

Roll No. 

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 01

Total No. of Questions : 09

**B.Tech Ind. Engg. & Mgt. (Spl. in TQM) (Sem.-5)**  
**INDUSTRIAL AUTOMATION AND ROBOTICS**

**Subject Code : IEM-501**

**Paper ID : [70992]**

Time : 3 Hrs.

Max. Marks : 40

**INSTRUCTIONS TO CANDIDATES :**

1. Attempt All EIGHT questions from SECTION-A carrying TWO marks each.
2. Attempt any SIX questions out of EIGHT from SECTION-B carrying FOUR marks each.

**SECTION-A**

**Q1 Answer briefly :**

- a. Discuss the scope of Industrial Automation in Indian Manufacturing Industries?
- b. Discuss the basic laws and principles of pneumatic systems?
- c. Discuss the functions of filters and air dryers in pneumatic and hydraulic systems?
- d. Discuss the block diagram of feedback control system using suitable example?
- e. What are AGV's?
- f. Discuss the industrial usage and applications of Pumps and compressors?
- g. Discuss the salient features of CNC machines?
- h. What are end effectors and give its types?

**SECTION-B**

- Q2 Discuss the industrial applications of robots in Welding and painting using suitable examples?
- Q3 Discuss the construction and working details of actuators used in Hydraulic systems?
- Q4 Discuss the features of Industrial robot? And explain what is Robot cell design and control?
- Q5 Discuss the differences between pneumatic and hydraulic automation systems?
- Q6 Discuss the concept of Human Machine interface in Industrial automation?
- Q7 Discuss various control loops of NC system using suitable block diagrams?
- Q8 Write a short note on Transfer devices and discuss their industrial applications?
- Q9 What is Adaptive control system in CNC and discuss its benefits?