SE (ECS) Sem IV 'c' scheme Summer 2015 Exam
Date - 15/5/25

(3 Hours) [Total Marks: 80]

N.B.: (1) Question No. 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) Each question carries 20 marks and sub-question carry equal marks.
(4) Assume suitable data if required.

Q.1 Solve any **Four** from the following --- **(20)**

A) Explain the effect of output capacitance on frequency response of CS MOSFET amplifier?

B) Draw the circuit diagram of the MOSFET differential amplifier with active load and explain its operation.

C) Design Non inverting amplifier for voltage gain of 11.

D) Draw circuit diagram of current to voltage converter and explain its operation.

E) Draw block diagram and explain the operation of Switching regulator.

Q.2**A)** Draw the circuit diagram of basic MOSFET amplifier. Derive the equations to plot DC transfer characteristics. Sketch its DC transfer characteristics. **(10)**

B) For an n channel MOSFET,the parameters are:Kn = 0.2 milliampere /Square volts,V TN = 1.0 Volts, Cgd = 0.02 picofarad ,Cgs = 0.25 micofarad.The device is biased at IDQ = 0.4 milliampere.Determine the unity gain frequency. **(10)**

Q.3**A)**Draw the circuit diagram of THREE Input averaging amplifier using OPAMP and derive the expression of its output voltage. What is the difference between averaging and scaling amplifier? **(10)**

B)Draw the circuit diagram of RC Phase shift oscillator and explain its operation? Compare RC Phase shift and Wein bridge oscillator? **(10)**

Q.4 **A)**Draw internal block diagram of IC 555 and explain its operation. List specifications of IC 555 **(10)**

B)Compare voltage series, voltage shunt, current series and current shunt feedback amplifiers **(10)**

Q.5**A)**With neat circuit diagram and waveforms ,explain the operation MONOSTABLE MULTIVIBRATOR using IC 555. **(10)**

B)State and explain operation and applications of various types of comparators? **(10)**

Q6. **A).**Draw the circuit diagram and explain the operation Square wave generator? **(10)**

B)Draw block diagram of OPAMP?Explain function of each block?State circuit used in each stage of the OPAMP? **(10)**
