Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Automation & Robotics)(Sem.–4)

MANUFACTURING TECHNOLOGY

Subject Code :BTAR-402-18

M.Code :77598

Date of Examination : 05-07-22

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Write briefly :

a) Enumerate the tooling used for Conventional machining processes.

b) What is the difference between mould and die?

c) Why pilots are used on progressive die?

d) Differentiate between precision and accuracy.

e) Explain different types of tolerance grades.

f) Explain the following terms with respect to limit, fit and tolerances: (1) Upper deviation, (2) Lower Deviation, (3) Fundamental deviation.

g) Enumerate the applications of various material handling devices used in assembly operations.

h) Explain significance of any two assumptions of Linear Programming Problem (LPP).

i) Differentiate between total float, free float and independent float.

j) Compare the characteristics of CPM and PERT.

SECTION-B

2. Write short note on Die and Punch of press tool design with neat sketches.

3. Enumerate the design principles used for forging die design.

4. What is Mechanical comparator? Explain Electrical/Electronic comparator in detail with advantages, applications and limitations.

5. What is selective assembly and Interchangeability?

6. Minimize $Z = -3x_1 + x_2 - 2x_3$

   Subject to: $x_1 + 3x_2 + x_3 \leq 5$

   $2x_1 - x_2 + x_3 \geq 2$

   $4x_1 + 3x_2 - 2x_3 = 5$

   where $x_1, x_2, x_3 \geq 0$

SECTION-C

7. a) Explain principles used for designing jigs and fixtures.

   b) With the help of neat sketch explain any three types of clamps.

8. a) Explain following parameters with respect to surface roughness measurement:

      i) R_a Value,

      ii) R_zValue,

      iii) R_y Value,

      iv) Roughness and Waviness.

   b) Write short note on aggregate production planning.

9. a) Solve the transportation problem for maximization and determine associated maximum profit.

Plant	Showrooms				Supp.
	Delhi	Mumbai	Calcutta	Chennai	
A	60	44	70	52	10
B	40	60	35	60	4
C	5	45	35	30	6
D	54	45	40	55	5
E	75	73	76	77	10
Req.:	13	10	6	6	

   b) In a railway marshalling yard, goods trains arrive at a rate of 30 trains per day. Assuming that the inter-arrival time follows an exponential distribution and the service time (the time taken to hump a train) distribution is also exponential with an average of 36 minutes. Calculate:

      (i) expected queue size (line length)

      (ii) probability that the queue size exceeds 10.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.