

M.Sc. (Part—I) Semester—II (CBCS Scheme) Examination
2-ELE4 : ELECTRONICS (Instrumentation)
(Mechatronics)

Time : Three Hours]

[Maximum Marks : 80

- Note :—**(1) All questions are compulsory.
(2) All questions carry equal marks.

EITHER

1. (a) What is Mechatronics ? Explain with block diagram. 8
- (b) Explain design process in detail. 8

OR

- (p) Explain control systems with open and closed loop system. 8
- (q) Explain analog and digital control systems. 8

EITHER

2. (a) Explain digital controllers in detail. 8
- (b) Explain controller tuning in brief. 8

OR

- (p) What is PID ? Give advantages and disadvantages of PID. 8
- (q) Explain different terminologies in closed loop controllers :
 - (i) lag
 - (ii) steady state error
 - (iii) control modes. 8

EITHER

3. (a) Explain :
 - (i) Basic structure of PLC
 - (ii) Shift registers. 8
- (b) Explain ladder programming with examples. 8

OR

- (p) Describe timers and counters. 8
- (q) Explain master and jump controls. 8

EITHER

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| 4. | (a) | What is network ? Explain in brief. | 4 |
| | (b) | Explain protocol in brief. | 4 |
| | (c) | Explain serial and parallel communication interfaces. | 8 |

OR

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|-----|---------------------------------------|---|
| (p) | Explain wireless protocols in brief. | 8 |
| (q) | Explain OSI model. | 4 |
| (r) | Explain digital communication system. | 4 |

EITHER

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|----|-----|-------------------------------------|---|
| 5. | (a) | Explain fault detection techniques. | 8 |
| | (b) | Explain parity and error coding. | 8 |

OR

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| (p) | Explain common hardware faults. | 8 |
| (q) | Explain fault finding techniques used in microprocessor system. | 8 |