312309

12526

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

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

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

(3) Illustrate your answers 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

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

a) Draw the symbol of resistor and capacitor.

b) Define biasing. List the types of biasing.

c) List applications of variable inductors.

d) State any four advantages of LC filter.

e) List any two special purpose diodes.

f) Name the circuit to obtain D.C. to ac signal.

g) Draw the circuit diagram of RC integrator.

Marks

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

a) State the output voltages for the ICs.

i) IC 7805

ii) IC 7824

iii) IC 7912

iv) IC 7906

b) Describe the V-I characteristic of PN junction diode with proper sketch.

c) Compare positive and negative feedback. (Any four points)

d) A transistor has $I_B = 210\,\mu A$, $I_C = 5\,mA$. Calculate the values of α and β.

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

a) Calculate the value of resistor for the following colour codes :

i) RED RED ORANGE GOLD

ii) BROWN BLACK BLACK SILVER

b) Compare half wave rectifier with bridge rectifier on the basis of TUF, Ripple factor, efficiency and PN.

c) State and explain Barkhusen's criteria required for oscillations.

d) State the need of regulated power supply. Define line and load regulation with reference to regulator.

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

a) State the function of each pins of IC 723. Sketch diagram for obtaining 5 V output DC regulated voltage using IC 723.

b) Sketch the circuit diagram of crystal oscillator. State any two advantages of Crystal oscillator.

c) Compare JFET and BJT on basis of –

i) Controlling parameter.

ii) Input impedance

iii) Transfer characteristics

iv) Offset voltage

Marks

d) Classify dependent voltage and current sources.

e) With the help of circuit diagram and waveforms, describe the working of negative shunt clipper.

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

a) Draw a sinusoidal waveform showing Peak to Peak voltage, Time period and wavelength. Also define Peak to Peak voltage, Time period and wavelength.

b) Draw RC phase shift oscillator and determine frequency of oscillation. Define how can the frequency of oscillator be changed.

c) Draw output characteristics of common emitter (CE) configuration and explain active, saturation and cut off region.

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

a) Describe the construction and working principle of OLED with neat sketch. List any four application of OLED.

b) Draw the block diagram of regulated DC power supply and explain the function of each block.

c) Compare Class A, Class B and Class C power amplifier on the basis of –

i) Conduction angle of IC.

ii) Position of Q point on load line

iii) Efficiency

iv) Power dissipation in transistor.

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