17319

11819

3 Hours / 100 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) Assume suitable data, if necessary.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any SIX : 6 × 2 = 12

(a) State any four applications of transistor.

(b) Define term stability factor.

(c) Define gain and band width.

(d) Which type of MOSFET is called "Normally ON MOSFET" ? Why ?

(e) Sketch the single tuned amplifier.

(f) List the types of power amplifier.

(g) State 2 advantages of JFET over BJT.

(h) Define intrinsic standoff ratio.

(B) **Attempt any TWO :** 2 × 4 = 8

(a) Explain the operating principle of PNP transistor.

(b) What is thermal runaway in transistor ? How it can be avoided ?

(c) Explain how Zener diode is used as voltage regulator.

2. **Attempt any FOUR :** 4 × 4 = 16

(a) Define α and β of transistor and derive the relation between them.

(b) Explain need of biasing. List any two methods of biasing.

(c) With the help of diagram, explain the working of N-channel JFET.

(d) Compare CB, CC, CE configuration (any 4 points).

(e) Draw block diagram of voltage series and current series feedback.

(f) Draw the functional block diagram of IC 723. Describe its working.

3. **Attempt any FOUR :** 4 × 4 = 16

(a) Draw the circuit diagram for common base configuration and draw its output characteristics.

(b) Describe source self bias method of FET with neat circuit diagram.

(c) Draw miller sweep generator and give its two applications.

(d) Compare the different types of coupling (any 4 points).

(e) Draw the circuit diagram of –5 V regulator using 7905 and describe its working.

(f) Define the following : (1) Load Regulation (2) Line Regulation.

4. **Attempt any FOUR :** **4 × 4 = 16**

(a) List 4 applications of FET. Draw the drain and transfer characteristics of JFET.

(b) Draw the diagram of single stage CE amplifier and state the function of each component.

(c) Describe the construction, operation of E-MOSFET.

(d) Describe class B push pull amplifier with neat circuit diagram.

(e) Compare class A, class B and class C power amplifier on (1) position of operating point (2) efficiency (3) conduction angle (4) O/P waveform.

(f) What is oscillator ? State applications of oscillator.

5. **Attempt any FOUR :** **4 × 4 = 16**

(a) In C.E. configuration if $\beta = 150$, leakage current ICEO = 100 µA and base current in 0.5 mA, determine I_C and I_E.

(b) State the advantages and disadvantage of crystal oscillator.

(c) Compare small signal amplifier (voltage amplifier) and power amplifier.

(d) Draw common source FET amplifier. Describe its operation.

(e) Describe the working principle of UJT as relaxation oscillator with neat circuit diagram.

(f) Draw pin diagram of IC 78XX and IC 79XX and state their features and advantages.

6. **Attempt any FOUR :** **4 × 4 = 16**

   (a) Explain with a neat circuit, voltage divider bias method for biasing a transistor.

   (b) Draw the circuit of series transistor voltage regulator and describe its operation.

   (c) State the meaning of positive and negative feedback.

   (d) Draw the circuit of double tuned amplifier and sketch the frequency response.

   (e) Draw circuit of RC phase shift oscillator and describe its working.

   (f) Explain the construction of UJT and draw its symbol.

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