

S.E. E x TC NEP June 2026

Time: 2 Hours

Total Marks: 60

06/06/26.

- 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 $V_o=15$ v & output current of 1.5 A. [10]

B) Draw & explain the working of RC Phase shift Oscillator using operational Amplifier. [5]

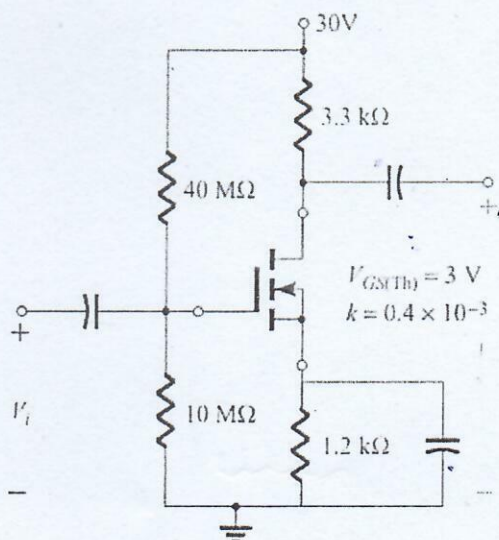
Q. 3 A) Design the Astable Multivibrator using IC555 for a frequency of 10 kHz & duty cycle of 70%. Use $C=0.1\mu\text{F}$. [10]

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 $I_L=150\text{mA}$, Given $I_{ADJ}=100\mu\text{A}$ choose $R_1=240\Omega$. [10]

B) Compare inverting & non inverting comparators. [5]

Q. 5 A) Determine the output voltage for the given network if $V_i = 0.8$ mV and $r_d = 40\text{K}\Omega$ [10]



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]
