

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 10Ω and inductance 0.1 H is connected in series with a capacitor of $150 \mu\text{F}$ across 200 V , 50 Hz supply. Calculate
 - i) Inductive reactance
 - ii) Impedance
 - iii) Capacitive reactance
 - iv) Current
- 9) A coil having a resistance of 10Ω and inductance of 0.2 H is connected to 100 V , 50 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 V , 50 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 25Ω 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 10Ω and inductive reactance of 5Ω 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.