Student Exam No: _____

GANPAT UNIVERSITY
B.TECH SEM. IV BIOMEDICAL & INSTRUMENTATION ENGINEERING
CBCS REGULAR EXAMINATION MAY/JUNE - 2015
2BM401: ANALOG INTEGRATED ELECTRONICS

Time: 3 hour **Marks: 70**

INSTRUCTION:

1. Write each section in separate answer books.
2. All questions are compulsory.
3. Draw figures & circuits, write equations and assume data wherever necessary.
4. Conventional terms / notations are used.
5. Figure to the right indicate marks.

Section – I

Q.1 **[12]**

a) How triangular wave can be generated using comparator with necessary diagrams. Derive equation to calculate frequency of output wave. Design it for output frequency 2 KHZ and $V_{O(PP)}$ = 7V. Supply voltage is 14 V.

b) Explain the applications of Monostable Multivibrator.

OR

Q.1 **[12]**

a) Distinguish between signal generator and oscillator. In voltage controlled oscillator circuit if supply voltage is 12V, R2 = 1.5KΩ, R1=R3 = 10 KΩ, C1 = 0.001μF. Determine output frequency, Modulation in output frequency if Control voltage is varied between 9.5 and 11.5. Draw square waveform if modulating input is sinc wave.

b) Explain the operation of Astable Multivibrator with output waveforms. Determine frequency if RA = 2.2 KΩ ; RB = 3.9 KΩ and C = 0.1 μF.

Q.2 **[11]**

a) Design 2nd order low pass Butterworth filter at 1KHz cutoff frequency with pass band gain of 2. Plot its frequency response

b) With the help of bock diagram explain phase locked loop

OR

Q.2 **[11]**

a) Define demodulation. Describe DSB-SC system of communication with its advantages and disadvantages.

b) Explain fixed voltage regulators and how it can be used to construct ± 5 V fixed power supply

Q.3 **Write shot note on (Any three)** **[12]**

a) High level AM transmitter

b) Classification of filters with advantages of active filters.

c) Switching regulators

d) General block diagram of communication

Section – II

Q.4 [1

a). Derive gain equation for Inverting amplifier configuration.

b) Discuss types of integrated circuits and IC packaging.

OR

Q.4 [1

a). Explain Output characteristic of OP-AMP.

b). Derive input and output resistance with feedback for Inverting amplifier configuration.

Q.5 [1

a). a. Explain SCHMITT trigger.

b. Explain sample and hold circuit.

b). Explain differentiator with neat figure and also derive its equation.

OR

Q.5 [1

a). Explain V to F converter and draw internal circuit.

b). Explain peak detector and sample and hold circuit.

Q.6 [1

a). Draw and explain equivalent circuit of OPAMP.

b). How to determine bandwidth of AC Amplifier.

c). Design peaking amplifier for gain of 10 at 12kHz peak frequency. Assume necessary data.

----------END OF PAPER----------