

CBCS SCHEME

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18ME72

Seventh Semester B.E. Degree Examination, Jan./Feb. 2023

Computer Aided Design and Manufacturing

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is Automation? List different types of automation and discuss with an example. (10 Marks)
- b. Define : (i) Production rate
(ii) Production capacity
(iii) Utilization and availability
(iv) MLT and WIP (10 Marks)

OR

- 2 a. Sketch and explain any two types of Automated flow lines. (10 Marks)
- b. The ideal cycle time of an 16 station transfer line is 1.4 min. The average down time per line will be 6 min and the probability of break downs per cycle is equal for all cycles and is equal to 0.004. Determine production rate and line efficiency by considering both upper bound and lower bound approaches. (10 Marks)

Module-2

- 3 a. Briefly explain design process and the application of computer in design process. (10 Marks)
- b. Explain the following in detail:
Translation , Rotation , Concatenation and benefits of CAD. (10 Marks)

OR

- 4 a. What do you understand by CAPP? With a block diagram explain Generative System. (10 Marks)
- b. Write a note on MRP Inputs and Outputs, Benefits of MRP. (10 Marks)

Module-3

- 5 a. Define Group Technology, List various types of FMS and benefits of FMS. (10 Marks)
- b. What do you mean by As/Rs? Explain briefly about Part Identification System. (10 Marks)

OR

- 6 a. A manual assembly line has to accomplish 10 work elements to complete the assembly. The element times and precedence requirements are listed in the table. The production rate of the line is 60 units per hour. The efficiency of the line is 95% and the repositioning time is 3 sec. Use Kilbridge and Westers method to balance the line and compute balance delay and balance efficiency.

Element	1	2	3	4	5	6	7	8	9	10
T_e (min)	0.3	0.4	0.3	0.2	0.4	0.1	0.5	0.6	0.4	0.6
Preceded by	-	-	1	1, 2	2	3, 4	4	5	6, 7	8, 9

- b. From above data compute balance delay and balance efficiency using RPW method. (10 Marks)

Module-4

- 7 a. Define CNC. Enlist various advantages / disadvantages and application of CNC. (10 Marks)
 b. List few G and M codes you came across and write a program to cut the profile shown in Fig.Q7(b).

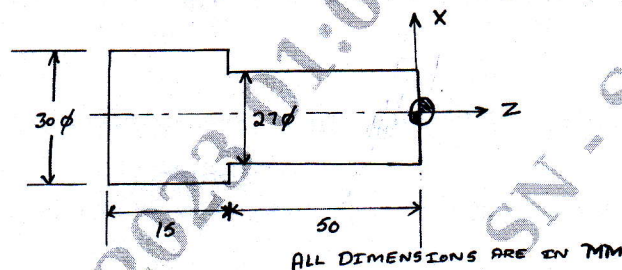


Fig.Q7(b)

(10 Marks)

OR

- 8 a. With neat sketches show robot components and joints. (10 Marks)
 b. List various configuration of a Industrial robot, sketch and draw in detail. (10 Marks)

Module-5

- 9 a. Discuss the basic principles of additive manufacturing and list various advantages / limitations of AM technique. (10 Marks)
 b. Explain the process in brief photopolymerization, material jetting. (10 Marks)

OR

- 10 a. Describe Slicing in AM. (10 Marks)
 b. Explain the following :
 (i) Direct Energy deposition (ii) Sheet lamination. (10 Marks)
