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BRAINWARE UNIVERSITY

Term End Examination 2024-2025

Programme – Dip.ME-2022

Course Name – Mechatronics

Course Code - DMEPE602A

(Semester VI)

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) The 8255 is a _____ chip.
 - a) Digital to analog
 - b) Input/Output
 - c) Analog to Digital
 - d) None of the mentioned
- (ii) "DJNZ R0, label" is _____ byte instruction.
 - a) 2
 - b) 3
 - c) 1
 - d) Can't be determined
- (iii) Select when we add two numbers the destination address must always be.
 - a) some immediate data
 - b) any register
 - c) accumulator
 - d) memory
- (iv) Define, which of the following can be cause for non-zero output when zero input.
 - a) Bias
 - b) Slew
 - c) Offset
 - d) Offset or bias
- (v) Recall, thermocouple generate output voltage according to _____.
 - a) Circuit parameters
 - b) Humidity
 - c) Temperature
 - d) Voltage
- (vi) Write, which of the following act as magneto-resistive material.
 - a) Bismuth
 - b) Antimonide
 - c) Both bismuth and antimonide
 - d) None of the mentioned
- (vii) Write, what does SCARA stand for in terms of industrial mechatronic robots.
 - a) Selectively Compliance Assembled Robot Arm
 - b) Selective Complicated Assembly Robot Arm
 - c) Selective Compliance Assembly Robot Arm
 - d) Static Complicated Assembly Robot Arm
- (viii) Illustrate, which axis of SCARA (Selective Compliance Assembly Robot Arm) robot is rigid and static.
 - a) X axis
 - b) Y axis
 - c) Z axis
 - d) No axis

- (ix) Write, how many degrees of freedom do an industrial SCARA (Selective Compliance Assembly Robot Arm) has.
a) 3 b) 5
c) 4 d) 9
- (x) Report, how many degrees of freedom do an industrial redundant arm has.
a) 3 b) 5
c) 7 d) 7
- (xi) Write the full form of "AI".
a) Artificial Intelligence b) Artificial Intellect
c) Automatic intellect d) Automatic intelligence
- (xii) Illustrate the full form of "PUMA" in context to robotics.
a) Programmable used machine to assemble b) Programmed utility machine for assembly
c) Programmable universal machine for assembly d) Programmed utility machine to assemble
- (xiii) Illustrate whether, primitive methods should be preferred over mechatronic systems for short term manufacturing.
a) Mechatronics systems are preferred b) Mechatronics systems are preferred
c) Not defined d) None of the mentioned
- (xiv) signal will become zero when the feedback signal and reference signs are equal.
a) Input b) Actuating
c) Feedback d) Reference
- (xv) Pirani gauge is used for measuring pressure.
a) very high b) high
c) very low d) atmospheric.

Group-B
(Short Answer Type Questions)

3 x 5=15

2. Define Mechatronics. (3)
 3. List some of the applications of Mechatronics. (3)
 4. Explain Automatic Control system and also explain the advantages and disadvantages of Automatic Control system. (3)
 5. Explain the features of Servo-mechanism. (3)
 6. Explain functions of measurement systems. (3)
- OR**
- Explain about measurement system performance. (3)

Group-C
(Long Answer Type Questions)

5 x 6=30

7. Explain about open loop and closed loop system. (5)
8. Illustrate the classification of transducers. (5)
9. Explain the static characteristics of transducers. (5)
10. Explain the role of mechatronics in advance manufacturing. (5)

11. Illustrate the advantages and disadvantages of using fluid power via a hydraulic system? (5)
12. Illustrate the construction and working principle of LDR used as light sensors. (5)

OR

Explain the difference between zeroth, first, and second-order systems.

(5)

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