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3 Hours / 100 Marks

Seat No.

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- 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.*

Marks

1. Attempt any ten :

20

- a) Define:
 - i) Active components
 - ii) Passive components.
- b) Draw the symbol of
 - i) N-channel JFET
 - ii) P-channel JFET.
- c) Draw V-I characteristics of PN diode.
- d) List any two types of couplings used in amplifier.
- e) Define Barrier potential. Give its values for Si and Ge diode.
- f) Give two advantages of ICS.
- g) Give necessity of filters in DC power supply.
- h) Define transconductance of JFET.
- i) Draw the symbols of
 - i) Varacter diode
 - ii) LDR.
- j) Give classification of ICs.
- k) Give two applications of Light Emitting Diode.
- l) Enlist two examples of non linear resistors.

2. Attempt any four :

16

- a) State any four applications of electronics in day to day life.
- b) Draw symbol of Zener Diode. Draw and explain its V-I characteristics.
- c) Draw neat sketch of NPN Transistor. Describe its working.
- d) Derive relation between α and β .
- e) Give construction and working of Tunnel diode.
- f) Define Oscillator. Give Bark Hausen Criteria for sustained oscillations.

P.T.O.



3. Attempt any four :

16

- Give construction and working of LDR.
- Draw the neat sketch of common emitter amplifier.
- Give construction and working of Field Effect Transistor.
- Give two applications of
 - Varactor diode
 - Tunnel diode.
- Given $I_B = 110\mu A$, $I_C = 2 mA$. For a transistor find α and β .
- Describe the need of multistage amplifier.

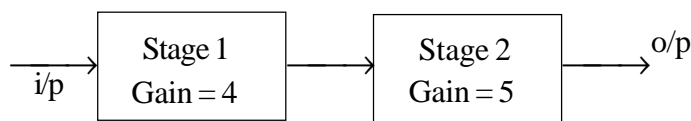


Fig 3.f

Find out overall gain.

4. Attempt any four :

16

- Give four applications of Schottky diode.
- Draw the neat sketch of center tap full wave rectifier. Draw input and output waveforms.
- Compare BJT and FET (any four points).
- Draw and explain working of CLC filter.
- Draw the neat sketch of two stage transformer coupled amplifier.
- Draw and explain construction and working of crystal oscillator circuit.

5. Attempt any four :

16

- Describe process of formation of Depletion Layer.
- Compare Half wave, full wave center tap and full wave bridge type rectifier (four points).
- State and explain the operating principle of P-N junction diode under forward bias condition.
- Give construction of Bistable multivibrator using transistor.
- List two advantages and disadvantages of R-C coupled amplifier.
- Describe working of Zener diode as voltage regulator.

6. Attempt any four :

16

- Describe static resistance and dynamic resistance of PN junction diode.
- Define Rectifier. State its need. Define the terms :
 - Ripple Factor
 - Efficiency.
- Define "Biasing of Transistor." Explain in brief voltage divider biasing.
- Draw DC load line of transistor. Explain working of transistor as a switch.
- Draw and explain Drain characteristics of JFET.
- Draw neat sketch of half wave rectifier. List its two disadvantages. Draw input output waveforms.