

END TERM EXAMINATION

FOURTH SEMESTER [B.TECH] MAY-JUNE 2016

Paper Code: ETEC-204

(NEW)

Subject: Analog Electronics-II

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions including Q.no.1 which is compulsory.
Select one question from each unit.

- Q1 (a) Design an OPAMP as a buffer amplifier and voltage multiplier. (5x5=25)
 (b) Explain circuit diagram and working of Colpitt's oscillator. Also mention the frequency of oscillations.
 (c) Calculate the period of oscillations of Hertley oscillator having $L_1 = 1$ mH, $L_2 = 2$ mH and $C = 0.1$ μ F.
 (d) Discuss Class C and AB amplifiers.
 (e) Explain second order low pass filter with a suitable diagram.

Unit-I

- Q2 (a) Discuss op-amp as an integrator giving its applications. A 5 mV, 1 kHz sinusoidal signal is applied to the input of an op-amp integrator for which $R = 100$ K Ω , and $C = 1$ μ F. Find the output voltage. (6.5)
 (b) The input to the differential OPAMP is a sinusoidal voltage of peak value 5 mV and frequency 2 kHz. Find the output if $R = 100$ k Ω and $C = 1$ μ F. (6)
- Q3 (a) A differential amplifier has an open circuit gain of 100. The input signals are 3.25 V and 3.15 V. Determine the output voltage. What conclusion do you draw from this calculation? (4.5)
 (b) Explain the following: (8)
 (i) Active Loads
 (ii) Virtual Ground
 (iii) Current Mirrors
 (iv) Voltage to Current converters

Unit-II

- Q4 (a) Draw the circuit of crystal oscillator and explain its operation. (6)
 (b) Explain the working of an op-amp square wave generator. Derive an expression for the frequency of oscillation. What is the maximum amplitude of the square wave and how can it be varied? (6.5)
- Q5 (a) Discuss principle and working of Sawtooth Waveforms Generators. (6)
 (b) Calculate the frequency of oscillations of a Colpitts oscillator with $C_1 = C_2 = 400$ pF and $L = 2$ mH. (6.5)

Unit-III

- Q6 (a) Discuss power dissipations in transistors. (6)
 (b) Explain Clipping and Clamping circuit with suitable examples. (6.5)
- Q7 (a) Explain the working of a complementary symmetry class-B push pull amplifier. Show that its maximum conversion efficiency is 78.5%. What will be the conversion efficiency when power dissipation is maximum. (6)
 (b) Discuss the working of a log-amplifier with a suitable diagram, which provides saturation current and temperature compensation. (6.5)

Unit-IV

- Q8 (a) Discuss wide band pass filter along with its frequency response curve. Also, discuss its frequency. (6)
 (b) Write a short note on HPFs and LPFs. (6.5)
- Q9 (a) Discuss Butter worth and Chebyshev filters. (6.5)
 (b) Discuss IC voltage regulators. (6)

* * * * *