23242

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.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

SECTION – I

1. Attempt any SIX of the following : **12**

(a) Define :

(i) M.M.F.

(ii) Reluctance

(b) Define :

(i) Power

(ii) Energy

(c) Define RMS value & form factor with respect to sinusoidal ac waveform.

(d) Define Autotransformer.

(e) State applications of single phase motor (any two).

(f) Define :

(i) Peak factor

(ii) Power factor

(g) State the working principle of single phase transformer.

2. Attempt any THREE of the following : 12

(a) Draw circuit diagram and phaser diagram for series RL circuit. Write equation for voltage and current for it.

(b) Explain working of single phase induction motor with neat sketch.

(c) State (i) Faraday's laws of electromagnetic induction & (ii) Lenz's law.

(d) For a single phase transformer, Give

(i) any two types

(ii) any two losses

(iii) any two applications

(iv) transformation ratio

3. Attempt any TWO of the following : 12

(a) (i) Define Dynamically induced emf & statically induced emf. Give one example of each.

(ii) Define self & mutual inductance & give equation of each.

(b) (i) State relation between V_l & V_{ph} in case of 3ϕ star connection. If a line voltage of 400 V is applied across star connected load, then find phase voltage.

(ii) In a R-L Series circuit R = 15Ω and L = 0.005 H. When a 220 V, 50 Hz, 1ϕ AC is applied to it, calculate current flowing through the circuit.

(c) (i) State principle of single phase transformer.

(ii) Derive an emf equation of single phase transformer.

SECTION – II

4. Attempt any FIVE of the following : **10**

(a) Compare active & passive components (2 pts).

(b) Define (i) PIV (ii) Efficiency of rectifiers.

(c) State types of BJT & their symbols.

(d) State different types of signals.

(e) State any two types of filters.

(f) State cut-off & active region of transistor.

5. Attempt any THREE of the following : **12**

(a) Give symbol of

(i) Capacitor

(ii) Inductor

Give their specifications.

(b) For an LED –

(i) draw symbol

(ii) draw its characteristics

(iii) write any two applications

(c) Explain working of fullwave rectifier with waveforms.

(d) Find value of resistor from the given colour code :

(i) Orange, Orange, Orange, Gold

(ii) Brown, Black, Orange, Silver

6. Attempt any TWO of the following : **12**

(a) (i) Draw waveform of different signals.

(ii) Explain time & frequency domain representation of signals.

(b) State need of filter. Explain π filter with neat sketch.

(c) (i) Explain input & output characteristics of CE configuration.

(ii) Give applications of transistors.

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