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**Question Paper Code: 49724**

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Elective

Mechanical Engineering

14UME924-ROBOTICS

(Regulation 2014)

Duration: 1.15 hrs

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

- \_\_\_\_\_ is an automatically controlled, reprogrammable, multipurpose manipulator programmable in three or more axes.  
(a) SCARA Robot      (b) Manipulator      (c) Yaw      (d) Industrial Robot
- The device with hardware & software support for giving commands to the drives called  
(a) Controller      (b) Sensor      (c) Base      (d) Actuator
- The \_\_\_\_\_ must not create any sort of distort and scratch in the fragile work parts  
(a) Path control      (b) Hydraulic drives      (c) Tools      (d) Gripper
- Mechanical inaccuracy among the following  
(a) gear backlash      (b) leakage of hydraulic fluid  
(c) stretching of pulley cards      (d) all the above
- Internal state sensors are used for measuring \_\_\_\_\_ of the end effector.  
(a) Position      (b) Position & Velocity  
(c) Velocity & Acceleration      (d) Position, Velocity & Acceleration
- The work envelop is described by the surface of the  
(a) Work volume      (b) Work Done      (c) Work space      (d) Sensor

7. The amount of time required for the work cycle is
- (a) Robot cycle time analysis                      (b) Robot time  
(c) Cell timing    (d) Machine cycle time
8. The robot which is located at the approximate center of the cell is called
- (a) Machine cell    (b) Robot centered work cell  
(c) Cell layout    (d) Data Interpretation
9. The system used to move parts in the cell
- (a) Intermittent transfer                              (b) synchronous transfer  
(c) Continuous transfer                              (d) In-Line transfer
10. In which of the following categories of robot AVG placed
- (a) A uncontrolled robot                              (b) A saturated robot  
(c) A mobile robot                                      (d) A natural robot

PART – B (3 x 8 = 24 Marks)

**(Answer any three of the following questions)**

11. Elaborate the various parts of a robot and its anatomy with neat sketch. (8)
12. Explain the various drive system used with an industrial robot and compare their features, merits and demerits. (8)
13. Briefly explain the characteristics of Sensors. (8)
14. Experiment with an example which differentiates forward and inverse kinematics. (8)
15. Briefly explain the economic analysis of Robots in detail. (8)