22329

12425

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.

Marks

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

(a) List types of coupling in multistage amplifier.

(b) List types of negative feedback amplifier.

(c) State two advantages of transformer coupled class A power amplifier over direct coupled class A power amplifier.

(d) Draw pin diagram of 78XX voltage regulator IC.

(e) Define the term Feedback.

(f) Define the terms related to timebase generator :

(i) Sweep time (Ts)

(ii) Retrace time (Tr)

(g) State the role of tuned circuit in tuned amplifier.

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

(a) Sketch circuit diagram of single stage CE amplifier. State the function of each component.

(b) Sketch the circuit diagram of class A power amplifier and describe its working.

(c) Draw the block diagram of SMPS. State any two advantages of SMPS over linear power supply.

(d) Determine the frequency of oscillation of RC phase shift oscillator with three section feedback network consisting 13 Ω resistors and 100 μF capacitors.

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

(a) State the difference between voltage amplifier and power amplifier with respect to following parameters :

(i) Amplitude of input signal

(ii) Current gain (β) of transistor

(iii) Size of transistor

(iv) Types of coupling used

(b) Draw circuit diagram of class B push-pull power amplifier. How push-pull word is derived ?

(c) Draw circuit diagram of Bootstrap sweep generator.

(d) Draw circuit diagram of voltage regulator circuit using IC LM317. List any two features of IC LM317.

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

(a) Draw the circuit diagram of complementary symmetry push-pull power amplifier. Explain its working.

(b) Draw circuit diagram of single stage JFET amplifier. Explain its working.

(c) State the advantages of negative feedback in respect to :

(i) Bandwidth

(ii) Noise

(iii) Distortions

(iv) Voltage gain

(d) Draw circuit diagram of crystal oscillator. List two advantages of crystal oscillator over RC phase shift oscillator.

(e) Sketch the circuit diagram of dual voltage regulator using 78XX and 79XX series IC's to obtain ± 5V output.

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

(a) Sketch the circuit diagram of Miller sweep generator. Describe its working with neat waveforms.

(b) What is crossover distortion ? How it can be avoided ?

(c) Draw the circuit diagram of single tuned amplifier. List two advantages and two disadvantages of single tuned amplifier.

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

(a) A three-stage amplifier has a first stage voltage gain of 100, second stage voltage gain of 200, and third stage voltage gain of 300. Find the total voltage gain in db.

(b) If voltage gain of amplifier without feedback is 3000 and output impedance is 1 kΩ. Calculate voltage gain with feedback and output impedance of voltage series feedback amplifier when negative feedback with feedback factor 0.01 is introduced in the circuit.

(c) Distinguish Class A, Class B, Class C and Class AB power amplifiers on the basis of :

(i) Conduction angle

(ii) Efficiency

(iii) Distortion

(iv) Position of operating point
