

Code No: **R32032**

**R10**

**Set No. 1**

**III B.Tech II Semester Supplementary Examinations, April/May- 2019**

**ROBOTICS**

(Mechanical Engineering)

**Time: 3 hours**

**Max. Marks: 75**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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- 1 a) Explain the classification of robotics by coordinate system? [8M]  
b) Write about CAD/CAM and robotics? [7M]
- 2 a) Write about requirements and challenges of end effectors? [8M]  
b) Describe about Hydraulic type of locomotion devices? [7M]
- 3 a) Explain the importance of homogenous transformations. [7M]  
b) For the vector  $v=25i + 10j + 20k$ , perform a translation by a distance of 8 in the x-direction, 5 in the y-direction and 0 in the z-direction. [8M]
- 4 Explain the method of assignment of DH frames with the help of an example and define the link parameters. [15M]
- 5 Using Norton - Euler forward equations, determine the joint torques or forces of a planar PR robotic manipulator [15M]
- 6 a) Discuss about straight line motion and joint integrated motion. [8M]  
b) Write about Robot programming languages and software packages? [7M]
- 7 a) Describe about working principle of electric actuator? [8M]  
b) Explain about potentiometers and resolvers? [7M]
- 8 a) Explain the robot applications in spot and continuous arc welding & spray painting? [10M]  
b) Write the importance of robots in the area of inspection? [5M]

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