06-06-2026 SE EXTC SEM-III (NEP-2020) EDLC QP CODE: 20014774

Time: 2 Hours **Total Marks: 60**

N.B.: 1) Question No.1 is compulsory.
2) Solve any three from remaining five.
3) Figures to right indicate full marks.

Q. 1 Attempt any FIVE questions.

A) Explain in brief EMOSFET biasing. **[3]**
B) Explain IC 555 as Pulse Width Modulator. **[3]**
C) Differentiate between AC & DC load lines. **[3]**
D) Write short note on practical integrator using operational amplifier. **[3]**
E) Draw & explain block diagram of operational amplifiers. **[3]**
F) Draw ac equivalent circuit of BJT CE amplifier. **[3]**

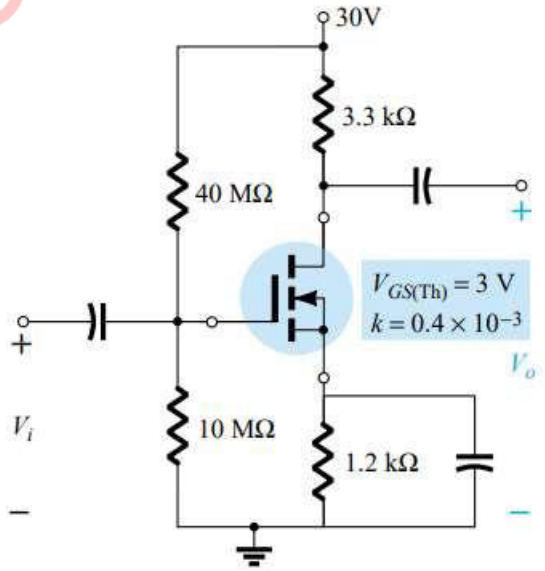
Q. 2 A) Design a voltage regulator using IC723 to give Vo=15 v & output current of 1.5 A. **[10]**
B) Draw & explain the working of RC Phase shift Oscillator using operational Amplifier. **[5]**

Q. 3 A) Design the Astable Multivibrator using IC555 for a frequency of 10 kHz & duty cycle of 70%. Use C=0.1μF. **[10]**

B) Draw first order low pass filter & derive expression for cut off frequency. **[5]**

Q. 4 A) Design an adjustable voltage regulator using IC317 to give 10 volts at I_L=150mA, Given I_{ADJ}=100μA choose R1=240Ω. **[10]**
B) Compare inverting & non inverting comparators. **[5]**

Q. 5 A) Determine the output voltage for the given network if Vi = 0.8 mV and rd =40KΩ **[10]**



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B) Explain the Miller theorem. **[5]**

Q. 6 Write short notes on: (Attempt any THREE)

A) Block diagram of Operational Amplifier. **[5]**
B) Construction & working of N channel EMOSFET. **[5]**
C) Noninverting Schmitt trigger. **[5]**
D) Effect of coupling & bypass capacitor on the frequency response. **[5]**

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