Q.P. Code: 18EC0407 **R18**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Supplementary Examinations March-2021

ANALOG CIRCUITS

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Classify the amplifiers according to the method of coupling.	**2M**
	b	Classify the various negative feedback amplifiers.	**2M**
	c	What are the merits of using push-pull configuration?	**2M**
	d	Mention the applications of operational amplifier	**2M**
	e	What is a Sallen- Key filter?	**2M**

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	Derive the expression for the CE short circuit current gain Ai as a function of frequency using hybrid – π model.	**5M**
	b	Discuss the need of Darlington pair circuit.	**5M**

OR

3		With neat diagram, explain Cascode amplifier and derive overall voltage gain, input resistance, current gain and output resistance of Cascode amplifier.	**10M**

UNIT-II

4	a	What are the advantages and disadvantages of the introduction of negative feedback in amplifiers? Explain.	**5M**
	b	Derive an expression for frequency of oscillations of a RC phase shift oscillators.	**5M**

OR

5	a	Explain the effects of negative feedback on gain , stability and bandwidth	**5M**
	b	With the help of the circuit diagram explain the working of Hartley oscillator and derive an expression for frequency of oscillations.	**5M**

UNIT-III

6	a	Draw the circuit diagram of class B push pull amplifier and explain its operation. Also, prove that its conversion efficiency is 78.5%.	6M
	b	Draw the circuit of Single tuned amplifier and explain its operation.	4M

OR

7	a	Describe the operation principle of complementary push-pull configuration in detail.	6M
	b	Explain the effect of Cascading Single tuned amplifiers on Bandwidth.	4M

UNIT-IV

8	a	Explain the basic differential amplifier and draw its transfer characteristics.	6M
	b	Design practical integrator circuit using op-amp.	4M

OR

9	a	Draw and explain the operation of Instrumentation amplifier	5M
	b	Draw a sample and hold circuit. Explain its operation and explain its uses.	5M

UNIT-V

10	a	Design a first order LPF for a high cut-off frequency of 2 kHz and pass band gain of 2.	6M
	b	Explain a 3-bit R-2R Ladder DAC in detail	4M

OR

11	a	Design a band pass filter of second order with a mid band voltage gain of AV=100, centre frequency f_0=10 kHz and a bandwidth of 5 kHz	6M
	b	Explan the operation of Dual – Slope ADC	4M

END