

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 7 – EXAMINATION – SUMMER 2026

Subject Code: 2171903

Date: 20/05/2026

Subject Name: Computer Aided Manufacturing

Time: 02:30 PM TO 05:00 PM

Total Marks: 70

Instructions:

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

- Q.1**
- (a) Explain role of management in CAM. **03**
 - (b) Explain the difference between NC, CNC and DNC machine. **04**
 - (c) Discuss the concept of CIM wheel and benefits derived from CIM. **07**
- Q.2**
- (a) Explain the need of CAM in today's industry era. **03**
 - (b) Explain tool length compensation with neat sketch. **04**
 - (c) Explain the axis designation in a CNC lathe machine. State rule followed for axis designation. **07**
- OR**
- (c) Describe with sketch the working and construction of recirculating ball screw used in CNC machine tools. **07**
- Q.3**
- (a) Explain essential elements of a PLC system. **03**
 - (b) Write difference between absolute and incremental programming. **04**
 - (c) What is Production Flow Analysis (PFA)? Write various steps to be followed for PFA. **07**
- OR**
- Q.3**
- (a) Explain the PLC architecture using a diagram. **03**
 - (b) What is group technology? Define part family. **04**
 - (c) Write down benefits of group technology. Differentiate between Generative process planning and Variant process planning. **07**
- Q.4**
- (a) Explain End-effectors in robots **03**
 - (b) What is AGV? Explain different types of AGV used in FMS. **04**
 - (c) What is FMS? Which are various components of FMS? **07**
- OR**
- Q.4**
- (a) Differentiate in detail between GT and FMS. **03**
 - (b) Discuss the concept of JIT. List various advantages of JIT in manufacturing. **04**
 - (c) Explain the types of AS/RS and its applications. **07**
- Q.5**
- (a) Explain in brief Economic Evaluation of investment in robotic installation. **03**
 - (b) Draw and explain the structure of an MRP system. **04**

(c) What is computer integrated production management system? Explain with neat flow chart. **07**

OR

Q.5 (a) What is MRP-II? Explain in brief **03**

(b) Explain various sensors and actuators used in robots. **04**

(c) Describe the methods for programming robots. What are the advantages of each method? **07**
