

- OTE :**
1. Figure should be Neat and labeled.
 2. All Questions are compulsory.
 3. Right side indicates marks.

Q.1 Answer any 2 from following.

(10)

1. Draw and explain PN junction Forward bias.
2. Explain transistor as a switch in detail.
3. Write a short note on Zener diode.
4. Explain transistor as an amplifier.

Q.2 Answer any 2 from following.

(10)

1. Explain the amplifier notations.
2. Draw and explain frequency response of single stage amplifiers.
3. Draw and explain DC amplifier.
4. Draw and explain Darlington pair.

Q.3 Answer any 2 from following.

(10)

1. In an Astable circuit, $R_A = 2K\Omega$, $R_B = 3K\Omega$ and $C = 0.1\mu F$. Calculate pulse width t_c , t_d and free running frequency f .
2. Draw and explain Monostable Multivibrator.
3. Difference between positive feedback and negative feedback.
4. Draw and explain Colpitts Oscillator.

Q.4 Answer any 2 from following.

(10)

1. Draw and explain Pilot Carrier SSB system.
2. Draw and explain Envelope Detector.
3. Explain concept of SSB with advantages and disadvantages.
4. Draw and explain Balanced Modulator using FET.

Q.5 Answer any 2 from following.

(10)

1. Draw & explain Frequency Modulation.
2. Write a short note on Phase modulation.
3. Explain FDM with advantages and disadvantages.
4. Explain the concept of companding.

Q.6 Answer any 2 from following.

(10)

1. Write a short note on Fiber optic cable.
2. Write a short note on Ray model.
3. Explain Multimode fibers.
4. Explain LED & LASER.

Q.7 Answer any 3 from following.

(15)

1. Difference between BJT and FET
2. Draw and explain BJT as a single stage amplifier.
3. Draw and explain Colpitts Oscillator.
4. Explain Demodulation of AM.
5. Explain the sampling process.
6. Explain Ray Model.