

**B.E./B.TECH. Degree Examination, December 2020**

Third Semester

**ME18302 – MANUFACTURING PROCESSES**

(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. Match the column I (casting processes) with column II (Applications)

<b>Column I</b>		<b>Column II</b>	
1.	Investment casting	A.	Pipes
2.	Die casting	B.	Alloy Wheel
3.	Sand Mould casting	C.	Complex Shape like dental fixtures
4.	Centrifugal casting	D.	Piston and cylinder

a. 1-B, 2-D, 3-C, 4-A

b. 1-C, 2-B, 3-A, 4-D

c. 1-B, 2-A, 3-C, 4-D

d. 1-C, 2-B, 3-D, 4-A

2. A skilled welder is needed for welding in

- a. Horizontal position
- b. Vertical position
- c. Overhead position
- d. Flat position

3. Stress induced in the plastic deformation process is

- a. Less than yield strength of the metal
- b. Greater than the yield strength of the metal
- c. Greater than the ultimate strength of the metal
- d. Greater than the flexural strength of the metal

4. For cutting a square hole of 150 mm side in sheet metal of 3 mm thickness having shear strength of 600 MPa, the required punch force and work done will be

- a. 648 kN
- b. 1080 kN
- c. 216 kN
- d. 129.6 kN

5. Name the pattern allowances given to remove the pattern from the mould without damaging the mould and also to get required surface finish and accuracy for the cast products?

6. When to select leftward and rightward welding?
7. Name and explain the extrusion process meant for extruding high strength alloys/
8. List down the manufacturing processes meant for manufacturing the following.
  - a. Plastic pipes
  - b. Cutting tool inserts
  - c. Plastic trays
  - d. Plastic chairs

**PART B - (4 X16 = 64 marks)**

09. (a) (i) How the ferrous metals are melted for large scale production? Explain in detail. (8)
- (ii) A sewage pipe is to be manufactured. Select a suitable casting process and explain in detail the manufacturing setup. (8)

**(OR)**

- (b) (i) How the moulding sand properties affect the cast product quality? Justify. (8)
- (ii) A piston has to be manufactured from the aluminium metal matrix composites. (8)  
Suggest a suitable process for manufacturing the raw material from aluminium metal matrix. Explain the process with a simple sketch.
10. (a) (i) Name and explain the arc welding process that uses consumable coated electrode and used predominantly for most of the welding process. (8)
- (ii) Explain the welding process suitable for making the welded pipes. (8)

**(OR)**

- (b) (i) Name and explain the welding process where the rotating tool is used for generating necessary heat required for welding? (8)
- (ii) Name and explain the arc welding process in which the arc is under granular flux materials. (8)
11. (a) (i) Select a suitable manufacturing process for manufacturing the component shown in the figure. Also explain the related operations to be performed. (8)



- (ii) What process can be selected for manufacturing the aluminium channels shown in the figure? Explain in detail (8)



(OR)

- (b) (i) What extrusion process is meant for providing a protective sheathing for cable wires shown in figure? Explain the process with a simple sketch. (8)



- (ii) What type of rolling mill is selected for converting the continuous cast ingots into plates or sheets? Explain in detail. (8)

12. (a) (i) Name and explain the suitable manufacturing process to manufacture the components shown in the figure (8)



- (ii) Name and explain the sheet metal deformation process that use explosives to plastically deform the material? (8)

(OR)

- (b) (i) A overhead tank made up of thermoplastic materials has to be manufactured in mass production? Select and explain the suitable manufacturing process. (8)



- (ii) What is the purpose of powder metallurgy process and list down the components (8) manufactured by powder metallurgy.