

Reg. No.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2023

Third Semester

ME18302 – MANUFACTURING PROCESSES

(Mechanical Engineering)

(Regulation 2018/2018A)

TIME: 3 HOURS

MAX. MARKS: 100

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Select a suitable casting process for a given engineering component	3
CO 2	Given a material, the students will Apply a suitable joining process	3
CO 3	Given a part diagram & its application, students will justify a suitable bulk deformation process	3
CO 4	Students will identify the necessary operations to be performed on a sheet metal and will select a suitable process for a given application	3
CO 5	Students will justify a suitable process for thermoplastics, thermosetting plastics and for cutting tools	3

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

	CO	RBT LEVEL
1. Choose and name a mould that can be repeated for casting 500 numbers of a product.	1	3
2. Mention the purpose of providing chills during the mould preparation.	1	2
3. Articulate the composition of spelter used in brazing.	2	3
4. Examine the following diagram (Figure. 1) and identify the type of weld defect.	2	3

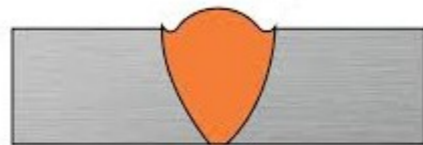


Figure. 1

5. What does “Bulk” refers to in bulk deformation processes?	3	3
6. Define extrusion.	3	1
7. The height to diameter ratio of a hollow cup is 5. Choose a manufacturing process to manufacture the hollow cup for a plate of thickness 3 mm.	4	3
8. List the applications of explosive forming.	4	2

- | | | |
|---|---|---|
| 9. Plastic water bottles are to be manufactured at a high production rate. Choose and recommend a suitable plastic processing method. | 5 | 3 |
| 10. List out the limitations of powder metallurgy process. | 5 | 2 |

PART- B (5 x 14 = 70 Marks)

	Marks	CO	RBT LEVEL
11. (a) A complex product with excellent surface finish and dimensional accuracy is to be manufactured. Choose a casting process that uses expandable pattern to manufacture the above product and explain its procedure in detail. Draw the suitable sketches.	(14)	1	3
(OR)			
(b) Could cast iron be melted at a production rate of 2 tons/ hour? Justify your answer with suitable furnace diagram along with its constructional details.	(14)	1	3
12. (a) Choose a welding process that is particularly suitable for thick plates and heavy structural sections. Explain the procedure of the selected welding process in detail with necessary diagrams.	(14)	2	3
(OR)			
(b) How metal pipes are longitudinally welded? Explain the procedure of a suitable welding technique with neat diagrams.	(14)	2	3
13. (a) (i) Explain thread rolling in detail with suitable diagram.	(7)	3	2
(ii) How the hydrostatic extrusion is beneficial in comparison with direct extrusion? Explain with suitable diagrams.	(7)	3	2
(OR)			
(b) (i) Draw neat diagrams of two-high, three-high and cluster rolling mills.	(6)	3	2
(ii) Compare Hot and Cold working processes.	(8)	3	2
14. (a) (i) Compare punching and blanking operations on a sheet metal. Draw the diagrams.	(6)	4	2
(ii) Explain explosive forming with suitable diagram.	(8)	4	2

(OR)

- (b) (i) Explain how stretch forming is made on a metal sheet. Draw suitable diagrams. (8) 4 2
- (ii) List the advantages of rubber pad forming. (6) 4 2
15. (a) Thermoset plates of dimensions 300 mm x 300 mm x 4 mm are to be fabricated. Choose a suitable processing technique and explain its detail with appropriate diagrams. (14) 5 3
- (OR)**
- (b) Thermoplastic toys are to be manufactured. Suggest a suitable processing technique and explain its working principle with suitable diagrams. (14) 5 3

PART- C (1 x 10 = 10 Marks)
(Q.No.16 is compulsory)

- | | Marks | CO | RBT
LEVEL |
|---|-------|----|--------------|
| 16. A manufacturing company is planning to manufacture bearings using copper in powder form. Suggest a manufacturing technique and explain its steps in detail. | (10) | 5 | 3 |
