Government College of Engineering, Amravati
(An Autonomous Institute of Government of Maharashtra)

Fourth Semester B. Tech. (Mechanical Engineering)

Summer – 2018

Course Code: MEU404

Course Name: Manufacturing Processes

Time: 2 ½ hours **Max. Marks: 60**

Instructions to Candidate

1) All questions are compulsory.
2) Assume suitable data wherever necessary and clearly state the assumptions made.
3) Diagrams/sketches should be given wherever necessary.
4) Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5) Figures to the right indicate full marks.

1.	(a)	What are the main characteristics which good moulding sand should possess? How these characteristics influence the performance of moulding sand during moulding and casting?	6
	(b)	Sketch a cross section through a completed mould and indicate on it the various terms related to it and their functions	6
		OR	
	(c)	Why testing of foundry sand is necessary? What are the common tests performed on foundry sand?	6
2.	(a)	Step by step, describe the complete procedure of Investment casting? What are the main advantages and disadvantages of Investment Casting method?	6

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(b) Make a neat cross-sectional sketch of a Cupola and describe its different zones and their functions. 6

OR

(c) Explain mechanical construction and working principle of High Frequency Induction furnace with neat sketch. 6

3. (a) Explain Rotational Moulding operation for plastics, what are its advantages? 6

(b) Write short notes on the following : 6

a. Slush moulding
b. Calendaring
c. Blow moulding

4. (a) Define the term 'Mechanical working' and 'Plastic flow' of metals, describe the process of hot spinning stating its advantages and specific uses. 6

(b) How direct extrusion differs from indirect extrusion? Discuss their relative merits and demerits 6

5. (a) Explain Electro Slag Welding method and its specific application 6

(b) Explain TIG welding method and its specific application 6

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Instructions to Candidate

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2) Assume suitable data wherever necessary and clearly state the assumptions made.
3) Diagrams/sketches should be given wherever necessary.
4) Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5) Figures to the right indicate full marks.

1.	(a)	What is pattern? How does it differ from actual product to be made from it? What are the common allowances provided on patterns and why?	6
	(b)	What is meant by 'Green strength' and 'Dry strength' as applied to moulding sand? Explain, how the grain size and shape effect the performance of foundry sand	6
		OR	
	(c)	Why Directional solidification is necessary in sand casting, and how it helps in production of sound castings.	6
2.	(a)	With the help of neat diagram describe the process	6

Contd..

of true centrifugal casting? How the centrifugal casting methods are classified?

(b) Explain mechanical construction and working principle of High Frequency Induction furnace with neat sketch. 6

OR

(c) What are various non-destructive testing methods used for inspection of castings? State their advantages and limitations 6

3. (a) What are the common methods used for cleaning the surface of the casting? 6

(b) Explain with sketches 'Compression' and 'Transfer' moulding processes for plastics along with their specific applications. 6

4. (a) Explain with neat sketches 'Embossing' and 'Coining' operations, state their specific applications. 6

(b) Define with sketches following basic forging operations 6

1. Upsetting
2. Fullering
3. Edging

5. (a) Define welding and why is it done? Describe with the help of suitable sketches various types of joints made in welding. 6

(b) Explain Submerged Arc Welding method and its specific application 6

Government College of Engineering, Amravati
(An Autonomous Institute of Government of Maharashtra)

Fourth Semester B. Tech. (Mechanical Engineering)

Summer – 2016

Course Code: MEU404

Course Name: Manufacturing Processes

Time: 2 hr 30 min **Max. Marks: 60**

Instructions to Candidate

1) All questions are compulsory.
2) Assume suitable data wherever necessary and clearly state the assumptions made.
3) Diagrams/sketches should be given wherever necessary.
4) Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5) Figures to the right indicate full marks.

