17319

15116

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instruction *: **All** questions are **compulsory**.*

Marks

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

a) Draw the symbols of NPN and PNP BJT.

b) State two advantages of voltage divider biasing technique.

c) State two applications of direct coupling method used in multistage amplifiers.

d) Draw the symbols enhancement p type and enhancement n type MOSFET.

e) Sketch the circuit diagram of single tuned amplifier.

f) State the maximum efficiency of class A power amplifier.

g) State two advantages of JFET over BJT.

h) Define intrinsic stand-off ratio η of UJT.

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

a) Compare CB, CE and CC with respect to input impedance, output impedance, current gain and voltage gain. Give typical figures of each parameter.

b) Draw the circuit diagram and explain the operation of fixed biasing circuit used in BJT. State its advantages and disadvantages.

c) With the help of neat circuit diagram and V-I characteristics explain the working of zener diode as voltage regulator.

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

a) Explain the concept of DC load line used in BJT amplifier.

b) Draw the circuit diagram of voltage divider biasing circuit used with BJT CE amplifier and explain its operation.

c) Draw the constructional sketch of n channel JFET and explain its working principle.

d) With neat circuit and waveform diagrams explain how BJT works as switch.

e) Draw the block diagrams of current series and current shunt feed-back.

f) Draw the block diagram of DC regulated power supply and state the function of each block.

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

a) Draw the input and output characteristics of CE configuration and label it.

b) With neat circuit diagram and mathematical expressions explain the self biasing used in FET.

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Marks

c) Draw the circuit diagram and explain the working principle of UJT relaxation oscillator.

d) Draw the circuit diagram and frequency response of two stage RC coupled amplifier and explain its operation. State its important applications.

e) Draw the high voltage regulator using IC 723 and explain its operation.

f) Draw the circuit diagram of tansistorized series voltage regulator and explain its working. State its advantages and disadvantages.

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

a) Draw the drain characteristics and transfer characteristics of JFET.

b) How BJT can be used as an amplifier ? Explain.

c) Compare Miller integrator and bootstrap sweep generator with respect to the technique used.

d) Compare small signal amplifier and power amplifier (any 4 points).

e) Draw the circuit diagram of class-B push-pull amplifier and explain its operation. State its important applications.

f) With neat sketch explain working principle of enhancement type MOSFET. State its important applications.

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

a) Define α , β and γ w.r.t. BJT. Derive the relation between α and β .

b) State the working principle of crystal oscillator and list its two applications.

c) Compare class A, class B and class AB power amplifiers (any four points).

d) Draw the circuit diagram common source FET amplifier and explain its working principle. State its applications.

e) Draw the circuit diagram of Miller crystal oscillator and explain its operation. State advantages and disadvantages of crystal oscillator.

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

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

a) What do you understand by stabilization of operating point ? Explain the need for stabilization.

b) Draw the diagram transistorized shunt regulator and explain its working.

c) Compare positive feedback and negative feedback (any four points).

d) Compare single tuned amplifier and double tuned amplifier w.r.t. circuit diagram and frequency response.

e) What do you mean by an oscillator ? State Barkhausen's criteria required for oscillations. State important applications of oscillator.

f) Draw the constructional sketch and equivalent circuit of UJT and explain its V-I characteristics.