Student Exam No._____

GANPAT UNIVERSITY

B. Tech. Semester: VII (MC) Engineering

CBCS Regular Examination Nov-Dec 2016

2MC702 Robotics

Time: 3 Hours **Total Marks: 70**

Instruction: 1 This Question paper has two sections. Attempt each section in separate answer book.
2 Figures on right indicate marks.
3 Be precise and to the point in answering the descriptive questions.

Section - I

Que. – 1

(a) Discuss incremental encoder. What is the limitation of incremental encoder? How it will solve? **(04)**

(b) Explain working of unipolar stepper motor. **(04)**

(c) Show how to select proper actuator? Calculate the required power for selected actuator if 1.5 m long robotic arm lifting the mass of 15 Kg at 20 rpm. Assume mass of the arm is zero. **(04)**

OR

Que. – 1

(a) Which sensor we can use to measure the force at wrist? Discuss in brief. **(04)**

(b) Discuss permanent magnet DC motor. **(04)**

(c) Just discuss the limitation of potentiometer. A wire wound potentiometer is to be used to measure angular position. A 200 turn resistive element is used and wiper can rotate 300° ; 15 V dc is applied to the pot. Determine the resolution of the devices. **(04)**

Que. – 2

(a) Draw the circuit diagram of pneumatic actuator system and give four advantages and four disadvantages. **(05)**

(b) Draw the construction of vidicon tube and explain the working principle. **(06)**

OR

Que. – 2

(a) Discuss Inverse perspective transformation. **(05)**

(b) Explain the concept of neighbor of pixels with suitable example. **(06)**

Que. – 3

(a) Discuss control law of partitioning with suitable control diagram for second order differential system. **(04)**