Reg. No. : | | | | | | | | | | |

Question Paper Code: 49508

B.E./B.Tech. DEGREE EXAMINATION, SEP 2020

Elective

Electronics and Instrumentation Engineering

14UEI908- ROBOTICS AND AUTOMATION

(Regulation 2014)

Duration: One hour Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following Questions)

1. For a robot unit to be considered a functional industrial robot, typically, how many degrees of freedom would the robot have? CO1- R

   (a) 6 (b) 5 (c) 4 (d) 2

2. Maximum number of variable required to define the motion of body in space. CO1- R

   (a) 4 (b) 6 (c) 2 (d) 1

3. Basic components of pneumatic drive systems except CO2- R

   (a) Gripper (b) Compressor

   (c) Pneumatic conditioner (d) Pneumatic valve

4. Frame grabber is used to CO2- R

   (a) Archive the image (b) Segment the image

   (c) Process the image (d) Capture and store digital image

5. Drives are also known as CO3- R

   (a) actuators (b) controller (c) sensors (d) manipulator

6. Magnetic type gripper need _____ CO3- R

   (a) smooth surface to hold (b) surface without any hold

   (c) one side of surface to hold (d) corner less surface to hold

7. _____ is the mathematical optimization technique which belongs to family of local search. CO4- R

   (a) Hill climbing (b) Research and rescue

   (c) Surveillance (d) Agriculture

8. The 2-DOF universal joint is the combination of intersecting of CO4- R

(a) Two revolute joints (b) Two prismatic joints

(c) Two Helical joints (d) Two planner joints

9. Identify the material processing operation CO5- R

(a) Pick and place (b)Material loading (c) Spot welding (d) Die casting

10. A PUMA robot usually consists of CO5- R

(a) Six revolute axes (b) Five revolute axes

(c) Four revolute axes (d) Three revolute axes

PART – B (3 x 8= 24 Marks)

(Answer any three of the following Questions)

11.	Draw the block diagram of robotic system and explain the functions performed by every block of it.	CO1- U	(8)
12.	Explain the function of machine vision systems in robotics.	CO2- U	(8)
13.	Compare the function of electronics and pneumatic manipulator control circuits.	CO3- U	(8)
14.	Outline the concepts of Hill Climbing Techniques	CO4- U	(8)
15.	Discuss and detail about the robot computer interface and robot cell design	CO5- U	(8)