B.E. Seventh Semester (Mechanical Engineering) (C.B.S.)
Elective - I : Industrial Robotics

P. Pages : 2

Time : Three Hours

0144

Max. Marks : 80

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Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain following terms for robot arm performance. **7**
i) Work volume   ii) Accuracy
iii) Repeatability

b) Define robot. Describe its advantages & applications in modern industries. **7**

OR

2. a) Explain with the help of sketches. **7**
Various configuration of Robots.

b) Explain in brief joint notation schemes in context of Robots. **7**

3. a) Explain classification of end-effector with neat sketch. **7**

b) Explain different types of magnetic grippers & electrostatic gripper with neat sketches. **6**

OR

4. a) Explain drive systems for gripper in robots. **7**

b) Explain the working of Hooking & lifting grippers. **6**

5. a) Differentiate between forward. kinematics & Reverse kinematics. **7**

b) Explain various types of drives. **6**
Used in robots. Enlist its application also.

OR

6. a) Explain following terminologies with respect to robots. **7**

i) Slew motions.   ii) Joint Interpolated motion.
iii) Straight line motion

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	b)	Explain various Robot programming methods.	**6**
7.	a)	Differentiate between. contact & non-contact type of sensors.	**7**
	b)	Explain with neat sketch the working principle & application of Proximity Sensors.	**6**

OR

8.	a)	Explain functionality of Range-Imaging sensors with its application.	**7**
	b)	Explain importance of sensor for machine intelligence used in Robots.	**6**
9.	a)	Describe Robot cell Layout with neat sketch. Also state specific application area.	**7**
	b)	Explain concept of error detection & Recovery system in Robots.	**7**

OR

10.		Write short notes on **any three.**	**14**
	i)	Work cell controller.	
	ii)	Robot & Machine interface.	
	iii)	Interlocks.	
	iv)	Consideration in work all Design.	
11.	a)	Enlist & describe general consideration in robot material handling.	**7**
	b)	Explain in detail pick & place operation using robots.	**6**

OR

12.	a)	Explain stamping press operation using Robots.	**7**
	b)	Explain use of Robots in. Plastic moulding operation.	**6**

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2

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