

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER- VI EXAMINATION – SUMMER 2026

Subject Code:3164105

Date:01-06-2026

Subject Name:Industrial Robotics and Material Handling Systems

Time:10:30 AM TO 01:00 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.

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|------------|---|-----------|
| Q.1 | (a) Enlist types of industrial robots. | 03 |
| | (b) Explain use of robots in material transfer. | 04 |
| | (c) Discuss general considerations in robotic material handling. | 07 |
| Q.2 | (a) Explain machine loading and unloading by using robots. | 03 |
| | (b) Explain robot centered cell. | 04 |
| | (c) Write a note on robotic vision systems. | 07 |
| | OR | |
| | (c) Write a note on image representation. | 07 |
| Q.3 | (a) Enlist different parts of robots. | 03 |
| | (b) Explain application of robot in spot welding. | 04 |
| | (c) Explain application of robot in continuous arc welding. | 07 |
| | OR | |
| Q.3 | (a) Explain application of robot in spray painting. | 03 |
| | (b) Explain application of robot in assembly operations. | 04 |
| | (c) Explain application of robot for under water applications. | 07 |
| Q.4 | (a) What do you mean by End Effectors? | 03 |
| | (b) Enlist different factors influencing the choice of a robot. | 04 |
| | (c) Write a note on active and passive grippers. | 07 |
| | OR | |
| Q.4 | (a) What do you mean by degrees of freedom? | 03 |
| | (b) Write a short note on robot performance testing. | 04 |
| | (c) Discuss impact of robot on industry and society. | 07 |
| Q.5 | (a) What is material handling? | 03 |
| | (b) Discuss considerations in material handling systems design. | 04 |
| | (c) Write a note on principles of material handling. | 07 |
| | OR | |
| Q.5 | (a) Explain conveyor systems in conventional material handling. | 03 |
| | (b) Write a short note on automated guided vehicle systems. | 04 |
| | (c) Write a note on AS and RS. | 07 |
