

BACHELOR OF SCIENCE (COMPUTER SCIENCE) (CBCS - 2016 COURSE)
S.Y.B.Sc.(Computer Science) Sem-IV : WINTER- 2022
SUBJECT : ANALOG SYSTEMS

Day : Saturday

Time : 02:00 PM-05:00 PM

Date : 17-12-2022

W-14897-2022

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

- a) Explain the principle of operation of LVDT with necessary diagram.
- b) Explain the working principle of ultrasonic sensors. State any two applications of it.
- c) Draw and explain water level indicator system using float switch.

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

- a) With neat diagram explain the working of Wheatstone's bridge for balanced conditions.
- b) Differentiate between active and passive filters.
- c) Draw neat diagram of analog electronic system and explain the function of each block.

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

- a) With neat diagram explain the principle of operation of pH sensor.
- b) Draw the circuit diagram for instrumentation amplifier using three OP-AMP. Also, derive an expression for its output voltage.
- c) Explain with diagram the case study of ECG.

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

- a) Draw circuit diagram of OP-AMP based voltage to frequency converter (VFC) and explain its working.
- b) Explain the working principle of tilt sensors.
- c) Explain data acquisition system.
- d) With neat diagram explain the working principle of PIR sensor.

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

- a) What do you mean by order of a filter? Draw frequency response of an ideal high pass filter.
- b) Define the term active sensor. Give any two examples of optical sensor.
- c) Draw well labelled circuit diagram of level shifter circuit and explain it in brief.
- d) What is calibration? Why is it necessary.
- e) State and explain any three parameters of sensors.
- f) Explain the operating principle of LDR.

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