Student Exam No._____

GANPAT UNIVERSITY

B. Tech. Sem. IV (EC)

Regular Examination May-June 2013

2EC403: Analog Electronics

Time: 3 Hours **Total Marks: 70**

Instructions:

1. Attempt all questions.
2. Answers to the two sections must be written in separate answer books.
3. Figures to the right indicate full marks.
4. Assume suitable data, if necessary.

SECTION-I

1	(A)	Find input and Output resistance of Current Shunt feedback amplifier.	7
	(B)	Derive expression for transfer gain of amplifier with positive and negative feedback.	5
		OR	
1	(A)	Find input and Output resistance of Current series feedback amplifier.	7
	(B)	An amplifier with open loop voltage gain Av=1000 ± 100 is available. It is necessary to have an amplifier whose voltage gain varies by no more than ± 0.1 %. Find the gain with feedback. Also find β.	5
2	(A)	Explain RC phase shift Oscillator.	4
	(B)	Draw functional block diagram of IC 555 timer and explain function of each pin.	7
		OR	
2	(A)	Explain working with necessary circuit diagram and waveforms of monostable multivibrator design using timer IC-555.	5
	(B)	Explain the working principle of shunt voltage regulator.	4
	(C)	What is load and line regulation? Write equation for them.	2
3	(A)	Define the following terms: (i) Return ratio (ii) Return difference feedback factor	2
	(B)	A single stage transistor amplifier has a voltage gain of 600 without feedback, and 50 with feedback. Calculate the percentage of output which is feedback to input.	4
	(C)	Draw block diagram of PLL and explain it in detail.	6

SECTION-II

4 (A) Define the following: 6
(i)Slew rate (ii) Instrumentation Amplifier (iii) Electronic Filter
(iv) Input bias current (v)First order filter (vi) Op -Amp

(B) With neat circuit diagram, explain the operation of a Positive and a Negative Clipper circuit using op amp. 6

OR

4 (A) Define a Rectifier. Explain the operation of a Rectifier circuit using op-amp. 6

(B) Define the following: 6
(i) Corner Frequency (ii) UGB (iii) Second Order filter
(iv) Clamper (v) PSRR (vi) Bandwidth

5 (A) Explain the circuit of Schmitt trigger in detail. 5

(B) Briefly explain the Voltage Follower circuit using op amp. 3

(C) Differentiate between the Active and Passive filters. 3

OR

5 (A) Derive an expression for the input and output resistance of a voltage series feedback amplifier using op amp. 5

(B) Explain the practical Integrator circuit. 3

(C) Briefly explain the Inverter circuit using op amp. 3

6 (A) For the Differential amplifier using single op amp, $R_{1=}$ R_2= 1 KΩ, $R_F = R_3$ = 10KΩ. $V_{d=}$ $5mV$ *sine wave at* $1\ KHz$. V_{ni} =2mV at 60 Hz.Calculate (a) output voltage at 1 KHz (b) the amplitude of the induced 60 Hz noise at the output. The op amp is μA741 with CMRR(db)=90. 6

(B) Explain the current to voltage converter circuit in detail. 3

(C) Explain in detail, a first order low pass Butterworth filter circuit. 3

END OF PAPER