Roll No. | | | | | | | | | | | |

Total No. of Pages : 01

Total No. of Questions : 08

M.Tech.(CAD/CAM) (Sem.–3)

ROBOTICS

Subject Code : ME-505

M.Code : 23509

Time : 3 Hrs. Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

1. a) Discuss the criteria for robotic installation from economic point of view.
   b) What are the characteristics of a robot which differentiate it from CNC machines?
2. a) With the help of neat and labelled sketches, discuss the construction and working of any one job orienting device.
   b) Differentiate between inline and rotary transfer of work parts.
3. a) Define degree of freedom. How will you determine the degree of freedom of a mechanical system?
   b) Define Link and Joint as in kinematic chains. Discuss any three types of joints used in robot manipulators.
4. Discuss four common kinematic configurations of robotic manipulators with the help of neat sketches.
5. a) What are the advantages and disadvantages of hydraulic actuators *vis-a-vis* pneumatic actuators in robots?
   b) Discuss the use of gears and belt drives in robot manipulators.
6. a) Differentiate between forward and inverse kinematic analysis in robots
   b) What is the principle of tactile sensors? Discuss the importance of tactile sensors in robotics.
7. a) What is machine vision? What are the major components of a robot vision system?
   b) Discuss the grippers which may be used for handling large flat objects such as metallic and non-metallic sheets.
8. Write short notes on :
   a) Robot programming
   b) Automated Guided Vehicles

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.