

SEAT NO.....

**GANPAT UNIVERSITY**  
**B.TECH SEM. IV<sup>th</sup> BIOMEDICAL & INSTRUMENTATION ENGINEERING**  
**REGULAR EXAMINATION MAY/ JUNE- 2012**  
**2BM401: ANALOG INTEGRATED ELECTRONICS**

**TIME: 3 HOURS**

**TOTAL MARKS: 70**

**INSTRUCTIONS:**

1. All the questions are compulsory.
2. Answer to the question of each section must write in separate answer books.
3. Figures to the right indicate marks.
4. Assume data, if and only if needed.

**SECTION- I**

**Q. 1**

- (a) Write a short note on: The Differential Amplifier with 3 op-amps & derive its equation of Differential voltage gain with necessary diagrams. [6]
- (b) Draw the schematic of Band Pass Filter & Explain it in detail. [6]

**OR**

**Q. 1**

- (a) Enlist the types of Open Loop configurations of the Op-amp & Explain each in detail. [6]
- (b) Write a short note on: [6]
  1. All-pass Filter.
  2. Sample & Hold circuit.

**Q. 2**

- (a) Design the Second-order High-pass Filter of unity gain at a cutoff frequency of 1.5KHz & also design the Second-order Low-pass Filter of unity gain at a cutoff frequency of 3KHz & then draw the combined frequency response plot for both the filters. [6]
- (b) Define: [5]
  1. Input bias current.
  2. Thermal Drift.
  3. Characteristics of an Ideal Op-amp.
  4. Slew Rate.

**OR**



Q. 2

- (a) Write short note on: 1. I to V converter. [6]  
2. Zero Crossing Detectors.
- (b) For the following circuit in figure (i): find out the values of  $R_1$ ,  $R_2$ , &  $V_o$ , if the [5]  
voltage gain of the circuit is 20 and the input voltage  $V_x = 0.5$  V.

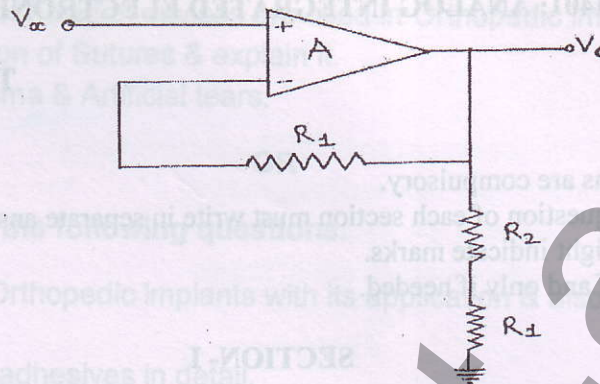


Figure (i)

Q. 3

- (a) What is Instrumentation Amplifier & Explain in detail the Instrumentation [6]  
Amplifier using Bridge & derive its output voltage equations with necessary  
diagrams?
- (b) Explain in detail the Differentiator with necessary diagrams. [6]

## SECTION-II

Q. 4

- (a) Derive AC Analysis of Dual Input Balanced Output. [6]  
(b) Answer the following: [6]
1. Define Differential Amplifier & its types.
  2. Why Constant Current Bias is needed?
  3. What happens if we Cascade two Differential Amplifiers? What is  
needed to solve the problem?

OR

Q. 4

- (a) Draw & Explain in detail the Voltage controlled Oscillator. [6]  
(b) Explain in detail Block diagram of Low level modulated AM Transmitter. [6]

Q. 5

- (a) What happens if we connect Integrator to Square Wave Generator? Explain [6]  
this in detail with necessary diagrams.
- (b) Design the Phase Shift Oscillator of frequency 100Hz. [5]

OR

Q. 5

- (a) Draw & Explain in detail the Schmitt Trigger. [6]  
(b) Design the Square Wave Generator of frequency 2KHz. [5]

Q. 6

- (a) Draw & Explain the block diagram of Communication System in detail. [6]  
(b) Explain in detail the Wein Bridge Oscillator with necessary diagrams. [6]