



(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 147656

Roll No.

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B. Tech.

(SEM. VI) THEORY EXAMINATION, 2014-15
PRODUCT DESIGN AND ASSEMBLY AUTOMATION

Time : 3 Hours]

[Total Marks : 100

Note: Attempt all questions. Be precise in your answer. Draw neat and clean diagram where ever require.

Section - A

Q.1 Attempt any four questions:

(5x4=20)

- What types of robot assembly system used in high speed automation system? Explain single station with one robot arm.
- What are the advantages of magazines over conventional part feeders?
- Draw the sketches for Geometrical features affecting part handling.
- Define Flexible automation and its features.
- If a standard Vibratory- bowl feeder cost 5000Rs after installation and debugging, that the play back period is 30 months with two shifts working, and that the factory equipment overheads are 100%(E=2) then find the rate of feeding equipment.

Q.2 Attempt any two questions: (10x2=20)

- a) Explain the mechanics of vibratory conveying.
- b) Discuss the various strategies' involves in automation.
- c) Explain briefly the classification system for first and second digit in assembly code in manual handling system.

Q.3 Attempt any two questions: (10x2 =20)

- a) Explain Alfa and Beta rotational symmetries for various parts.
- b) Describe the construction and working of Reciprocating - tube hopper feeder and derive the expression of an angle required for tube of a hopper.
- c) Explain Buffer storage. Give the reasons why is it used in automation lines.

Q.4. Attempt any two questions: (10x2=20)

- a) What is the effect of required feed rate on feeding cost in design of parts for high speed feeding and orienting.
- b) Explain the design of part for feeding and orientating in high speed automatic and assembly. Describe the rules for product design.
- c) Discuss the design rules for robot assembly.

Q.5. Attempt any two questions: (10x2=20)

- a) Why fusibility study is carried out on automation assembly system? Explain in brief.
- b) What do you understand by term automation? Explain fixed automation and programmable automation.
- c) What are the various types of indexing machines? Explain construction and working principle of rotary and inline indexing machine