

**B.E. (Instrumentation and Control Engineering)**  
**ROBOTICS & AUTOMATION**  
**(2015 Pattern)**

1. What is digitizing in machine vision?
2. Explain Cycle time concept in robots.
3. Explain hardware required for digitizing.
4. Explain Inspection automation
5. Short note on Proximity and range sensors of robotic systems.
6. Explain Signal commands.
7. Explain Remote Centre Compliance (RCC)
8. Draw and explain architecture of robotic system
9. Write short note on capabilities and limitations of lead - through programming.
10. What is adaptable programmable assembly system?
11. Explain position control and force control in robotics.
12. Short note on Navigation architectures
13. Explain in detail how obstacle avoidance is done in robots.
14. What is assembly system configurations?
15. Why is it needed for robots?

***P.T.O.***