

II B. Tech I Semester Regular/Supplementary Examinations, December-2023
PRODUCTION TECHNOLOGY
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks

~~~~~  
UNIT-I

- 1 a) Explain briefly with neat sketches the following patterns. [14M]
- i. Match Plate Pattern -4M
  - ii. Cope and Drag Pattern -4M
  - iii. Segmental Pattern -3M
  - iv. Shell Pattern -3M

OR

- 2 a) Describe the method used for determining the permeability of any moulding sand. [7M]
- b) Classify the materials used for pattern making and write about them. [7M]

UNIT-II

- 3 a) What are the various elements that comprise of the gating system? Explain briefly. [7M]
- b) Describe the solidification of a pure metal with a neat sketch. [7M]

OR

- 4 a) Specify the advantages of the precision investment casting process over the other casting process. [7M]
- b) Explain with neat sketch the cold chamber die casting process with neat sketch and list its applications and advantages. [7M]

UNIT-III

- 5 a) What are the kinds of joints that are normally employed for welding processes? Give their sketches. [7M]
- b) Explain resistance spot welding process with a neat sketch. [7M]

OR

- 6 a) What are the various methods of brazing? Describe them in brief. [7M]
- b) Write a short note on laser beam welding, detailing the applications. [7M]

UNIT-IV

- 7 a) What are the main characteristics of hot working as compared with cold working processes? [7M]
- b) What are the advantages and disadvantages of forging? [7M]

OR



- 8 a) Describe and classify the types of rolling mills with the necessary sketches. [7M]  
b) Explain the working of Hydrostatic extrusion with a neat sketch. [7M]

**UNIT-V**

- 9 a) Explain the various sheet metal forming operations with neat sketches. [7M]  
b) Write a short note on spring back bending process. [7M]

**OR**

- 10 a) Explain with a suitable diagram, the working principle of Electro Hydraulic Forming. [7M]  
b) List the advantages and disadvantages of Electro Magnetic Forming. [7M]



**II B. Tech I Semester Regular/Supplementary Examinations, December-2023**  
**PRODUCTION TECHNOLOGY**  
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit  
All Questions carry **Equal** Marks

~~~~~

UNIT-I

- 1 a) What are the major limitations of the sand-casting process and how are they minimized? [7M]
- b) Define Pattern. Explain any 4 types of patterns used in metal casting. [7M]

OR

- 2 a) Distinguish between green sand and dry sand cores with reference to their applications. [7M]
- b) Explain the different core making process with a neat sketch. [7M]

UNIT-II

- 3 a) What is the most commonly used type of gate? Explain the reason for its choice. [7M]
- b) Mention the causes and remedies of the following sand – casting defects: blow holes, hot tears, misruns. [7M]

OR

- 4 a) Describe the constructional features of a cupola furnace. [7M]
- b) State the difference between centrifuging and true centrifugal casting. [7M]

UNIT-III

- 5 a) Describe the working principle of Tungsten Inert Gas (TIG) welding process with neat sketch. [7M]
- b) For welding heavy rail sections, thermit welding is often used. Explain how the heat necessary for the joining process is obtained. [7M]

OR

- 6 a) What is friction welding? What are its applications? [7M]
- b) Explain about welding defects and destructive and non-destructive testing of welds. [7M]

UNIT-IV

- 7 a) Explain recrystallization and grain growth processes and their effect on properties of a metal worked component. [7M]
- b) List the advantages of forging of metals. Why is press forging preferred over hammer forging? [7M]

OR



- 8 a) Explain with sketches the difference between direct and indirect extrusion. [7M]
b) Describe the wire drawing process with a neat sketch. [7M]

UNIT-V

- 9 a) Describe the various sheet metal making operations with neat sketch. [7M]
b) Distinguish between drawing and bending in sheet metal operations. [7M]

or

- 10 a) Explain any high energy rate forming method with a proper sketch. [7M]
b) Explain explosive forming with a neat sketch. [7M]



