

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII (NEW) - EXAMINATION – SUMMER 2018

Subject Code: 2181706

Date: 30/04/2018

Subject Name: Robotic Engineering(Departmental Elective - III)

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.

	MARKS
Q.1 (a) Explain degree of freedom with suitable example.	03
(b) List the type of robot joints along with notation, symbol and description.	04
(c) Explain in detail history of robotics, along with various generations of robots that came into existence.	07
Q.2 (a) List 3 drive technologies used in robotics.	03
(b) State various components/parts of robots	04
(c) Explain in detail how gear ratio is decided and what are the factors on which it is dependent?	07
OR	
(c) Explain in detail how selection of suitable motor is done.	07
Q.3 (a) State any 3 sensors which are generally used in robots	03
(b) Explain the use of optical sensors in robots	04
(c) Explain in detail various types of grippers in robotics	07
OR	
Q.3 (a) What is the purpose of using machine vision in robots?	03
(b) Explain the use of tactile sensors in robots.	04
(c) Explain in detail classification of various types of robotic manipulators	07
Q.4 (a) List various applications where robots are preferred.	03
(b) What is full form of SCARA? Explain SCARA.	04
(c) What is robot programming? Explain in detail various types of robot programming.	07
OR	
Q.4 (a) Explain a robot cell and its use.	03
(b) What is kinematics? Explain its types	04
(c) Explain in details factors affecting selection of robots.	07
Q.5 (a) List few problems faced in inverse kinematics.	03
(b) Explain proximity sensor.	04
(c) Explain in detail Jacobian Transpose method for solving inverse kinematic problem.	07
OR	
Q.5 (a) State Asimov's laws of robotics.	03
(b) Explain types of wrists of robots in robotics	04
(c) List out various application in manufacturing where robots are used and explain any one application how robots are applied in detail?	07
