



## BRAINWARE UNIVERSITY

Term End Examination 2023-2024

Programme – Dip.ME-2022

Course Name – Manufacturing Engineering

Course Code - DMEPC305

( Semester III )

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

### Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Identify the correct definition of manufacturing technology.
- |  |   |
|--|---|
| a) The use of computers in manufacturing               | b) The process of converting raw materials into finished products |
| c) The study of management techniques in manufacturing | d) The application of robots in industrial settings               |
- (ii) Select the manufacturing process which involves heating and cooling metals to alter their physical properties.
- |                   |            |
|-------------------|------------|
| a) Forging        | b) Welding |
| c) Heat treatment | d) Casting |
- (iii) Identify the primary goal of introducing manufacturing technology.
- |  |                                      |
|--|--------------------------------------|
| a) To increase labour costs            | b) To decrease production efficiency |
| c) To improve productivity and quality | d) To improve outdated process       |
- (iv) Identify the disadvantage of sand casting from the following options.
- |   |                             |
|---|-----------------------------|
| a) High tooling costs                     | b) Limited material choices |
| c) Difficulty in achieving complex shapes | d) Long cooling time        |
- (v) Predict the process of creating a rough finish on a workpiece using a lathe.
- |            |             |
|------------|-------------|
| a) Turning | b) Boring   |
| c) Facing  | d) Knurling |
- (vi) Casting can be defined as
- |   |   |
|---|---|
| a) Joining two metal pieces together                          | b) Shaping metal using a lathe machine        |
| c) Pouring molten metal into a mold to create a desired shape | d) Carving a sculpture out of a block of wood |
- (vii) Select the term for a weld defect where the deposited metal does not fully penetrate the joint.
- |             |                      |
|-------------|----------------------|
| a) Undercut | b) Incomplete fusion |
| c) Porosity | d) Slag inclusion    |

- (viii) Identify the casting method which is suitable for high-volume production of small, complex parts with thin walls.
- a) Sand casting  
b) Investment casting  
c) Die casting  
d) Centrifugal casting
- (ix) Select the component of a lathe machine that holds and rotates the workpiece.
- a) Tool post  
b) Tailstock  
c) Chuck  
d) Carriage
- (x) Choose the type of extrusion used to create cylindrical parts with a hollow interior, like pipes or tubing.
- a) Cold extrusion  
b) Impact extrusion  
c) Forward extrusion  
d) Hollow extrusion
- (xi) Select the parameter that controls the amount of electrical energy supplied to the welding arc.
- a) Welding speed  
b) Voltage  
c) Electrode diameter  
d) Gas flow rate
- (xii) Identify the welding method known for its precision and is often used in applications requiring high-quality welds.
- a) TIG welding  
b) Stick welding  
c) MIG welding  
d) Flux-cored arc welding
- (xiii) Choose the correct option that defines feed rate of a lathe machine.
- a) The number of revolutions per minute (RPM)  
b) The rate at which the tool advances along the workpiece  
c) The diameter of the workpiece  
d) The tool post position
- (xiv) Among the following operations state which processes is most suitable for creating a threaded hole in a metal workpiece.
- a) Drilling  
b) Milling  
c) Turning  
d) Grinding
- (xv) A single point thread cutting tool should ideally have:
- a) Zero rake angle  
b) Positive rake angle  
c) Negative rake angle  
d) Point angle

### Group-B

(Short Answer Type Questions)

3 x 5=15

2. Describe the process of Submerged Arc Welding with a neat sketch. (3)
3. Write few advantages of using the extrusion process. (3)
4. Differentiate between soldering and brazing. (3)
5. Classify the various operations used in closed die forging. (3)
6. Compare the process of TIG and MIG welding. (3)

OR

Distinguish between drop forging and upset forging. (3)

### Group-C

(Long Answer Type Questions)

5 x 6=30

7. Explain Heat-Affected Zone (HAZ) in welding, with a neat sketch. (5)
8. Explain the various types of joining processes. (5)
9. Describe the process of hot extrusion. (5)
10. Distinguish between centrifugal and investment casting. (5)
11. Classify and explain the various types of patterns used in casting. (5)
12. Explain the limitations of sand casting. (5)

OR

Distinguish between filleting and bending operations used in the process of forging.

(5)

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