M-404 - ENGINEERING MATERIALS
Blue Print of Model Question Paper

Sl. No.	Chapter Name	Periods Allocated	Weightage Allocated	Question Wise Distribution of Weightage			Marks Wise Distribution of Weightage		
				R	U	Ap	R	U	Ap
1	Properties and Testing of Engineering Materials	12	26	1	1	2	3	3	20
2	Plastics and Powder Metallurgy	14	26	1	1	2	3	3	20
3	Production of Iron and Steel	12	21	1	1	1 1/2	3	3	15
4	Heat treatment of Steel	12	21	1	1	1 ½	3	3	15
5	Ferrous, Non-Ferrous Metals and their alloys	10	16	1	1	1	3	3	10
TOTAL		**75**	**110**	**5**	**5**	**08**	**15**	**15**	**80**

R-Remember; U-Understanding; Ap-Application ; An- Analylising

Unit Test - 1

Q.No	Question from the Chapter	Bloom's category	Marks allocated	CO addressed
Part - A (16 marks)				
1	Properties and Testing of Engineering Materials, Plastics and Powder Metallurgy ,Production of Iron	R,U	4	CO1,CO2,CO3
2,3	Properties and Testing of Engineering Materials	U	6	CO1
4	Plastics and Powder Metallurgy	U	3	CO2
5	Production of Iron	U	3	CO3
Part - B (24 marks)				
6	Properties and Testing of Engineering Materials	Ap	8	CO1
7	Plastics and Powder Metallurgy	Ap	8	CO2
8	Production of Iron	Ap	8	CO3

R-Remembering; U-Understanding; Ap-Applying; An- Analylising

Unit Test - 2

Q.No	Question from the topic	Bloom's category	Marks allocated	CO addressed
Part - A (16 marks)				
1	Production of steel, Heat treatment of Steel, Ferrous, Non-Ferrous Metals and their alloys	R,U	4	CO3-CO5
2	Production of steel	U	3	CO3
3	Heat treatment of Steel	U	3	CO4
4,5	Ferrous, Non-Ferrous Metals and their alloys	U	6	CO5
Part - B (24 marks)				
6	Production of steel	Ap	8	CO3
7	Heat treatment of Steel	Ap	8	CO4
8	Ferrous, Non-Ferrous Metals and their alloys	Ap	8	CO5

R-Remembering; U-Understanding; Ap-Applying; An- Analylising

MODEL PAPER
Unit Test – 1
ENGINEERING MATERIALS (M-404)

Time : 90 Minute Total Marks: **40**

PART – A

Instructions: *1st Question having 4 one mark questions, and remaining 4 Questions carry 3 markseach*

1. (a) The maximum cycle stress at which the material will operate indefinitely without failureis known as____.
   (b) For ductile material the percentage elongation will be more than 5%. (True/False)
   (c) What is the effective number of atoms for body cantered cubic lattice?
   (d) Melting point for pure iron is

   (a) 11300^{0}C (b) 1400^{0}C (c) 1539^{0}C (d) 723^{0}C

2. Define the mechanical properties strength and hardness.
3. State the principle of radiography testing.
4. Differentiate between thermosetting plastics and thermoplastics.
5. State three important raw materials of iron ore.

PART – B

Instructions: *Part B consists of **3** Units. Answer any one full question from each unit. Each questioncarries 8 marks and may have sub questions.*

6. Explain Rockwell hardness test and compare B-scale with C-scale.

(OR)

Explain the unit cell structures of (i) BCC and (ii) FCC with examples.

7. Explain injection moulding with a legible sketch.

(OR)

Explain steps in making products by using power metallurgy technique.

8. Explain with a neat sketch the production of cast iron in cupola furnace.

(OR)

Draw a neat sketch of a Puddling furnace and explain how the wrought iron is producedfrom it.

MODEL PAPER
Unit Test – II
ENGINEERING MATERIALS (M-404)

Time : 90 Minutes Total Marks: **40**

PART – A

Instructions: *1st Question having 4 one mark questions, and remaining 4Questions carry 3 marks each*

1. (a) What is the melting point of pure iron?
   (b) The annealing temperature of mild steel is in the range of 840^0C to 870^0C. (True/False)
   (c) Iron carbon alloy having carbon more than 2% is known as
   (a) Cast iron (b) High carbon steel (c) Mild steel (d) None of the above
   (d) Brass is an alloy of_____and_____.
2. List raw materials used for making of steel.
3. List out six heat treatment processes of steel.
4. State the properties of Babbit metals.
5. State the influence of silicon and manganese on plain carbon steel.

PART – B

Instructions: *Part B consists of **3** Units. Answer any one full question from each unit. Each questioncarries 8 marks and may have sub questions.*

6. Describe the open hearth of process of making steel.

(OR)

Describe L-D process of making steel .

7. Sketch the Iron- carbon diagram and mark the salient points.

(OR)

Explain the heat treatment processes (a) Carburising (b) Nitriding

8. Explain Properties and applications of Grey and White cast irons.

(OR)

What are the desired properties of bearing metals? Name three types of bearing metals.

MODEL PAPER
DME– IV SEMESTER END EXAMINATION
ENGINEERING MATERIALS (M-404)

Time : 3 hours **Max Marks : 80**

Part – A 3 M X 10 = 30 M

Instructions : 1) Answer ***all*** questions
2) Each question carries ***three*** marks
3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. Define the following properties:
   a)Ductility
   b) Creep resistance
2. Mention three advantages of Non-Destructive tests.
3. List three Advantages of powder metallurgy.
4. Differentiate between thermosetting plastics and thermoplastics.
5. State three important raw materials of iron ore.
6. State the advantages of making steel in L-D process.
7. List any six methods of heat treatment of steels.
8. Define case hardening and list the case hardening processes.
9. State the desirable properties of bearing metals.
10. State the properties and uses of nickel.

Part – B 10 M X 5 = 50M

Instructions : 1) Answer any ***five*** questions
2) Each question carries ***ten*** marks

3) Answer should be comprehensive and criteria for valuation is content, but not the length of the answer.

11. Explain the Rockwell Hardness Test with sketch and compare B-scale with C-scale.
12. Explain the unit cell structures of (i) BCC and (ii) FCC with examples.
13. Explain injection moulding with a legible sketch.
14. Explain steps in making products by using power metallurgy technique.
15. Explain with a neat sketch the production of cast iron in cupola furnace.
16. Sketch the Iron- carbon diagram and mark the salient points.
17. Explain Properties and applications of Grey and White cast irons.
18. (a) Explain the differences between basic and acid type of furnaces.
    (b) Explain the heat treatment processes (a) Carburising (b) Nitriding