

M.E. First Semester (Mechanical Engineering (CAD/CAM)) (F.T.) (CBS)

13485 : Mechatronics : 1 MCC 4

P. Pages : 1

Time : Three Hours



AW - 3731

Max. Marks : 80

- Notes :
1. Answer **three** question from Section A and **three** question from Section B.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answer necessary with the help of neat sketches.
 5. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION – A

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|----|----|--|---|
| 1. | a) | Explain the various types of components of a mechatronic system. Explain in brief the function of component with the help of an example. | 7 |
| | b) | What are the actuators? Explain the working of stepper motor with neat sketch. | 6 |
| 2. | a) | Explain the direct digital control system in detail. | 7 |
| | b) | What is servo principle? Explain in detail. | 6 |
| 3. | a) | Explain with the of a block diagram the working functions of a various components of analog to digital converters (ADC). | 7 |
| | b) | Explain the requirements of the spindle drives & feed drives. | 6 |
| 4. | a) | What is the difference between position, displacement & proximity sensors? Explain any two proximity sensors in detail. | 7 |
| | b) | Classify various electronic motors. State their characteristics and list applications. | 6 |
| 5. | a) | What is the computer process control? Explain various computer process hardware in detail. | 7 |
| | b) | Explain the supervisory computer control in detail. | 7 |

SECTION – B

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|-----|----|---|---|
| 6. | a) | What is the automatic loading & unloading devices? Explain magazines & bunkers with diagram. | 7 |
| | b) | What is the orientation mechanism? Explain any one orientation mechanism in detail. | 6 |
| 7. | a) | Classify the different control components in pneumatic system. Explain the different direction control valve and their functions. | 7 |
| | b) | Draw and explain pneumatic circuit for automatic piston reciprocation. | 6 |
| 8. | a) | Draw a pneumatic circuit for clamping and de-clamping of a chuck in a lathe machine. | 7 |
| | b) | Draw and explain hydropneumatics synchronization circuit for two cylinders. | 6 |
| 9. | a) | Sketch and explain a hydraulic circuit for sequencing of two hydraulic cylinders. | 7 |
| | b) | Explain general structures of a hydraulic system. | 6 |
| 10. | a) | Draw and explain meter – out type of speed control circuit for a pneumatic circuit. | 7 |
| | b) | Explain the general structure of pneumatic system. | 7 |
