22329

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) List the types of coupling used in BJT amplifier. (any four)

b) Compare small signal amplifier with power amplifier (any four)

c) State four advantages of negative feedback used in feedback amplifier.

d) State the Barkhausen criteria of oscillation.

e) Differentiate between positive feedback and negative feedback. (four points)

f) State the need of tuned amplifier in electronic circuits. (four points)

g) List the uses of heat sink. (four points)

Marks

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

   a)   Explain the working principle of FET amplifier and list its two applications.

   b)   Compare the performance of voltage series and current series type of negative feedback amplifiers. (four points)

   c)   Draw the block diagram of SMPS and state its working principle.

   d)   Design a RC phase shift oscillator to generate the frequency of 500 kHz. Assume suitable values for $R_1 = R_2 = R_3 = R$ and $C_1 = C_2 = C_3 = C$. Justify your answer.

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

   a)   Classify the power amplifiers on the basis of operation and input / output waveforms.

   b)   Describe the operation of class - C type of power amplifier with the help of neat sketch.

   c)   Justify the need of current time base generator to obtain the specified sawtooth waveform with one example.

   d)   Design a voltage regulator using IC LM317, draw the circuit diagram and state the output voltage equation.

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

   a)   Draw the two stage BJT amplifier. State the formula for overall gain of this amplifier.

   b)   Draw the circuit diagram of class AB power amplifier and describe its working.

   c)   With the help of neat circuit diagram, explain the operation of voltage shunt type of feedback amplifier.

   d)   Compare between RC phase shift oscillator and crystal oscillator.

   e)   Compare the fixed voltage regulators using 78XX and 79XX. (Any four points)

Marks

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

a) Describe the operation of double tuned amplifier with the help of neat circuit diagram and mention its applications.

b) Sketch the labelled diagram of class A and class B types of power amplifier. Also draw the input and output waveforms. State one application of each.

c) Draw the neat labelled diagram of miller sweep generator and mention it's two applications.

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

a) For a BJT ac amplifier, with a midband voltage gain of 200, if the cutoff frequencies are f_1 = 20 Hz and f_2 = 20 kHz. Draw the frequency response for amplifier. Draw the frequency response in case of mid gain of 100 and f_1 = 500 Hz to f_2 = 5 kHz.

b) Draw a class AB push pull amplifiers and comment on its usefulness in the output stage as compared to other power amplifiers and the relationship between maximum transistor power dissipation wrt the supply voltage.

c) Comment on the effect of negative feedback on the gain, input and output resistance of the feedback amplifiers. Describe the gain bandwidth product term used in this context and its importance.

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