

**S.Y.B.SC. (Computer Science) SEM –IV (2014 COURSE) : WINTER -  
2018**

**SUBJECT : COMPUTER INSTRUMENTATION**

Day : Monday  
Date : 22/10/2018

**W-2018-0964**

Time : 03.00 PM TO 05.00 PM  
Max. Marks : 40

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**N.B.:**

- 1) All questions are **COMPULSORY**.
  - 2) Figures to the right indicate **FULL** marks.
  - 3) Draw diagrams **WHEREVER** necessary.
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**Q.1** Answer **ANY TWO** of the following: **[10]**

- a) Explain three OP-AMP instrumentation amplifier with neat diagram. Also obtain relation for its output gain.
- b) What are filter circuits? Explain with diagram basic principle of RC filter circuit.
- c) Explain the principle of ultrasonic sensor with neat diagram.

**Q.2** Answer **ANY TWO** of the following: **[10]**

- a) Explain the working of LVDT.
- b) What is a band pass filter? Explain it with proper circuit diagram.
- c) Explain with diagram the case study to implement water level indicator system using float switch.

**Q.3** Answer **ANY TWO** of the following: **[10]**

- a) Define the following terms for sensors:  
i) Accuracy ii) Range iii) Linearity iv) Sensitivity v) Resolution
- b) Explain block diagram of electrocardiography (ECG) machine.
- c) Explain the working of Light Dependent Resistor.

**Q.4** Answer **ANY FIVE** of the following: **[10]**

- a) State any two applications of PIR.
- b) Define Level shifter.
- c) Give two points of difference between sensor and transducer.
- d) Wheatstone's bridge contains following resistors:  
 $R_1 = 5\text{ k}\Omega$ ,  $R_2 = 10\text{ k}\Omega$ ,  $R_3 = 15\text{ k}\Omega$ . Find the unknown resistance  $R_4$ .
- e) State the need of signal processing.
- f) Compare active and passive filters.
- g) List any two features of temperature sensor LM35.

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