17319

15162

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) Figures to the ***right*** *indicate* ***full*** *marks.*
(5) Assume suitable data, if ***necessary****.*

Marks

1. A) Attempt **any six** : **12**

i) Draw neat symbol of n-channel and p-channel FET.
ii) Define intrinsic stand off ratio for UJT.
iii) List the types of amplifier coupling.
iv) Which type of MOSFET is called "Normally ON MOSFET" ? Why ?
v) Define operating principle of tuned circuit.
vi) State maximum efficiency of class –A power amplifier.
vii) Compare amplifier and oscillator on :
  i) Type of feedback used
  ii) Input signal.
viii) Draw neat circuit of bootstrap time base generator.

B) Attempt **any two** : **8**

i) Compare CB, CE and CC on the basis of
  i) Input resistance (Ri)
  ii) Output resistance (Ro)
  iii) Current gain (Ai)
  iv) Voltage gain (Av)
ii) Describe the concept of thermal runaway. How it can be avoided ?
iii) Draw circuit of Zener diode as a voltage regulator and explain its working with neat V-I characteristics.

2. Attempt **any four** : **16**

A) Draw labelled Input and Output characteristics of BJT in CE configuration.
B) List the types of biasing of transistor. Draw neat circuit diagram of voltage divider bias.
C) With the help of neat construction of JFET, explain its working principle.
D) Define α and β related to transistor. Derive relation between them.
E) List the type of feedback connection. Draw block diagram representation of them (any one).
F) Draw block diagram of DC regulated power supply and explain function of each block with waveforms.

P.T.O.

Marks

3. Attempt **any four**: **16**

A) Explain working of transistor as a switch with waveforms.

B) Compare BJT and FET (Any 4 pt.).

C) Describe working of UJT relaxation oscillator with circuit and waveforms.

D) Draw circuit diagram of single stage CE amplifier with Input and Output waveforms.

E) Draw circuit diagram of DC regulated dual power supply for $\pm$ 12V using IC's 78XX and 79XX.

F) Define :

i) Load Regulation

ii) Line Regulation

4. Attempt **any four**: **16**

A) Draw labelled Drain and transfer characteristics of JFET.

B) Draw circuit of transformer coupled transistor amplifier also draw its frequency response.

C) Explain working of enhancement type MOSFET with neat construction.

D) Draw the diagram of class A power amplifier and explain its working.

E) Compare Class A, Class B, Class C power amplifier on the basis of

i) Operating point

ii) Efficiency

iii) Conduction angle

iv) O/p wave forms

F) Draw circuit and waveforms of miller sweep generator. List two applications of it.

5. Attempt **any four**: **16**

A) Draw circuit of transistorized shunt voltage regulator and explain its working.

B) Draw V-I charact of UJT and label it.

C) Explain operation of Class-B push-pull amplifier with circuit diagram.

D) Draw circuit of common source FET amplifier and explain its working.

E) State Barkhausen's criteria required for oscillations. List 2 application of oscillator.

F) Draw pin diagram and functional block diagram of IC 723.

6. Attempt **any four**: **16**

A) Explain concept of DC loadline used in BJT.

B) Draw circuit of transistorised series voltage regulator and explain its working.

C) List any four advantages of – ve feedback.

D) Compare single tuned and double tuned amplifier on i) Circuit diagram ii) Frequency response.

E) Describe the operation of UJT with its equivalent circuit.

F) Draw labelled circuit of RC phase shift oscillator. State the formula for frequency of oscillation.