B. TECH. (CBCS - 2014 COURSE) SEM - VIII (PRODUCTION ENGG.) : SUMMER - 2018

SUBJECT: INDUSTRIAL ROBOTICS

Day: **Tuesday** **S-2018-4705** Time: **02.30 PM TO 05.30 PM**

Date: **05/06/2018** Max. Marks: 60

N.B:

1) All questions are **COMUPSORY.**
2) Figures to the right indicate **FULL** marks.
3) Neat diagram must be drawn **WHEREVER** necessary.
4) Assume suitable data if necessary.

Q.1 What are the basic components of robot? Explain them in brief **(10)**

OR

Q.1 What is Robot? Explain robot joints in detail. **(10)**

Q.2 How grippers are classified? Explain mechanical grippers in detail **(10)**

OR

Q.2 A single link robot arm has link parameters of moment of inertia 0.01 and moment of inertia 2.0kg.m^2. The robot arm lifts weight and the link intertia changes to 5.50kg. m^2. Find the percentage change in effective inertia at the output side due to the object lifted by robot (gear reduction $\eta = 100$). **(10)**

Q.3 Discuss image processing and analysis in detail **(10)**

OR

Q.3 What are the basic methods of robot programming? Explain any one with suitable example. **(10)**

Q.4 Describe kinematic equations using homogeneous transformations in detail. **(10)**

OR

Q.4 Explain Denavit hartenberg convention in detail. Also state its application **(10)**

Q.5 Discuss problem reduction approach to problem solving in detail. **(10)**

OR

Q.5 What is the importance of 'training' in robotics? **(10)**

Q.6 Explain use of robots in spot welding and spray coating process. **(10)**

OR

Q.6 Describe machine loading and unloading applications of robot in various production operations. **(10)**

* * * * *