

# VTU B.E/B.TECH QUESTION PAPER SET

## CBCS SEMESTER III

# MANUFACTURING PROCESS-I

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# CBCS Scheme

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15AU36

**Third Semester B.E. Degree Examination, Dec.2016/Jan.2017**

## Manufacturing Process – I

Time: 3 hrs.

Max. Marks: 80

**Note: Answer any FIVE full questions, choosing one full question from each module.**

### Module-1

- 1 a. Briefly explain the steps involved in metal casting process with a simple sketches. (08 Marks)  
 b. List the types of patterns and explain any 3 types of pattern with sketches (08 Marks)

OR

- 2 a. What is binder? Explain briefly the types of binder used in moulding sand. (08 Marks)  
 b. List the types of cores and explain any 3 types of cores with simple sketches. (08 Marks)

### Module-2

- 3 a. With a neat sketch, explain the working principle of Jolt and squeeze moulding machine. (08 Marks)  
 b. With a neat sketch explain the working of sand slinger. (08 Marks)

OR

- 4 a. Explain the steps involved in shell moulding with simple sketches. (08 Marks)  
 b. Sketch and explain the constructional features and working principle of cupola furnace. (08 Marks)

### Module-3

- 5 a. With a neat sketch explain the working principle of Tungsten Inert Gas (TIG) welding. (08 Marks)  
 b. With a neat sketch explain the working principle of Metal Inert Gas (MIG) welding. (08 Marks)

OR

- 6 a. Explain the submerged arc welding with a neat sketch. (08 Marks)  
 b. Sketch and explain the Atomic hydrogen welding. (08 Marks)

### Module-4

- 7 a. Sketch and explain the thermit welding process. (08 Marks)  
 b. With a neat sketch explain the Electron beam welding process. (08 Marks)

OR

- 8 Write short notes on :  
 a. Residual stresses in welding      b. Electrodes used in welding  
 c. Welding defects                      d. HAZ in welding (16 Marks)

### Module-5

- 9 a. What is brazing? Explain the different methods of brazing with simple sketches. (08 Marks)  
 b. What is soldering? Compare the soldering and brazing process. (08 Marks)

OR

- 10 List the different Non Destructive Testing (NDT) and explain any three methods with neat sketches. (16 Marks)

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Important Note: 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
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## Third Semester B.E. Degree Examination, June/July 2017 Manufacturing Process - I

Time: 3 hrs.

Max. Marks: 80

**Note: Answer FIVE full questions, choosing one full question from each module.**

### Module-1

- 1 a. List and explain the various steps involved in casting process. (08 Marks)  
 b. Define Pattern. List the materials used for pattern and state the functions of pattern in brief. (08 Marks)

OR

- 2 a. Draw and explain the basic steps involved in fettling and cleaning of castings in brief. (08 Marks)  
 b. What is necessity of Pattern Allowance? With suitable sketches, elaborate the various types of pattern allowances. (08 Marks)

### Module-2

- 3 a. What is a Remelting Furnace? Explain the working principle and constructional features of Cupola furnace, with neat sketches. (10 Marks)  
 b. Explain the principle of working of Sand slinger, with neat sketch. (06 Marks)

OR

- 4 a. What are Permanent Moulds? Briefly explain the Centrifugal Casting process, with neat sketch and also mention its applications. (10 Marks)  
 b. Explain the Thixocasting process, with neat sketch. (06 Marks)

### Module-3

- 5 a. Define Welding. Classify the various welding processes. (05 Marks)  
 b. Describe the process of Tungsten Inert gas welding, with neat sketch. (07 Marks)  
 c. Define Gas welding. Write the chemical reactions involved in gas welding. (04 Marks)

OR

- 6 a. Describe Atomic Hydrogen Welding, with neat sketch. (06 Marks)  
 b. Explain the advantages, applications and limitations of Arc Welding process. (06 Marks)  
 c. Draw the construction of gas torch used in gas welding and label the parts. (04 Marks)

### Module-4

- 7 a. With suitable sketch, explain the principle of Thermit welding. (08 Marks)  
 b. Describe any two of the following resistance welding processes, with neat sketch :  
 i) Seam welding ii) Butt welding iii) Projection welding. (08 Marks)

OR

- 8 a. Explain the explosive welding process, with neat sketch. (08 Marks)  
 b. What is Heat affected zone? List the parameters affecting it and explain the effect of carbon content on structure and properties of steel. (08 Marks)

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## Third Semester B.E. Degree Examination, Dec.2017/Jan.2018 Manufacturing Process - I

Time: 3 hrs.

