

GUJARAT TECHNOLOGICAL UNIVERSITY

DI -5 SEMESTER – OLD PAPER – S24 TO S25 – QUESTION BANK(English)

Subject Name & Code:

Advance Manufacturing System- 4351906

Unit I: Introduction

Repeated Questions:

1. Explain different stages of product life cycle. (S25, S24, W24)
2. Define product life cycle and technology life cycle. (S25, W23)

Other Important Questions:

3. Write importance of AMS. (S24)
4. List types of Manufacturing System. (W24)
5. Explain the need of manufacturing quality & innovative products. (W23)

Unit II: Group Technology (GT) & Cellular Layout

Repeated Questions:

1. List benefits of Group Technology. (S25, S24, W23)
2. Explain the need of group technology in manufacturing. (S25, S24)
3. List various Coding system used in group technology and explain any one. (S25, W23)
4. Explain Part classification with example. (S25, W23)

Other Important Questions:

5. Define Group Technology. (S25)
6. Explain OPTIZ classification system in detail with one example. (S24)
7. Write advantages and disadvantages of monocode used in group technology. (S24)
8. List different methods for developing part families and explain any one in detail. (S24)
9. Explain DCLASS coding system in detail with one example. (S24)
10. Construct Structure of KK3 Coding System with any example. (W24)
11. List types of structure for GT coding system and explain anyone. (W24)
12. Define Part family and Group Technology. (W24)
13. Explain Cellular Manufacturing. (W24)
14. Construct basic structure of Ortiz system. (W23)

Unit III: Flexible Manufacturing System (FMS)

Repeated Questions:

1. List and explain various types of AGV. (S25, S24)
2. List and explain various types of AS/RS. (S25, S24)
3. List Advantages of FMS. (S25, S24)

Other Important Questions:

4. Define Flexible Manufacturing System. (S25)
5. Construct Ladder layout in FMS system with Sketch. (S25)
6. Construct open Field layout in FMS system with Sketch. (S25)
7. Differentiate between FMC & FMS. (S24)
8. List out the main parts of AGV. (S24)
9. Explain In line FMS layout with figure. (S24)
10. Classify vehicle guidance technology and explain anyone. (W24)
11. Construct In-Line layout system with an example. (W24)
12. Construct Robot Centered layout system with an example. (W24)
13. List Major Elements of FMS and explain anyone. (W24)
14. Explain any one Flexible Manufacturing system (FMS) layout with sketch. (W23)
15. Construct Loop layout system with an example. (W23)
16. Construct Inline layout system with an example. (W23)
17. Explain group technology layout with sketch. (W23)
18. Compare Group Technology layouts with convention layouts. (W23)

Unit IV: Automation and Control Technology

Repeated Questions:

1. List advantages and dis-advantages of Automation.

- **Appeared in:** W23 (Q3b, 04 marks)
- Define automation and write advantages and disadvantages of automation. (S24 - Q4-OR(c), 07 marks)

Other Important Questions:

2. List Control system in Automation and Explain anyone. (S25 - Q4c, 07 marks)
3. Differentiate between Process Industry and Discrete Manufacturing. (S25 - Q4-OR(c), 07 marks)
4. Explain various level of automation in detail. (S24 - Q4c, 07 marks)
5. Compare Continuous control and Discrete Control. (W23 - Q4b, 04 marks)
6. Define Automation and Explain need of Automation. (W23 - Q3-OR(b), 04 marks)
7. Explain different Actuators used for Automation. (W24 - Q3b, 04 marks)
8. Differentiate Process Industries and Discrete Manufacturing. (W24 - Q3-OR(b), 04 marks)
9. Compare process industry and Discrete manufacturing industry. (W23 - Q4-OR(b), 04 marks)

Unit V: Robotics

Repeated Questions:

1. **Write industrial applications of Robot.**
 - **Appeared in:** S25 (Q4b, 04 marks), S24 (Q4a, 03 marks)
2. **Identify work criteria for using industrial robots.**
 - **Appeared in:** S25 (Q4-OR(b), 04 marks), W23 (Q4a, 03 marks)

Other Important Questions:

3. Explain selection criteria of Robot. (S25 - Q4a, 03 marks)
4. Differentiate between point to point Robots and continuous path Robots. (S24 - Q4b, 04 marks)
5. Define following terms for Robot. 1. Work envelope 2. Manipulator 3. Load carrying capacity. (S24 - Q4-OR(a), 03 marks)
6. List various components of robot and explain any two. (W23 - Q3c, 07 marks)
7. List various types of robot and explain any two. (W23 - Q3-OR(c), 07 marks)
8. Define a Robot and List benefits of Robots. (W24 - Q4a, 03 marks)
9. Give the details of joints used for the construction of industrial robot. (W24 - Q3-OR(c), 07 marks)
10. Explain the different types of grippers used in industrial robots. (W24 - Q3c, 07 marks)

