U.S.N | | | | | | | | | | |

P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Third Semester, B.E. - Electronics and Communication Engineering

Semester End Examination; Dec. - 2019

Analog Electronic Circuits

Time: 3 hrs *Max. Marks: 100*

Note: I) **PART - A** is compulsory. One question for 2 marks from each unit.
II) **PART - B**: Answer any **two** sub questions (from a, b, c) for Maximum of 18 marks from each unit.

Q. No.	Questions	Marks
	I : PART - A	**10**
I a.	Write the drain current equation for n-type MOSFET by considering channel length modulation.	2
b.	Define CMRR.	2
c.	Draw the circuit diagram of op-amp differentiating circuit.	2
d.	Define Astable 555timer.	2
e.	Differentiate between low pass and high pass filter.	2
	II : PART - B	**90**
	UNIT - I	**18**
1 a.	Draw the drain and transfer characteristics of n-channel E-type MOSFET. Explain its operation.	9
b.	What is biasing? Explain biasing using a constant current source.	9
c.	With relevant diagram, derive the equation for finite output resistance of a MOSFET.	9
	UNIT - II	**18**
2 a.	Explain and design a Non-inverting amplifier to have a voltage gain of 66 for input amplifier of 15 mV by using op-amp 741(I_{Bmax}= 500 nA).	9
b.	Analyze the working operation of op-amp difference amplifier circuit along with related equations.	9
c.	With a neat diagram Illustrate how high input impedance capacitor coupled voltage follower can be designed?	9
	UNIT - III	**18**
3 a.	Write the circuit diagram of a current source for floating load and explain its operations.	9
b.	List precaution that should be observes for op-amp circuit stability. Explain in each case.	9
c.	Draw the circuit of inverting Schmitt trigger and explain the plot of hysteresis voltage.	9
	UNIT - IV	**18**
4 a.	Write the circuit diagram, input and output waveforms of precision full wave rectifier analyze its working operation.	9
b.	Draw the op-amp sample and hold circuit sketch the signal, control and output voltage waveforms. Explain its operations.	9
c.	Explain with neat diagram of Astable multi vibrator using op-amp.	9

Contd…2

UNIT - V **18**

5 a.	With a neat diagram, explain the working of triangular/rectangular wave generator.	9
b.	Design a second order low pass filter circuit using Op-amp to have a cut off frequency of 1 kHz. Also Explain its operation.	9
c.	Design LM317 for an output voltage of 9 V and explain its operation.	9

* * *