



- Notes :
1. Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.
 2. All questions carry equal marks.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Explain input and output characteristics of BJT connected in common emitter configuration. **8**
 b) Write note on V-I characteristics of P-N junction diode. **8**

OR
2. a) Explain working of full wave rectifier with the help of neat circuit diagram and waveforms at different stages. **8**
 b) Write a note on Zener diode as a voltage regulator. **8**
3. a) Explain basic and practical differentiator circuit working. Also explain its freq. response. **8**
 b) Define and give the typical values for IC741 op-amp. **8**
 i) Input offset voltage ii) CMRR
 iii) Slew Rate iv) Input resistance

OR
4. a) Draw non-inverting amplifier using op-amp. Derive its output equation. **8**
 b) Explain. **8**
 i) Unity gain buffer ii) Comparator using op-amp
5. a) Explain RC-phase shift oscillator circuit. **8**
 b) Explain internal block diagram of IC555. Give the function of each block in detail. **8**

OR
6. a) Explain astable multivibrator using IC555 with neat waveforms and circuit diagram. **8**
 b) What is Barkhausen criteria for generating oscillations. Explain Wien bridge oscillator. **8**
7. a) Obtain following logical functions using only universal gates. **8**
 i) NOT ii) AND iii) OR iv) EX-OR
 b) Write a note on Half subtractor and full subtractor. **8**

OR
8. a) Explain working of 4-bit right shift register with appropriate timing diagram. **8**
 b) Write a short note on mod-5 counter. **8**
9. a) Write short note on IEEE freq. spectrum. **8**
 b) What is need of modulation? Explain the concept of freq. modulation. **8**

OR
10. a) With neat diagram explain GSM architecture. **8**
 b) Distinguish between wired and wireless communication. Also give types of media used for both. **8**