Max. Marks: 80

**Note: Answer any FIVE full questions, choosing one full question from each module.**

### Module-1

- 1 a. List the steps involved in sand casting. Briefly explain. (06 Marks)  
 b. What is a Pattern? What are the functions of pattern? (04 Marks)  
 c. List the types of Binders used in molding sand. (06 Marks)

**OR**

- 2 a. With a neat sketch, explain the procedure and advantages and limitations of Green sand moulding process. (08 Marks)  
 b. Explain the principal of Risers and any two types of Risers. (04 Marks)  
 c. What is Casting defect? What are the causes and remedies of any four casting defects? (04 Marks)

### Module-2

- 3 a. With a neat sketch, explain Jolt squeeze type moulding. (06 Marks)  
 b. Explain Sweep mould process. (04 Marks)  
 c. With neat sketch, describe investment moulding process. (06 Marks)

**OR**

- 4 a. Describe Pressure – die casting technique with appropriate sketches. (06 Marks)  
 b. Explain the structural features, working of Cupola furnace with different zones of Cupola. (10 Marks)

### Module-3

- 5 a. With a neat sketch, explain flux – shielded metal arc welding. (06 Marks)  
 b. Define Welding. Describe the detailed classification. (04 Marks)  
 c. Explain Oxy – acetylene welding process with flame characteristics. (06 Marks)

**OR**

- 6 a. List the differences between forward and backward welding. (04 Marks)  
 b. What is TIG? Explain working of TIG. (06 Marks)  
 c. With a neat sketch, explain atomic hydrogen welding process. (06 Marks)

### Module-4

- 7 a. Explain the principle and working of Thermit welding process. (08 Marks)  
 b. With a neat sketch, explain Electron beam welding. (08 Marks)

**OR**

- 8 a. Name the different zones formed during welding and parameters affecting on HAZ. (06 Marks)  
 b. What is Residual stress? Explain the methods of relieving residual stresses. (06 Marks)  
 c. With neat sketches, explain the causes and remedies of any two welding defects. (04 Marks)

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**Module-5**

- 9 a. Explain the principle of Brazing. Explain any two methods of brazing. (06 Marks)  
b. With neat sketches, explain fluorescent particle test. (06 Marks)  
c. Explain Eddy current test. (04 Marks)

**OR**

- 10 a. With neat sketch, describe ultrasonic inspection methods. (08 Marks)  
b. Explain Holography method of inspection and list the advantages. (08 Marks)

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## Third Semester B.E. Degree Examination, June/July 2018 Manufacturing Process – I

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions, choosing one full question from each module.*

### Module-1

- 1 a. List the steps involved in sand casting. Briefly explain. (06 Marks)  
 b. What is a pattern? What are the functions of pattern? (04 Marks)  
 c. List the types of binders used in molding sand. (06 Marks)

OR

- 2 a. With a neat sketch explain the procedure and advantages and limitations of green sand moulding process. (08 Marks)  
 b. Explain the principle and any two types of risers. (04 Marks)  
 c. What is casting defect? Write the causes and remedies for any 4 casting defects. (04 Marks)

### Module-2

- 3 a. With a neat sketch explain jolt and squeeze type moulding machine, list the advantages. (06 Marks)  
 b. Explain sweep mould process. (04 Marks)  
 c. With neat sketch describe investment molding process. (06 Marks)

OR

- 4 a. Describe pressure die casting technique with appropriate sketches. (06 Marks)  
 b. Explain the constructional features working of cupola furnace with different zones of cupola. (10 Marks)

### Module-3

- 5 a. With a neat sketch explain flux-shielded metal arc welding. (06 Marks)  
 b. Define welding. Describe the detail classification. (04 Marks)  
 c. Explain oxy-acetylene welding process with flame characteristics. (06 Marks)

OR

- 6 a. List the differences between forward and backward welding. (04 Marks)  
 b. What is TIG? Explain working of TIG. (06 Marks)  
 c. With a neat sketch explain atomic hydrogen welding process. (06 Marks)

### Module-4

- 7 a. Explain the principle and working of thermit welding process. (08 Marks)  
 b. With a neat sketch, explain electron beam welding. (08 Marks)

1 of 2

Important Note : 1. On completing your answers, compulsorily draw diagonal lines from the remaining blank space. 2. Any scribbles or corrections written on the remaining blank space will be treated as malpractice.

