

B.TECH/ME /7TH SEM/MECH 4143/2019
QUANTITY PRODUCTION METHOD
(MECH 4143)

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 5 (five) from Group B to E, taking at least one from each group.*

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

- (i) Cellular manufacturing is an approach whereby production can be done in
(a) small batches (b) medium batches
(c) large batches (d) any one of the above.
- (ii) Tungsten Carbide tool inserts are made by
(a) Forging (b) Extrusion (c) Powder metallurgy (d) Casting.
- (iii) First operation in making a ball of a ball bearing is
(a) Rolling (b) Turning (c) Tumbling (d) Heading.
- (iv) For quantity production of bolts, threading can be done by
(a) Rolling (b) Broaching (c) Grinding (d) Forging.
- (v) Grouping of different parts having similar geometric shapes and size is done based on concept of
(a) quantity production technology (b) total productivity management
(c) statistical quality control (d) group technology.
- (vi) Type of chuck used in bar fed automatic lathe is
(a) collet (b) 3-jaw (c) 4-jaw (d) floating centre.
- (vii) Statistical Quality control of a product requires
(a) more inspection effort (b) less inspection effort
(c) no inspection effort (d) same inspection effort.
- (viii) The mode of deformation of the metal during spinning is
(a) bending (b) stretching
(c) rolling and stretching (d) bending and stretching.

- (ix) Gear cutting by hobbling can be classified as
 (a) rolling process (b) generation process
 (c) broaching process (d) forming process.
- (x) Car bodies are made out of
 (a) hot rolled sheet (b) cold rolled sheet
 (c) cold rolled plates (d) hot rolled plates.

Group – B

2. (a) Discuss the characteristics, advantages and disadvantages of the following types of production.
 (i) Job shop Production
 (ii) Mass production.
- (b) Draw a sketch of the plant layout for each type of production.
(3 + 3) + 6 = 12
3. Write short notes with sketches on the following production process. Name at least one component made by the process.
 (i) Spinning
 (ii) Hydroforming.

6 + 6 = 12**Group – C**

4. (a) Briefly explain with sketches, the steps for production of ball of a ball bearing.
- (b) Describe with neat sketch, the steps of production of a crank shaft.
6+6= 12
5. (a) Describe with neat sketch the steps for quantity production of "Bolts" from raw material.
- (b) Indicate the different manufacturing/machining processes involved in quantity production of an engine block.

6 + 6 = 12**Group – D**

6. (a) What are jigs and a fixtures? Mention the application for each with suitable sketches.
- (b) Explain the concept of "Group Technology" with suitable sketches and examples. What are the benefits of Group Technology?

(3+ 3) + (3+3) = 12

7. (a) (i) Differentiate between the terms "Inspection" and "Quality Control".
 (ii) Illustrate the concept of UCL, CL and LCL in the context of Statistical Quality Control.
- (b) What are the advantages and disadvantages of "Flexible CNC and Machining System" and "Transfer Line"?

(3 + 3) + 6 = 12**Group – E**

8. (a) How do you define an Industrial Robot? Explain with the help of a sketch, the three coordinate system used by robots.
- (b) Illustrate the advantages of 'Computer Numerical Control' (CNC) system.
(2 + 4) + 6 = 12
9. (a) Briefly mention the steps of "Powder Metallurgy Process".
- (b) Mention the advantages of Powder Metallurgy over Conventional Metal Fabrication Process.

6 + 6 = 12