17319

21314

3 Hours / 100 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. a) **Attempt any SIX of the following:** **12**

i) Name different operating region of BJT.

ii) Define the term stability factor.

iii) List advantages of transformer coupled amplifier (any two).

iv) Define enhancement mode and depletion mode w.r.t. MOSFET.

v) Draw basic tuned circuit.

vi) List application of class A amplifier (any two).

vii) Draw symbol of n-channel and p-channel JFET.

viii) Draw output characteristics of UJT.

b) **Attempt any TWO of the following:** **8**

i) Draw the ckt diagram for common base configuration and draw its output characteristics.

ii) Explain need of baising. List any two methods of baising.

iii) Draw block diagram of DC power supply and explain function of each block.

Marks

2. Attempt any FOUR of the following: **16**

a) Explain thermal runway. How it should be avoided?

b) Draw D.C. load line of common emitter amplifier and define Q. point.

c) Draw construction and describe working of n-channel JFET with neat sketch.

d) Compare CB, CE, CC on basis of following points:

i) input resistance

ii) output resistance

iii) current gain

iv) voltage gain.

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

f) Draw the circuit diagram of negative 5 voltage using 7905 IC. Describe its working.

3. Attempt any FOUR of the following: **16**

a) In common emitter configuration if $\beta = 150$ leakage current $I_{CEO} = 100\ \mu A$ and base current is 0.5 mA determine I_C and I_E.

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

c) Describe UJT as a relaxation oscillator with neat circuit diagram.

d) Draw the circuit diagram of two stage R–C coupled amplifier and describe its working.

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

f) What is necessity of regulated power supply? Define load and line regulation.

Marks

4. Attempt any FOUR of the following: **16**

a) Describe the working of n-channel JFET with diagram.

b) Describe transformer coupled amplifier with neat circuit diagram.

c) Describe working of D-MOSFET with neat diagrams.

d) Compare Class A, Class B, Class AB and Class C amplifier w.r.t. following points:

i) position of operating pt. on load line

ii) efficiency

iii) conduction angle

iv) O/P waveform.

e) Describe the working of single stage Class A amplifier with circuit diagram.

f) Describe the working of Bootstrap time base generator with circuit diagram.

5. Attempt any FOUR of the following: **16**

a) In common base connection $\alpha = 0.95$ the voltage drop across resistance which is connected in collector is 2 V. Find base current if the value of resistance connected in collector is 2 k.

b) A phase shift oscillator has R-220 k C = 500 pf calculate frequency of sine wave generator.

c) Describe Class B push pull amplifier with neat circuit diagram.

d) Describe FET as an amplifier with circuit diagram.

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

f) Describe +ve voltage regulator using IC 78XX series.

Marks

6. Attempt any <u>FOUR</u> of the following: **16**

a) Describe voltage devider biasing method in BJT with circuit diagram.

b) Describe the working of shunt voltage regulator using transistor with circuit diagram.

c) State Barkhausen criteria. List advantages of negative feedback over positive feedback (any two).

d) Describe the operating principle of single tuned amplifier with circuit diagram.

e) Describe the working principle of crystal oscillator with circuit diagram.

f) Draw construction and describe its working principle of UJT.

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