1. **(a)** What is a core? What is its use? What are the characteristics of good core? **6**

(b) Why Directional solidification is necessary in sand casting, and how it helps in production of sound castings. **6**

OR

(c) Write a short note on following :
1. Use of padding
2. Use of exothermic material
3. Use of chills to help proper directional solidification **6**

2. (a) Step by step, describe the complete procedure of Investment casting? What are the main advantages and disadvantages of Investment Casting method? 6

(b) What are various non-destructive testing methods used for inspection of castings? State their advantages and limitations 6

OR

(c) Explain mechanical construction and working principle of direct and indirect arc electric furnace with neat sketch. 6

3. (a) Explain with neat sketches 'Embossing' and 'Coining' operations, state their specific applications. 6

(b) Explain Rotational Moulding operation for plastics, what are its advantages? 6

4. (a) How welded pipes and tubes are manufactured? Explain 6

(b) Compare the forging operation with machining, casting and other processes. 6

5. (a) What do you understand by Gas welding? What are the equipments required for oxy-acetylene welding and cutting 6

(b) Explain Thermit welding method and its specific application 6

Government College of Engineering, Amravati
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II Year B. Tech. (Mechanical Engineering)

Summer - 2015

Course Code: MEU404

Course Name: Manufacturing Processes

Time: 2 ½ hours **Max. Marks: 60**

Instructions to Candidate

1) All questions are compulsory.
2) Assume suitable data wherever necessary and clearly state the assumptions made.
3) Diagrams/sketches should be given wherever necessary.
4) Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5) Figures to the right indicate full marks.
6) (Other special instruction, if any)

1. (a) Sketch a cross section through a completed mould and indicate on it the various terms related to it and their functions 6

(b) What is meant by 'Green strength' and 'Dry strength' as applied to moulding sand? Explain, how the grain size and shape effect the performance of foundry sand 6

page 366

OR

(c) Why testing of foundry sand is necessary? What are the common tests performed on foundry sand? 6

371

375

2. (a) With the help of neat diagram describe the process of true centrifugal casting? How the centrifugal casting methods are classified 471 6

(b) Make a neat cross-sectional sketch of a Cupola and describe its different zones and their functions. 436 6

OR

(c) Explain mechanical construction and working principle of High Frequency Induction furnace with neat sketch. 6

3. (a) Discuss briefly any six defects which occur in sand castings and state their probable causes and remedies. 6

(b) Explain with sketches 'Compression' and 'Transfer' moulding processes for plastics along with their specific applications. 594. 6

4. (a) Define the term 'Mechanical working' and 'Plastic flow' of metals, describe the process of hot spinning stating its advantages and specific uses. 515 6

(b) Write short notes on the following : 6

a. Slush moulding } 597
b. Calendaring
c. Blow moulding → 598

5. (a) Define welding and why is it done? Describe with the help of suitable sketches various types of joints made in welding. 6

(b) Explain TIG welding method and its specific application 6

Government College of Engineering, Amravati

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Fourth Semester B. Tech. (Mechanical Engineering)

Summer – 2014

Course Code: MEU404

Course Name: Manufacturing Processes

Time: 2 Hrs 30 Min **Max. Marks: 60**

Instructions to Candidate

1) All questions are compulsory.
2) Assume suitable data wherever necessary and clearly state the assumptions made.
3) Diagrams/sketches should be given wherever necessary.
4) Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5) Figures to the right indicate full marks.
6) (Other special instruction, if any)

1. (a) What are the main characteristics which good moulding sand should possess? How these characteristics influence the performance of moulding sand during moulding and casting? **6**

(b) What is a core? What is its use? What are the characteristics of good core? **6**

OR

(b) What is meant by 'Green strength' and 'Dry strength' as applied to moulding sand? Explain, how the grain size and shape effect the performance of foundry sand **6**

Cont.

2. (a) Make a neat cross-sectional sketch of a Cupola and describe its different zones and their functions. 6

(b) Explain mechanical construction and working principle of direct and indirect arc electric furnace with neat sketch. 6

3. (a) What are various non-destructive testing methods used for inspection of castings? State their advantages and limitations 6

(b) Explain with sketches 'Compression' and 'Transfer' moulding processes for plastics along with their specific applications. 6

4. (a) Define the term 'Mechanical working' and 'Plastic flow' of metals, describe the process of hot spinning stating its advantages and specific uses. 6

(b) Explain with neat sketches 'Embossing' and 'Coining' operations, state their specific applications. 6

5. (a) What do you understand by Gas welding? What are the equipments required for oxy-acetylene welding and cutting 6

(b) Explain MIG welding method and its specific application 6