22346

11920

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

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

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) 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) Define following parameter for JFET along with mathematical relation:

(i) Transconductance

(ii) Amplification factor

b) Draw the symbol of:

(i) NPN transistor

(ii) PNP transistor

c) List any two applications of crystal oscillator.

d) Determine the output voltage of regulated power supply using following ICs -

(i) IC 7915

(ii) IC 7824

e) Define load and line regulation.

Marks

f) Compare linear and non-linear wave shaping circuits on the basis of :

(i) Components used

(ii) Applications

g) State Barkhausen criteria for sustained oscillations.

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

a) Compare RC integrator and differentiator on the basis of :

(i) Circuit diagram

(ii) O/p voltage equation

(iii) Time constant condition

(iv) Output voltage waveform for square wave input.

b) Draw and describe working of negative clamper with neat circuit diagram and input/output waveforms.

c) Derive the relation between α and β of transistor.

d) Draw VI characteristics of UJT and show its operating regions on it.

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

a) Compare class A, class B, power amplifiers on the basis of :

(i) Current flow in terms of cycle

(ii) Efficiency

(iii) Distortion

(iv) Place of Q point

b) List types of feedback connections used in amplifiers and derive gain expression for voltage series feedback with neat block diagram.

c) Draw and describe working of voltage divider bias used as biasing circuit in BJT.

d) Draw single stage BJT CE amplifier and describe function of each component used in it.

Marks

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

a) Compare BJT and JFET on the basis of:

(i) Signal controlling in terms of voltage or current

(ii) Input resistance

(iii) Thermal stability

(iv) Switching speed

b) Describe the operation of UJT relaxation oscillator with neat circuit diagram.

c) Draw cricuit diagram for positive clipper and describe its operation with input and output waveforms.

d) Identify linear waveshaping circuit used to generate following waveforms and draw the circuit diagram for it.

(i) Narrow pulses from square wave.

(ii) Triangular wave from square wave.

e) Describe controlling action of transistorised shunt regulator with neat circuit diagram.

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

a) Draw circuit diagram of zener diode as voltage regulator and describe its operation for:

(i) Variable input voltage and constant load resistance.

(ii) Constant input voltage and variable load resistance.

b) Draw circuit diagram for transformer coupled two stage amplifier. Also draw its frequency response and explain it.

c) Draw input and output characteristics for CE configuration of BJT and show different operating regions on it.

Marks

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

a) Compare CB, CE configurations of BJT on the basis of:

(i) Current gain

(ii) Voltage gain

(iii) Input impedance

(iv) Output impedance

(v) Applications

(vi) Phase shift

b) Describe working of N-ch JFET with neat circuit diagram. Also draw its drain characteristics with labelled operating regions on it.

c) Draw neat circuit diagram for class B push pull amplifier and describe its working with output current and voltage waveforms.