## **Chapter -2 ( Poly Phase system ) (12M)**

### **3 marks**

- 14) State the relationship between line and phase quantities for star and delta connected load
- 15) State any four advantages of poly phase system.
- 16) Write down the equations to find out the active power, reactive power and apparent power in 3phase system.
- 17) State the meaning of three phase balanced and unbalanced load.

### **4 marks**

- 18) Three resistance of  $25 \Omega$  each are connected in delta across a 3 phase 400V A.C. supply. find i)phase current ii)line current iii)phase voltage iv)total power consumed.
- 19) Calculate the line current, phase current, power factor and total power for a delta connected circuit having the resistance of  $10 \Omega$  and inductive reactance of  $5 \Omega$  for 3 phase 440 V, 50 Hz A.C.
- 20) Draw a 3phase star connected supply system and state the relation between  $V_{ph}$  and  $V_L$ ,  $I_{ph}$ , and  $I_L$ . State an expression to determine the active power in the circuit.
- 21) A delta connected balanced load has an impedance of  $(3+j4) \Omega$  connected to a 230v,50 Hz A.C. supply. Calculate values of line and phase currents, line and phase voltages power consumed by each impedance and total power consumed.
- 22) State the principle of three phase e.m.f generation. Sketch three phase voltage waveforms. Write the voltage equations.

## **Chapter 3 (Electromagnetic Induction)(8M)**

### **3 marks**

- 23) State lenz's law

### **4 marks**

- 24) Define self-induced emf and mutually induced emf?
- 25) State and explain fleming's right hand rule and lenz's law for deciding the direction of induced EMF.