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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)

B. Tech II Year I Semester Supplementary Examinations November-2022

**ANALOG ELECTRONIC CIRCUITS**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a Interpret Feedback amplifier topologies with necessary diagram. L1 6M  
 b An amplifier has midband voltage gain of 1000 with  $F_L = 50\text{Hz}$ ,  $F_H = 50\text{KHz}$ , if 5% of feedback is applied then determine  $F_L$ ,  $F_H$ . L2 6M

OR

- 2 a Determine the input and output resistances of Current Shunt feedback amplifier. L3 6M  
 b List the characteristics of negative feedback amplifiers. L2 6M

**UNIT-II**

- 3 a Illustrate the Barkhausen criterion condition for oscillation with suitable diagram. L3 6M  
 b Determine the frequency of oscillations when a RC phase shift oscillator has  $R=100\text{ k}\Omega$ ,  $C=0.01\mu\text{F}$  and  $RC = 2.2\text{ K}\Omega$  L4 6M

OR

- 4 a Draw the circuit diagram of Hartley oscillator using BJT and derive the expression for frequency of oscillations. L3 6M  
 b Derive the generalized equation of a LC Oscillator with its circuit L4 6M

**UNIT-III**

- 5 a Explain the basic information and pin configuration of an op-amp . L2 6M  
 b Explain the term slew rate and illustrate the importance in op-amp circuits? L2 6M

OR

- 6 a What is voltage follower? What are its features and applications? L2 6M  
 b Define the terms CMRR, common mode gain, differential mode gain. L2 6M

**UNIT-IV**

- 7 a Explain the operation of triangular wave generator using op-amp with a neat circuit diagram and its waveforms. L2 6M  
 b Draw the circuit of a subtractor using op-amp and derive the expression for voltage gain. L4 6M

OR

- 8 a Explain the operation of monostable multivibrator using op-amp with a neat circuit and its waveforms . L2 6M  
 b Design and explain the operation of inverting summing amplifier. L5 6M

**UNIT-V**

- 9 a Define active filter and give its characteristics . L1 6M  
 b Discuss the parameters specifications of DAC/ADC. L4 6M

OR

- 10 a Design a highpass filter at a cut-of frequency of 10kHz with passband gain 1.5 and draw the frequency response. L5 6M  
 b Explain the first order high pass butter worth filter with a neat circuit diagram. L2 6M

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