OR

- 8 a. Name the different zones formed during welding and parameters affecting on HAZ. (06 Marks)  
b. What is residual stress? Explain the methods of relieving residual stresses. (06 Marks)  
c. With neat sketches, explain the causes and remedies of any two welding defects. (04 Marks)

**Module-5**

- 9 a. Explain the principle of brazing. Explain any two methods of brazing. (06 Marks)  
b. With a neat sketch, explain flurocent particle test. (06 Marks)  
c. Explain Eddy current test. (04 Marks)

OR

- 10 a. With neat sketch describe ultrasonic inspection method. (08 Marks)  
b. Explain holography method of inspection and list the advantages. (08 Marks)

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17AU36

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019

## Manufacturing Process - I

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Briefly explain the steps involved in casting, with neat diagram. (10 Marks)  
 b. What is Pattern? Write its functions. (05 Marks)  
 c. What are the different allowances given to the pattern? Explain any 2 with neat diagram. (05 Marks)

OR

- 2 a. With neat diagram, explain the different types of cores used in manufacturing process. (10 Marks)  
 b. Write the principles of Gates and Risers. (10 Marks)

Module-2

- 3 a. With neat diagram, explain the sand slinger moulding machine. (10 Marks)  
 b. Explain the CO<sub>2</sub> mould, with a neat diagram. (05 Marks)  
 c. Explain the investment mould, with neat diagram. (05 Marks)

OR

- 4 a. Write a short note on "Centrifugal casting" (05 Marks)  
 b. With a neat diagram, explain the different zones of cupola furnace. (12 Marks)  
 c. What are the different types of Special moulding processes? (03 Marks)

Module-3

- 5 a. What you mean by welding? Discuss the advantages and limitations of welding. (07 Marks)  
 b. With neat diagram, explain the working of metal arc welding process. (07 Marks)  
 c. What are the different applications of welding process? (06 Marks)

OR

- 6 a. Explain the construction and working of oxy-acetylene welding, with neat diagram. (08 Marks)  
 b. Explain the different flame characteristics in gas welding, with diagram. (05 Marks)  
 c. Explain the construction and working of Tungsten Inert gas welding, with neat diagram. (07 Marks)

Module-4

- 7 a. With neat diagram, explain the working of Electron beam welding. (10 Marks)  
 b. Write a short note on 'Laser welding'. (05 Marks)  
 c. Write a short note on 'Spot welding'. (05 Marks)

OR

- 8 a. Write a short note on "Heat affected zones" in welding. (06 Marks)  
 b. Explain the different welding defects, their causes and remedies. (10 Marks)  
 c. Write a short note on 'Filler Rod and Fluxes'. (04 Marks)

1 of 2

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Module-5

- 9 a. Differentiate Soldering and Brazing. (05 Marks)  
b. Write the advantages and disadvantages of soldering and brazing. (10 Marks)  
c. Explain Induction brazing and mention its advantages and limitations. (05 Marks)

OR

- 10 a. What are the different Non – destructive Testing (NDT) methods and explain with neat sketches of magnetic particle Inspection and Radiography Inspection method. (15 Marks)  
b. Write a short note on 'Ultrasonic method of Inspection'. (05 Marks)

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**Third Semester B.E. Degree Examination, Dec.2019/Jan.2020**  
**Manufacturing Process – I**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, choosing ONE full question from each module.**

**Module-1**

- 1 a. Explain different types of patterns used in casting process. (08 Marks)  
 b. Explain various pattern allowances provided in casting technology. (08 Marks)  
 c. Write short note on sand binders and additives used in foundry. (04 Marks)

