22310

12425

03 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answer with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) 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) Peak factor

ii) Power factor.

b) State the types of transformers.

c) Define:

i) Current

ii) Potential.

d) State any two applications of single phase motor.

e) Define:

i) Amplitude

ii) Phase angle.

Marks

f) State Fleming's right hand rule.

g) Write the equation of self inductance. State the meaning of each notation on it.

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

a) Compare self and mutual induction (Any four points).

b) Draw and explain construction of transformer.

c) Explain the construction and working principle of auto transformer.

d) Explain the construction and working principle of single phase AC motor.

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

a) Draw and explain series RLC circuit. State any two differences between series and parallel RLC circuit.

b) A capacitance of 40μf and a resistance of 100Ω are connected in series across a 230 V, 50 Hz supply mains. Determine:

i) Angular frequency

ii) Current

iii) Circuit power

Draw circuit diagram.

c) Explain the working principle of single phase induction motor.

SECTION-II

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

a) State specification of resistors.

b) Draw the symbol of:

i) Zener diode

ii) LED.

c) Define parameters – α and β related to BJT.

Marks

d) State the classification of capacitors.

e) List different types of filter.

f) State the application of BJT.

g) List different operating region for BJT.

5. Attempt any <u>THREE</u> of the following: **12**

a) Explain ideal and practical voltage sources with suitable diagram.

b) Differentiate between centre tapped and bridge full wave rectifier with following parameters:

i) No. of diode used

ii) PIV

iii) Ripple factor

iv) Efficiency.

c) Draw and explain VI characteristics of PN junction diode.

d) Find the values of resistor from given colour code:

i) Red, Red, Orange, Gold.

ii) Brown, Green, Yellow, Silver.

6. Attempt any <u>TWO</u> of the following: **12**

a) i) Differentiate between analog and digital IC.

ii) State difference between passive and active components.

b) Draw and explain half wave rectifier with capacitor shunt and π filter.

c) i) State difference between CB, CE and CC configuration with given parameter – i/p resistance, current gain and application.

ii) Explain transistor as a switch.

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