

2112E083

**BACHELOR OF VOCATION**  
**Production-Tool and Die Manufacturing**  
**Subject: Material Science and Heat Treatment**  
**Subject MSE-701**  
**Semester: Third**  
**December 2021**  
**Theory (External): 35 Marks**  
**Time: 03 Hours**

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**Instructions to the Students**

1. This Question paper consists of two Sections .All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature .All questions are compulsory .Each question carries 1 mark.
3. Section B comprises 8 essay-type questions out of which students need to do any 5 .Each question carries 5 marks .
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labeled

Roll Number									

**SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)**  
(10x1=10 Marks)

- A. Define Heat treatment
- B. Define annealing process
- C. Discuss the application of fibre materials
- D. Define the applications of thermocole
- E. Define the applications of asbestos
- F. Define the properties of alloy steel
- G. Define atomic packing factor
- H. Define the properties of white metal
- I. Define the application of tool and die materials
- J. Define the application of cork

**SECTION –B (ESSAY TYPE QUESTIONS)**  
(5x5=25 Marks)

1. Explain the different types of material and their applications related to manufacturing
2. Explain BCC, FCC and HCP Crystals with neat and clean diagram along with suitable applications
3. Differentiate between fatigue and creep with suitable example and neat diagrams
4. Explain the different types of cast iron along with applications related to manufacturing industries
5. Describe the properties of plain carbon steel with suitable applications
6. Differentiate between the properties of high speed steel and stainless steel with suitable applications
7. Discuss the properties of composite material with suitable applications related to industries
8. Explain carburizing process of heat treatment with suitable diagram and also mentions its demerits

===END OF PAPER===