LAST MOMENT TUITIONS

Electronic Circuits and Communication Fundamentals

MAY 18

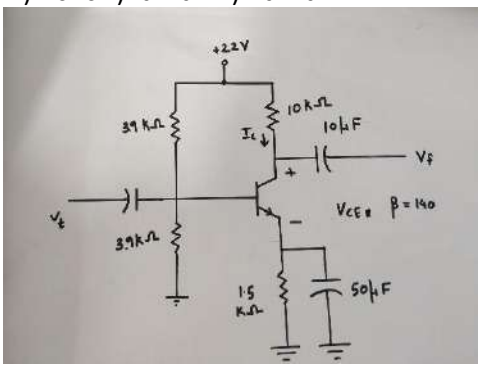
Computer Engineering (Semester 3)

Total marks: 80
Total time: 3 Hours

INSTRUCTIONS
(1) Question 1 is compulsory.
*(2) Attempt any **three** from the remaining questions.*
(3) Draw neat diagrams wherever necessary.

1.a. Draw input and output characteristics of BJT.
State significance of DC load line. (5 marks)
1.b. For an AM DSBFC modulator with carrier frequency fc = 100kHz and a maximum modulating signal frequency fm = 5KHz, determine
i) Frequency limit for the upper and lower sidebands
ii) Bandwidth
iii) Draw the frequency spectrum (5 marks)
1.c. Write a note on zero crossing detector using op-amp with waveforms. (5 marks)
1.d. Compare Class A and Class C Amplifers. (5 marks)

2.a. Explain Superheterodyne receiver with suitable diagram (5 marks)
2.b. Implement summing Operational Amplfiers using inverting configuration of Op-amp. (5 marks)
2.c. For the emitter bias network of figure below, determine :
i) IbIb ii)IcIc iii) VceVce
iv) VcVc v)EthEth vi) RthRth



(10 marks)

3.a. Explain generation of DSBSC using balanced Modulator along with its frequency and power spectrum. (10 marks)
3.b. With suitable waveforms explain how Op-amp can be used as Differentiator. (10 marks)

4.a. For an AM DSBFC envelope with VmaxVmax= 20V and VminVmin = 4V; determine
i. Peak amplitude of USF AND LSF
ii. Peak amplitude of carrier
iii. Peak change in the amplitude of the envelope
iv. Modulation coefficient
v. Draw the AM envelope. (10 marks)
4.b. Differentiate between TDM and FDM (5 marks)
4.c. State shannon's theorem and explain its significance. (5 marks)

5.a. Draw PAM, PWM and PPM waveforms in time domain using a sinusoidal signal and explain in brief. (10marks)
5.b. Define and explain in brief Amount of information, average information, information rate and channel capacity of a communication system. (10 marks)

6.a. State significance of modulation in communication. (5 marks)
6.b. Write a note on pulse code modulation with waveforms (5 marks)
6.c. Explain and give ideal values of following parameters of an op-amp:
i) CMRR
ii) slew rate
iii) offset voltage
iv) Input Resistance
v) Output Impedence (10 marks)