

**BACHELOR OF SCIENCE (COMPUTER SCIENCE) (CBCS - 2018 COURSE)**  
**S.Y.B.Sc.(Computer Science) Sem-IV : WINTER :- 2021**  
**SUBJECT: ANALOG SYSTEMS**

Day : Monday  
Date 31-01-2022

W-20108-2021

Time : 02:00 PM-05:00 PM  
Max. Marks: 60

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate full marks.
- 3) Draw diagrams **WHEREVER** necessary.
- 4) Use of Calculator is **ALLOWED**.

**Q.1** Answer **ANY TWO** of the following: (12)

- a) Draw and explain the function of different blocks of an analog electronic system.
- b) Draw the circuit diagram of OP-AMP based voltage to frequency converter and explain its working.
- c) Explain Piezoelectric humidity sensor with block diagram. State any two uses of it.

**Q.2** Answer **ANY TWO** of the following: (12)

- a) Draw and explain the block diagram of temperature monitoring system using LM35.
- b) Explain first order high pass filter with neat circuit diagram and frequency response.
- c) Draw and explain the block diagram of signal conditioning system.

**Q.3** Answer **ANY TWO** of the following: (12)

- a) Explain the operating principle of capacitive touch sensor. State any two applications of it.
- b) Explain the following with reference to sensors:  
i) Accuracy    ii) Linearity    iii) Range  
iv) Sensitivity    v) Resolution    vi) Reproduction
- c) Explain with neat diagram the working of Wheatstone's bridge for unbalanced condition.

**Q.4** Answer **ANY THREE** of the following: (12)

- a) What is meant by electrocardiogram? Give the analysis of ECG signal.
- b) Draw and explain the frequency response of band pass filter.
- c) With neat diagram explain the working principle of PIR sensor.
- d) With neat diagram explain data acquisition system to process analog signal.

**Q.5** Answer **ANY FOUR** of the following: (12)

- a) Define the following terms:  
i) Instrumentation    ii) Calibration
- b) State three points of difference between active and passive filters.
- c) Explain level shifter using OP-AMP with necessary diagram.
- d) Name any two active and two passive transducers.
- e) Explain any three applications of tilt sensors.
- f) Explain the basic structure of LDR.

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