OR

- 2 a. Explain different types of cores used in casting process. (06 Marks)  
 b. Explain different types of risers used in casting process. (06 Marks)  
 c. Explain different types of casting defects. (08 Marks)

**Module-2**

- 3 a. Explain jolt squeeze machine used in moulding operation with neat sketch. (06 Marks)  
 b. Explain sweep moulding with neat sketch. (06 Marks)  
 c. Explain squeeze casting. (08 Marks)

OR

- 4 a. Explain shell moulding with neat diagrams. (10 Marks)  
 b. Explain cupola furnace describing various zones informed in it. (10 Marks)

**Module-3**

- 5 a. Explain weld joints formed in welding operation. (06 Marks)  
 b. Explain TIG welding with neat sketch. (08 Marks)  
 c. Explain submerged Arc welding. (06 Marks)

OR

- 6 a. Explain Atomic Hydrogen Arc welding. (07 Marks)  
 b. Explain MIG welding with neat sketch. (06 Marks)  
 c. Explain flame characteristics in oxy-Acetylene gas welding. (07 Marks)

**Module-4**

- 7 a. Explain projection welding type of resistance welding. (07 Marks)  
 b. Explain seam welding type of resistance welding. (07 Marks)  
 c. Explain friction welding. (06 Marks)

OR

- 8 a. Explain explosive welding. (06 Marks)  
 b. Explain Thermit welding. (07 Marks)  
 c. Explain Laser welding. (07 Marks)

**Module-5**

- 9 a. Explain different types of Brazing. (10 Marks)  
 b. Explain liquid penetrant inspection method of NDT. (10 Marks)

OR

- 10 a. Explain ultrasonic inspection of NDT. (10 Marks)  
 b. Explain holographic method of inspection. (10 Marks)

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**Third Semester B.E. Degree Examination, Aug./Sept. 2020**  
**Manufacturing Process – I**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, choosing ONE full question from each module.**

**Module-1**

- 1 a. Classify manufacturing process and explain the factors to be considered while selecting a process for a given application. (10 Marks)  
 b. Briefly describe the steps involved in making a casting. (05 Marks)  
 c. List various types of patterns and explain the match plate pattern with a neat sketch. (05 Marks)

OR

- 2 a. List different types of sand moulds and discuss skin Dried Sand mould and its advantages and disadvantages. (05 Marks)  
 b. What are cores? Briefly explain their significance in sand moulding process. (10 Marks)  
 c. What are various casting defects? Explain any four defects with neat sketches. (05 Marks)

**Module-2**

- 3 a. Explain with a neat sketch, the working of sand slinger. (10 Marks)  
 b. Explain with a neat sketch, carbon dioxide moulding process. (10 Marks)

OR

- 4 a. Name the centrifugal casting methods and explain the vertical centrifugal casting with a neat sketch. (10 Marks)  
 b. Sketch and explain the construction and working of Cupola Furnace with different zones. (10 Marks)

**Module-3**

- 5 a. Define welding and list out its advantages, limitations and applications. (08 Marks)  
 b. Explain with neat sketches, any four welding defects and their causes and remedies. (12 Marks)

OR

- 6 a. With a neat sketch, explain the "Oxy-Acetylene Gas Welding process and mention its advantages and disadvantages. (12 Marks)  
 b. Explain Forward and Backward welding techniques. (08 Marks)

**Module-4**

- 7 a. Explain with a neat sketch, the seam welding and list out its advantages and disadvantages. (10 Marks)  
 b. With a neat sketch, explain Metal Inert Gas Welding and mention its advantages and disadvantages. (10 Marks)

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OR

- 8 a. Explain atomic hydrogen welding with a neat sketch and mention its advantages and disadvantages. (10 Marks)
- b. With a neat sketch, explain Thermit Welding and mention its advantages and disadvantages. (10 Marks)

Module-5

- 9 a. Define soldering and explain soldering Iron method with a neat sketch. (10 Marks)
- b. What is Brazing? What are different Brazing methods? Explain Torch Brazing with a sketch. (10 Marks)

OR

- 10 a. With neat sketches, explain Fluorescent Penetrant Inspection. (10 Marks)
- b. Explain Radiography (X-ray) inspection and give its advantages. (10 Marks)

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