Total No. of Questions: 20

Enrollment No : _____

MEDICAPS UNIVERSITY

Faculty of Engineering

End Semester Examination May 2025

AU3CO18 / ME3CO18 Manufacturing Processes -I

Programme	:	B.Tech.	**Branch/Specialisation**	:	AU/ME
Duration	:	3 hours	**Maximum Marks**	:	60

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

Section 1 (Answer all question(s))

Q1. Which of the following is NOT a property of moulding sand? **Marks: 1 CO: 1 BL: 1**

Rubric	Marks
Conductivity	1

- ○ Permeability
- ○ Refractoriness
- ◉ Conductivity
- ○ Cohesiveness

Q2. What is the main function of a core in moulding? **Marks: 1 CO: 1 BL: 1**

Rubric	Marks
To form internal cavities in the casting	1

- ○ To strengthen the mould
- ○ To increase the cooling rate
- ◉ To form internal cavities in the casting
- ○ To act as a riser

Q3. Why is a riser used in a casting process? **Marks: 1 CO: 2 BL: 2**

Rubric	Marks
To compensate for shrinkage during solidification	1

- ○ To control the pouring temperature
- ◉ To compensate for shrinkage during solidification
- ○ To reduce turbulence in molten metal
- ○ To form the gating system

Q4. Which factor influences the pouring time of molten metal? **Marks: 1 CO: 2 BL: 1**

Rubric	Marks
All of the above	1

- ○ Viscosity of metal
- ○ Shape of the mould
- ○ Size of the gating system
- ◉ All of the above

Q5. What is the purpose of extrusion in metal forming? **Marks: 1 CO: 3 BL: 2**

Rubric	Marks
Shape materials into complex cross-sections	1

- ○ Increase material hardness
- ○ Reduce metal wastage
- ◉ Shape materials into complex cross-sections
- ○ Improve the tensile strength of metals

Q6. Which process is used for producing bars and shapes in rolling? 1 3 1

Rubric	Marks
Hot rolling	1

- (•) Hot rolling
- ( ) Sheet rolling
- ( ) Deep drawing
- ( ) None of these

Q7. Which of the following welding processes uses a non-consumable tungsten electrode? 1 4 2

Rubric	Marks
TIG welding	1

- (•) TIG welding
- ( ) MIG welding
- ( ) Arc welding
- ( ) Submerged arc welding

Q8. What is the function of flux in welding? 1 4 1

Rubric	Marks
Remove oxides and prevent contamination	1

- ( ) Strengthen the weld
- (•) Remove oxides and prevent contamination
- ( ) Increase melting point of metal
- ( ) Reduce welding speed

Q9. What is the main purpose of the sintering process in powder metallurgy? 1 5 3

Rubric	Marks
Strengthening the bonded particles	1

- ( ) Melting the powder completely
- (•) Strengthening the bonded particles
- ( ) Increasing the hardness of the powder
- ( ) Mixing different metal powders

Q10. What is the primary limitation of powder metallurgy? 1 5 4

Rubric	Marks
Limited material availability	1

- ( ) High material wastage
- (•) Limited material availability
- ( ) Difficult to produce small components
- ( ) Inability to work with metals

Section 2 (Answer all question(s))

Marks CO BL

Q11. Define moulding and its importance. 2 1 1

Rubric	Marks
Definition-2 Marks	2

Q12. (a) What is pattern? Write and explain its types. **8 2 1**

Rubric	Marks
Pattern- 2 marks Pattern types with explanation- 6 marks	8

(OR)

(b) Write the various properties of moulding sand.

Rubric	Marks
8 properties- 8 marks	8

Section 3 (Answer all question(s))

Marks CO BL

Q13. What are the functions of a riser in a casting system? **3 2 2**

Rubric	Marks
3 function-3 marks	3

Q14. (a) Explain in detail the different types of gating systems with their advantages and limitations. **7 2 1**

Rubric	Marks
3.5 for gating system 3.5 for advantages and limitations	7

(OR)

(b) Discuss the design considerations for pouring basins, runners, gates, and risers.

Rubric	Marks
7 marks for all	7

Section 4 (Answer all question(s))

Marks CO BL

Q15. Differentiate between hot rolling and cold rolling. **3 3 2**

Rubric	Marks
3difference- 3 marks	3

Q16. (a) Explain the different forging defects with causes and remedies. **7 4 3**

Rubric	Marks
4 marks - defects 3 marks - causes and remedies	7

(OR)

(b) Discuss the classification of rolling mills and their applications.

Rubric	Marks
Classification and discussion - 5 marks Applications- 2 marks	7

Section 5 (Answer all question(s))

Marks CO BL

Q17. Write down the classification of welding processes. **3 4 3**

Rubric	Marks
3 marks	3

Q18. (a) Compare Electron Beam Welding and Laser Beam Welding. **7 4 1**

Rubric	Marks
3.5 marks each	7

(OR)

(b) Discuss the principle, advantages, and limitations of friction welding.

Rubric	Marks
principle-3 marks advantages - 2 marks limitations - 2 marks	7

Section 6 (Answer all question(s))

Marks CO BL

Q19. Define powder metallurgy. **2 5 1**

Rubric	Marks
definition-2 marks	2

Q20. (a) Explain the different processes involved in powder metallurgy. **8 5 1**

Rubric	Marks
all processes- 8 marks	8

(OR)

(b) Discuss the applications and limitations of powder metallurgy.

Rubric	Marks
4 marks application 4 marks limitation	8

******