190015

B.Voc. Robotics and Automation
Subject: Fundamentals of Robotic System
Subject Code: DBME104
Semester: 2nd (Regular)
Batch: 2018-21
Theory (External): 35 Marks
Time: 03 hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. **Section A** comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. **Section B** comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number

SECTION –A (OBJECTIVE TYPE QUESTIONS)

(10x1=10 Marks)

1. The main objective of robot is:
   a) To minimize human labour
   b) To increase productivity
   c) To reduce error
   d) All of the above
2. A robot is a
   a) Multi-function manipulator
   b) Programmable
   c) Both a and b
   d) None of the above
3. Heavy robot uses _____drive mechanism
   a) Pneumatic
   b) Hydraulic
   c) Stepper
   d) None of the above
4. Radial movement to manipulator arm is provided by:
   a) Wrist yaw
   b) Wrist swivel
   c) Elbow extension
   d) Wrist bend

5. Robot functionality includes
   a) Re-programmability
   b) Efficiency
   c) Multi functionality
   d) Responsibility
6. Cartesian coordinate based robot is having _____ movements
   a) 3 linear
   b) 2 linear an 1 rotational
   c) 2 rotational and 1 linear
   d) 3 rotational
7. Drives are also known as
   a) Actuators
   b) Manipulators
   c) Sensors
   d) Controllers
8. Grippers are used for
   a) Holding
   b) Cutting
   c) Controlling
   d) All of the above
9. In which of the following operations Continuous Path System is used
   a) Pick and place
   b) Loading and unloading

c) Continuous welding

d) All of the above

10. Physical structure of robot which moves around

a) Manipulator

b) Links

c) Joints

d) End-effector

SECTION –B (ESSAY TYPE QUESTIONS)

(5x5=25 Marks)

1. Describe the translation, rotation and transformation operators in detail.
2. Discuss and compare hydraulic and pneumatic drives.
3. What do you understand by manipulators? Describe construction of manipulators.
4. Explain the working of Robotic Gun and Gripper.
5. Explain trajectory planning in a robotic design. Explain how obstacles are avoided in a path.
6. Discuss the drive system for adhesive and magnetic grippers.
7. Describe Electronic and pneumatic manipulators.
8. Discuss rotary to rotary motion conversion.

----------END OF PAPER----------