II B. Tech I Semester Regular/Supplementary Examinations, December-2023
PRODUCTION TECHNOLOGY
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks

~~~~~

UNIT-I

- 1 a) Explain briefly the procedure to be followed for making a sand mould. [7M]  
b) What is pattern? Explain the various types of pattern allowance provided on the pattern? [7M]
- or
- 2 a) Sketch different types of cores used in foundry practice. [7M]  
b) What properties are desirable of a moulding sand from the standpoint of sand casting? [7M]

UNIT-II

- 3 a) Explain the function of a runner extension in a gating system. [7M]  
b) Differentiate between pressurized and unpressurized gating systems with reference to the application. [7M]
- or
- 4 a) Describe the operation of a cupola furnace for melting cast iron. [7M]  
b) Describe the need of Investment Casting. Explain the Investment Casting Process. [7M]

UNIT-III

- 5 a) Draw diagram showing classification of welding process. [7M]  
b) Compare and contrast the differences between TIG and MIG. [7M]
- or
- 6 a) Explain how a tube can be manufactured from sheet by a suitable welding process. [7M]  
b) Explain explosive welding with neat diagram. [7M]

UNIT-IV

- 7 a) Sketch and explain forging hammers. What are the advantages of cold forging? [7M]  
b) How does cold rolling differ from hot rolling in terms of the process and product? [7M]
- or



- 8 a) What are the various types of forging methods available to a manufacturing engineer? Explain the application of each of them. [7M]
- b) Explain what do you understand by the terms ingot, slab, bloom and billet. [7M]

**UNIT-V**

- 9 a) Explain any one method of stretch forming operation with a neat sketch. [7M]
- b) Sketch a deep drawing set up, labelling the various important parts. [7M]

or

- 10 a) Explain the working principles of rubber pad forming. [7M]
- b) List the advantages and disadvantages of Electro Hydraulic Forming. [7M]



**II B. Tech I Semester Regular/Supplementary Examinations, December-2023**  
**PRODUCTION TECHNOLOGY**  
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit  
All Questions carry **Equal** Marks

~~~~~  
UNIT-I

- 1 a) What are the factors to be considered in selecting pattern materials? [7M]
b) State the typical applications of casting process as used in automobile sector. [7M]

or

- 2 a) Classify the different types of moulding sand and explain. [7M]
b) Explain how the shape and the size of sand grains affect the permeability and green strength of a moulding sand. [7M]

UNIT-II

- 3 a) Explain the components of Gating System with a neat sketch and classification of the gating system. [7M]
b) Compare the bottom gate with the top gate in regard to its merits and demerits. [7M]

or

- 4 a) Determine the casting of a certain alloy using a sand mould, it took 155 seconds for a cube shaped casting to solidify. The cube was 50mm on each side. Determine the value of the mould constant in Chvorinov's rule. For the same alloy and mould, determine the total solidification time for a cylindrical casting whose diameter is 30mm and length is 50mm. [7M]
b) Describe the stages in cupola melting. [7M]

UNIT-III

- 5 a) Describe the principle of an Oxy – fuel gas welding. [7M]
b) Discuss the merits of AC and DC and explain the VI characteristics of arc and power sources. [7M]

or

- 6 a) What types of structure and property modifications can occur in welding heat zones? [7M]
b) What are the defects that are generally found in welding? Describe their causes and remedies. [7M]

UNIT-IV

- 7 a) Give the comparison between Cold Working and Hot Working processes. [7M]
b) Explain the principle of rolling with a neat sketch. [7M]

or

|||||

- 8 a) Explain briefly various defects in Forging. [7M]
b) Distinguish between wire drawing and tube drawing with sketches. [7M]

UNIT-V

- 9 a) Explain blanking and piercing operations with a neat sketch. [7M]
b) Discuss with neat sketch, the working of metal spinning process. [7M]

or

- 10 a) Explain with a suitable diagram, the working principle of Electro Magnetic Forming. [7M]
b) List the advantages and disadvantages of Rubber pad forming. [7M]

