Progressive Education Society's

Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16, NEP 2020 (Autonomous)

End Semester Examination: April 2024

First Year (Computer Science)
CELE-12201: Smart Instrumentation System
(Semester II)

Program: BScComp05 **Credits:** 2
Program Specific:B.Sc.(Comp.Sc.) **Time:** 2 Hours
Course Type:CC **Max. Marks:** 30
Paper: Minor **SET:A**

Instructions to the candidate:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Draw a well labeled diagram wherever necessary.*

SECTION: A

Q1) Answer the following **[5 X 1= 5]**

1. What is half adder?
2. List different types of shift register.
3. State True or False- D flip flop is known as direct flip flop
4. Define sensor
5. What is an address bus?

SECTION: B

Q2) Answer the following (Attempt any 5/7) **[5 X 2 =10]**

1. Draw the logical diagram of 1:2 de-multiplexer.
2. Why op-amp is called an operational amplifier?
3. Explain any two applications of optical sensor LDR.
4. Name two types of image sensor and compare them with each other.
5. Draw the symbol of opamp.
6. If temperature of the environment is 35 °C, calculate o/p voltage of LM 35.
7. For 4:1 multiplexer, how many select lines are required?

PTO

SECTION: C

Q3) Answer the following/Write short notes on following (Attempt any 2/4) [2 X 5 = 10]

1. Explain the working of full adder with neat diagram.
2. Describe the working of Decimal to BCD encoder.
3. Write a short note on ultrasonic sensor.
4. Draw the block diagram of smart instrumentation System and explain the role of each block.

SECTION: D

Q4) Answer the following (Attempt any 1/2) [5 X 1 = 5]

1. Explain the working of PIR sensor used for motion detection.
2. What is ALU ? Explain its role in brief.

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