

# JHARKHAND UNIVERSITY OF TECHNOLOGY

Diploma 3rd Semester Sample Paper ( DIPLOMA WALLAH )

## MANUFACTURING PROCESS (MEC 303)

More Model Sets & Study Materials available here [DiplomaWallah.in](https://DiplomaWallah.in)

Time: 3 Hours

Full Marks: 70

SET: 2

### INSTRUCTIONS:

1. Question No. 1 is Compulsory.
2. Answer any **FOUR** questions from the remaining (Q.2 to Q.7).
3. Use diagrams wherever necessary to explain your answer.

### Q.1. Multiple Choice Questions

[2 × 7 = 14]

(i) The main constituent of moulding sand is:

- |              |                |
|--------------|----------------|
| (a) Clay     | (b) Silica     |
| (c) Graphite | (d) Iron oxide |

(ii) Electrode coating in arc welding is used to:

- |                               |                       |
|-------------------------------|-----------------------|
| (a) Provide alloying elements | (b) Stabilize the arc |
| (c) Protect molten pool       | (d) All of the above  |

(iii) In which casting method is a wax pattern used?

- |                        |                         |
|------------------------|-------------------------|
| (a) Die casting        | (b) Centrifugal casting |
| (c) Investment casting | (d) Shell moulding      |

(iv) Seam welding is a type of:

- |                        |                     |
|------------------------|---------------------|
| (a) Gas welding        | (b) Arc welding     |
| (c) Resistance welding | (d) Thermit welding |

(v) The operation of cutting a sheet of metal in a straight line along the length is:

- |                 |              |
|-----------------|--------------|
| (a) Slitting    | (b) Notching |
| (c) Perforating | (d) Lancing  |

(vi) Recrystallization temperature is related to:

- |             |                 |
|-------------|-----------------|
| (a) Casting | (b) Hot working |
| (c) Welding | (d) Soldering   |

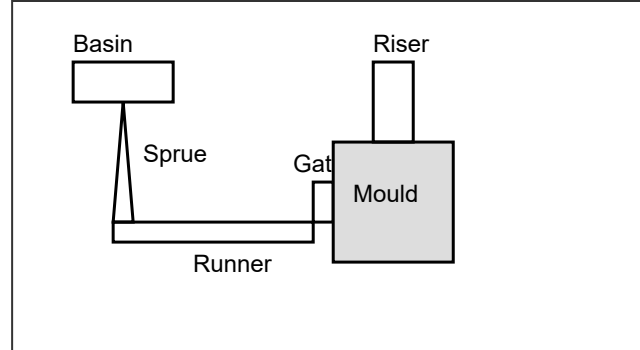
(vii) Core prints are used to:

- |                   |                      |
|-------------------|----------------------|
| (a) Form the core | (b) Support the core |
| (c) Bake the core | (d) Remove the core  |

### SECTION B (Long Answer Type)

Q.2. (a) [Theory] What is a **Pattern**? List the common materials used for making patterns (Wood, Metal, Plastic). Compare their advantages. [7]

Q.2. (b) [Figure Based] Explain the **Gating System** in casting. Draw and label: Pouring Basin, Sprue, Runner, Gate, and Riser. What is the function of a Riser? [7]



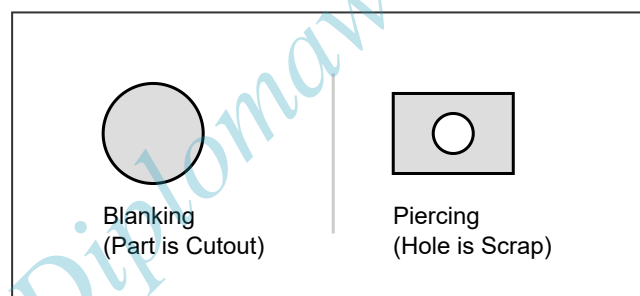
**Q.3. (a) [Theory]** Explain **Submerged Arc Welding (SAW)**. Why is it called "Submerged"? What are its advantages? [7]

**Q.3. (b) [Theory]** Describe the different **Polarities in DC Arc Welding** (Straight vs Reverse). How does it affect heat distribution? [7]

**Q.4. (a) [Theory]** Explain the process of **Extrusion**. Differentiate between **Direct** and **Indirect** extrusion with sketches. [7]

**Q.4. (b) [Theory]** What is **Drawing** operation? Explain **Wire Drawing** with a neat sketch. [7]

**Q.5. (a) [Figure Based]** Differentiate between **Blanking** and **Piercing** operations in press work. Show the difference in product and scrap. [7]



**Q.5. (b) [Theory]** Explain the construction of a **Simple Die** and **Compound Die**. Which one is more productive? [7]

**Q.6. (a) [Theory]** Explain **Blow Moulding** process for making plastic bottles. [7]

**Q.6. (b) [Theory]** What are **Cores**? What are the requirements of a good core? Explain the use of **Chaplets**. [7]

**Q.7. Write Short Notes on (Any FOUR):** [3.5 × 4 = 14]

- a. Die Casting
- b. Rolling Defects
- c. Heat Affected Zone (HAZ)
- d. Pattern Materials

### Diploma Wallah: Solution Key

**MCQ:** (i) b, (ii) d, (iii) c, (iv) c, (v) a, (vi) b, (vii) b.

**Q3(b) Hint:** DCSP (Electrode -): 70% heat at Work, 30% at Electrode (Deep Penetration).  
DCRP (Electrode +): 70% heat at Electrode (Cleaning Action, Shallow).

**Q5(a) Hint:** In Blanking, the cut-out piece is the useful product. In Piercing, the cut-out piece is scrap (hole is made).