BACHELOR OF SCIENCE (COMPUTER SCIENCE) (CBCS - 2018 COURSE)
S.Y.B.Sc.(Computer Science) Sem-IV :SUMMER- 2022
SUBJECT : ANALOG SYSTEMS

Day : Wednesday | Time : 03:00 PM-06:00 PM
Date : 13-07-2022 | **S-20108-2022** | 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**.

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

a) Explain the working of water level indicator system using float switch.
b) Explain with diagram the working of a balanced Wheatstone's bridge.
c) With neat diagram explain the construction and working principle of LVDT.

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

a) Explain the operating principle of capacitive touch sensors. State any two applications of it.
b) Draw well-labelled diagram of three OP-AMP instrumentation amplifier. Derive the equations for its gain.
c) Draw simplified block diagram of ECG system and explain analysis of ECG signal.

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

a) State and explain any six specifications of sensors.
b) Explain first order low pass filter with its frequency response. State any two applications of it.
c) Explain the working of temperature monitoring system using LM-35.

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

a) State the basic principle of working of ultrasonic sensor. State any two applications of it.
b) State four points of difference between active and passive filters.
c) Explain the working principle of pH sensor.
d) Draw block diagram of an analog electronic system and state the role of sensors.

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

a) Calculate the current through galvanometer of an unbalanced Wheatstone's bridge with excitation voltage of 12V and R_1= 1kΩ, R_2= 4K Ω, R_3 = 3K Ω, R_4= 8 K Ω and R_g= 600 Ω.
b) Define the following terms:
i) Sensors ii) Transducers iii) Instrumentation
c) Explain switch based tilt sensors.
d) Draw frequency response for band pass filter.
e) List any three features of AD590.
f) List any three application of PIR sensors.

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