

S.E. Sem - IV (EXTC) (C-Scheme) (Rev-19) Dec. 2025.

Time : 3 Hours

Q.P Code : 95468

Marks : 80

08/12/2025.

- N. B. 1. Q.1 is compulsory.  
 2. Answer any three out of the remaining five questions.  
 3. Figures to the right indicate marks.  
 4. Answer to the questions should be grouped and written together.

- Q1. Solve **Any Four** out of five
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|---|---|
| a. Explain the various specifications of IC 555   | 5 |
| b. Explain VCO IC 566 in brief.   | 5 |
| c. Explain Op-Amp as a peak detector.   | 5 |
| d. Define the following parameters for Operational Amplifier 741<br>i) Input resistance ii) CMRR iii) Slew Rate | 5 |
| e. Explain the Virtual ground concept of Operational Amplifier.   | 5 |
- Q2 a. Explain Astable Multivibrator using IC 555 with the help of functional block diagram. Design the same for 1ms time period and 50% duty cycle. 10
- b. Explain the working of Op-Amp as Schmitt Trigger. 10
- Q3 a. Explain the open loop and closed loop configuration and characteristics of Op-Amp. 10
- b. Draw and explain the RC-phase shift oscillator using Op-Amp. Derive the expression for the output frequency. 10
- Q4 a. Generate triangular waveform using the Op-Amp. 10
- b. Draw and explain the rectification of signal using Op-Amp
- Q5 a. Draw and explain the functional block diagram of IC 723. Design the same for 2.5V of regulated supply voltage. 10
- b. Design and explain Op-Amp as adder and subtractor. 10
- Q6 **Write short notes on (Any Four)**
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|--|---|
| a. Instrumentation Amplifier           | 5 |
| b. 78XX series fixed voltage regulator | 5 |
| c. Op-Amp as differentiator            | 5 |
| d. Second order Butterworth Filter     | 5 |
| e. FSK Demodulator using PLL           | 5 |