15-06-2026 SE ELECTRICAL SEM-III C SCHEME AE QP CODE:20009449

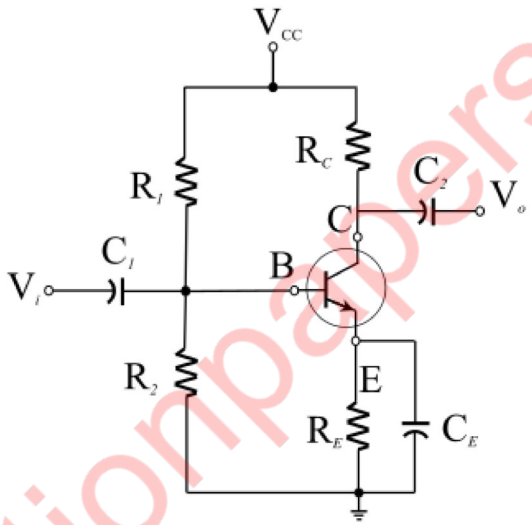
Time: 3 hours **Max. Marks: 80**

Q1) Answer any four of the following (entire syllabus)

a. Explain Diode as a clipper. (05)
b. Explain Common Emitter BJT characteristics. (05)
c. Explain the operation of E-MOSFET. (05)
d. Explain the BLock diagram of an operational amplifier. (05)
e. Draw and explain a pin diagram of IC 555 (05)
f. Explain the operation of LED. (05)

Q2)

a. Analyse the full-wave bridge wave rectifier along with 'C' filter. Analyse the impact of 'C'filer over the ripple factor. (10)
b. Calculate the Q point in the following circuit of BJT CE voltage divider bias.Given Data: V_{CC}=18 V, R_1= 82KΩ, R_2=22KΩ, R_C=5.6KΩ, R_E=1.2KΩ, β=50 (10)



Q3)

a. Perform small-signal analysis over a BJT CE amplifier with voltage divider bias using the h-model. Derive an expression for current gain, input impedance, voltage gain and output impedance. (10)
b. Perform DC analysis on FET CS amplifier using voltage divider bias and self-bias. (10)

Q4)

a. Derive expressions for voltage gain and output impedance of MOSFET CS (Self bias) amplifier circuit. (10)
b. Explain Op-Amp as an integrator. (10)

Q5)

a. Explain Op-Amp as a zero crossing detector. (10)
b. Design a voltage regulator using IC LM 317 to produce an output voltage of 6 volts. (10)

Q6)

a. Write a short note on a Schottky diode and an opto-isolator. (10)
b. Explain Op-Amp as a Wein bridge oscillator. (10)

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