# 22208

**11819**

**3 Hours / 70 Marks** Seat No. | | | | | | | | |

***Instructions :*** *(1)* ***All*** *questions are* ***compulsory****.*
*(2) Answer each Section on* ***separate*** *answer sheet.*
*(3) Illustrate your answers with neat sketches* ***wherever*** *necessary.*
*(4) Figures to the* ***right*** *indicate* ***full*** *marks.*
*(5) Assume suitable data, if* ***necessary****.*

**Marks**

SECTION – I

**1.** Attempt **any six** of the following. **12**

a) Define term :
   i) EMF ii) Current
b) State Lenz's law.
c) State the relationship between line and phase values for 3 phase delta connected balanced load.
d) State the significance of power factor.
e) State emf equation of single phase transformer.
f) State the application of single phase motor.
g) Define term :
   i) Transformation ratio
   ii) Turns ratio.

**2.** Attempt **any three** of the following. **12**

a) State and explain Faraday's law of electromagnetic induction.
b) State the difference between electric and magnetic circuit (four points).
c) Draw and explain construction of two winding transformer.
d) Explain working of autotransformer. State its any two applications.

**3.** Attempt **any two** of the following . **12**

a) Explain -self induced emf, mutual induced emf.
b) A resistance of 50 Ω and inductance 0.1 H are connected in series across 230 V, 50 Hz supply mains. Determine :
   i) Inductive reactance
   ii) Impedance
   iii) Power factor

**P.T.O.**

**Marks**

iv) Current

v) Angular frequency

vi) Power consumed by circuit.

c) State different power in ac circuit. State its formulae and units. Draw power traingle for series R-L ac circuit.

SECTION – II

**4.** Attempt **any five** of the following. **10**

a) State the classification of capacitor.

b) Draw symbol of ideal and practical voltage and current sources.

c) State the applications of PN Junction diode. (any two)

d) Draw the symbol

i) NPN BJT ii) PNP BJT

e) State the different types of filter.

f) Derive relationship between $\alpha$ and $\beta$.

**5.** Attempt **any three** of the following. **12**

a) Find the colour code for given resistance value.

i) 120 K$\Omega$, $\pm$ 20% ii) 2.2 M $\Omega$ , $\pm$ 5%

b) State difference between CB,CE and CC configuration.

c) Draw circuit diagram and input-output waveform for center tap full wave rectifier with $\pi$ filter.

d) Draw the waveform for given signal.

i) Triangular wave

ii) Square wave with representing time period.

**6.** Attempt **any two** of the following. **12**

a) i) State the difference between active and passive components.

ii) State the dielectric materials used for capacitor.

b) i) State the difference between PN Junction diode and Zener diode.

ii) Define term-static and dynamic resistance for PN Junction diode.

c) Draw and explain circuit diagram and output characteristics for CE configuration of Bipolar junction transistor.