Unit VI: Discrete Control & Programmable Logic Controller (PLC)

Repeated Questions:

1. **Explain the need of programmable logical controller. / Explain various components of PLC.**
 - **Appeared in:** S24 (Q1c / Q1-OR(c), 07 marks)
 - List Advantages and Disadvantages of PLC / Explain various components of PLC. (S25 - Q1c / Q1-OR(c), 07 marks)

Other Important Questions:

2. Draw a block diagram of a PLC and give detailed information about its main components. (W24 - Q4b, 04 marks)
3. Explain criteria for selection of PLC. (W24 - Q4-OR(b), 04 marks)
4. Explain the working of tactile sensors and proximity sensors and state their uses. (S24 - Q4-OR(b), 04 marks)
5. Explain application of different types of sensors. (S25 - Q4-OR(a), 03 marks)
6. Select and write down work related to vision sensor. (W23 - Q4-OR(a), 03 marks)
7. Give the examples of Range sensor. (W24 - Q4-OR(a), 03 marks)

Unit VII: Industry 4.0

Repeated Questions:

1. **List the advantages and disadvantages of Industry 4.0**
 - **Appeared in:** S24 (Q5a, 03 marks), W23 (Q5-OR(b), 04 marks)
2. **List current and future trends in Industry 4.0**
 - **Appeared in:** S24 (Q5-OR(a), 03 marks), W23 (Q5a, 03 marks)
3. **Explain factory of future and additive manufacturing. / Explain factory of future and Lean manufacturing. / Explain Green manufacturing and additive manufacturing.**
 - **Appeared in:** S24 (Q5c, 07 marks), W23 (Q5c, 07 marks), W23 (Q5-OR(c), 07 marks)

Other Important Questions:

4. Write need of Industry 4.0. (S25 - Q5a, 03 marks)
5. List the advantages of Industry 4.0. (S25 - Q5-OR(a), 03 marks)
6. Define artificial Intelligence and Explain its application. (S25 - Q5c, 07 marks)
7. List various characteristics of Industry 4.0 and explain any one. (W23 - Q5b, 04 marks)
8. Define design principal of Industry 4.0 and List current and future trends in Industry 4.0. (W23 - Q5a, 03 marks)
9. Show historical evolution and origin of Industry 4.0. (W23 - Q5-OR(a), 03 marks)
10. Define artificial intelligence, its concept and List its application areas. (W23 - Q4c, 07 marks)
11. Describe the various stages of industrial revolution. (W24 - Q5a, 03 marks)
12. List Various Technologies of Industry 4.0. (W24 - Q5-OR(a), 03 marks)
13. Explain environmental issues for implementing Industry 4.0. (W24 - Q5-OR(b), 04 marks)
14. Define AI and List various Application, Benefits and Disadvantages of AI. (W24 - Q5c, 07 marks)

Unit VIII: Recent Trends in Manufacturing System

Other Important Questions:

1. Write concept of CAPP. (S25 - Q5b, 04 marks)
2. Write need of CIM. (S25 - Q5-OR(b), 04 marks)
3. Explain additive manufacturing and its application. (S25 - Q5-OR(c), 07 marks)
4. List various types of CAPP and explain any one. (S24 - Q5b, 04 marks)
5. Define artificial Intelligence and list its application areas. (S24 - Q5-OR(b), 04 marks)
6. Explain green manufacturing and Lean manufacturing. (S24 - Q5-OR(c), 07 marks)
7. Define (1) Computer Aided Process Planning (CAPP) (2) Computer Integrated Manufacturing (CIM) (3) Computer Aided Inspection (CAI) (4) Coordinate Measuring Machine (CMM) and State their importance. (W23 - Q4-OR(c), 07 marks)
8. Explain Augmented Reality and Cloud Computing. (W24 - Q5b, 04 marks)
9. Explain Variant CAPP and Generative CAPP. (W24 - Q4c, 07 marks)
10. Explain concept of Factory of Future. (W24 - Q4-OR(c), 07 marks)
11. List Different Techniques for Additive Manufacturing and Explain any two. (W24 - Q5-OR(c), 07 marks)
