Question Bank

Engineering Material

(3rd Sem)

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Chapter 1.0 Engineering materials and their properties

02/03 Marks Questions

1 Classify engineering material. Give example.
2 Define ferrous material. Give two examples.
3 Define non-ferrous material. Give two examples.
4 Define Physical properties of materials. Give 05 example
5 Define chemical properties of engineering materials and write their significance.
6 Define Mechanical properties of material. Give examples.
7 Define Performance requirements
8 Define Material reliability and safety.
9 What is Porosity. Is it a physical, chemical or mechanical property ?
10 What is toughness?
11 What is fatigue?
12 What do you understand by corrosion?
13 What are the conditions of corrosion?
14 What do you understand by elasticity and plasticity?

05/10 Marks Questions

1. Explain the various Physical properties of engineering material.
2. Explain the various Chemical properties of engineering material. Write their significance in Engineering.
3. Explain the various Mechanical properties of engineering material.
4. Classify Engineering materials, define and give example of each.

Chapter 2.0 Ferrous Materials and alloys

02/03 Marks Questions

1. Define Ferrous alloys. Give 02 example.
2. Write 05 application of ferrous alloys.
3. What are the characteristics of ferrous alloys?
4. Define low carbon steel and write two applications.
5. Define medium carbon steel and write two applications.
6. Define high carbon steel and write two applications.
7. Define Alloy steel. Write it's types.
8. Define low alloy steel and write two applications.
9. Define high alloy steel and write two applications.
10. Define tool steel and write two applications.
11. Define stainless steel and write two applications.
12. What are the various alloying elements used to modify the properties of steel?

05/10 Marks Questions

1. Define and write Characteristics and application of ferrous materials.
2. Write Classification, composition and application of low carbon steel.
3. Write Classification, composition and application of medium carbon steel.
4. Write Classification, composition and application of high carbon steel.
5. Write various types of alloy steel, their composition and uses.
6. What is tool steel? Write it's composition and uses.
7. What is stainless steel? Write it's composition and uses.
8. Write the effect of various alloying elements such as Cr, Mn, Ni, V, Mo.

Chapter 3.0 Iron – Carbon system

02/03 Marks Questions

1. What is phase diagram? Write it's significance.
2. Write the general Gibbs phase rule.
3. What do you understand by phase in phase diagram.
4. What are the micro-constituents of iron and steel.
5. What are the three invariant reactions in Iron-carbon diagram.
6. What is eutectic reaction. Give example in reference to iron carbon diagram.
7. What is peritectic reaction. Give example in reference to iron carbon diagram.
8. What is eutectoid reaction. Give example in reference to iron carbon diagram.
9. What is cooling curve. What does the horizontal line in it represents?
10. What is curie temperature?
11. What is hypoeutectoid steel.
12. What is hypereutectoid steel.
13. What is cast iron.

05/10 Marks Questions

1. Draw the Iron-Carbon equilibrium diagram and explain it's micro-constituents and important reactions.
2. What is phase diagram and cooling curve. Draw the cooling curve of iron.

Chapter 4.0 Crystal imperfections

02/03 Marks Questions

1. What is perfect/ideal crystal? Give example.
2. What do you understand by crystal imperfections?
3. Define crystal.
4. Write various types of crystals.
5. What are different types of crystal imperfections.
6. What is point defect. Write it's various types.
7. What is line defect. Write it's various types.
8. What is surface defect. Write it's various types.
9. What is Vacancies? Write it's causes and types, if any.
10. What is Interstitials? Write it's causes and types, if any.
11. What is impurities? Write it's causes and types, if any.
12. Explain deformation by slip.
13. Explain deformation by twinning.
14. What are the effect of deformation on material properties.

05/10 Marks questions

1. Define Crystal, classify crystals and explain them.
2. What is ideal crystal and crystal imperfections. Write various types of crystal imperfections and explain them.
3. Write Classification of imperfection: Point defects, line defects, surface defects and volume defects and their causes.
4. Explain Types and causes of point defects: Vacancies, Interstitials and impurities and explain them with a labelled diagram.
5. Explain Types and causes of line defects: Edge dislocation and screw dislocation and explain them with labelled diagram.
6. Write Effect of imperfection on material properties.
7. Explain Deformation by slip and twinning with a labelled diagram.
8. Write Effect of deformation on material properties.

Chapter 5.0 Heat Treatment

02/03 Marks Questions

1. Write 04 purpose of heat treatment.
2. What is annealing? Describe.
3. What is Normalizing? Describe.
4. Give 4 examples of heat treatment process.
5. What is Hardening? Describe
6. What is Tampering? Describe
7. What do you understand by Stress relieving measures? Describe.
8. What is Surface Hardening? Give two examples.
9. What is Carburizing? Describe.
10. What is Nitriding? Describe.
11. What do you understand by Hardenability of steel?

05/10 Marks Questions

1. Write at least 10 Purposes of Heat treatment.
2. Describe these Process of heat treatment: Annealing, normalizing, hardening, tampering, stress relieving measures.
3. What do you understand by Surface hardening. Explain about carburizing and Nitriding.
4. Write various Effect of heat treatment on properties of steel.

Chapter 6.0 Non-ferrous alloys

02/03 Marks Questions

1. Write Composition, property and usage of Duralmin.
2. Write Composition, property and usage of y- alloy.
3. What is a copper alloy. Give two example and their uses.
4. What is Babbit material. Explain.
5. Give example of Lead alloys and their uses.
6. Give example of Zinc alloys and their uses.
7. Give example of Nickel alloys and their uses.
8. What is low alloy non-ferrous alloys. Give example.
9. What is high alloy non-ferrous alloys. Give example.
10. What are duplex and super duplex materials?

05/10 marks Questions

1. Write Composition, property and usage of Aluminium alloys- Duralmin & y- alloy.
2. Write Composition, property and usage of copper alloys- Copper-Aluminium, Copper-Tin, Babbit, Prosperous-bronze, brass, Copper- Nickel alloys.
3. Explain Predominating elements of lead alloys, Zinc alloys and Nickel alloys.
4. Describe various non-ferrous low and high alloy materials and their uses.

Chapter 7.0 Bearing Material

02/03 Marks Questions

1. What is a bearing. Write it's functions.
2. Write properties and uses of copper base bearing materials.
3. Write properties and uses of Tin base bearing materials.
4. Write properties and uses of Lead base bearing materials.
5. Write properties and uses of Cadmium base bearing materials.

05/10 Marks Questions

1. Write Classification, composition, properties and uses of copper base bearing materials.
2. Write Classification, composition, properties and uses of Tin base bearing materials.
3. Write Classification, composition, properties and uses of Lead base bearing materials.
4. Write Classification, composition, properties and uses of Cadmium base bearing materials.

Chapter 8.0 Spring materials

02/03 Marks Questions

1. Write properties and uses of Iron base spring material.
2. Write properties and uses of copper base spring material.
3. What is a spring? Write it's functions.

05/10 Marks Questions

1. Write Classification, composition, properties and uses of Iron base spring material.
2. Write Classification, composition, properties and uses of copper base spring material.

Chapter 9.0 Polymers

02/03 Marks Questions

1. What is thermosetting polymers?
2. What is thermoplastic polymers?
3. Write the application of thermosetting polymers.
4. Write the application of thermoplastic polymers.
5. Write the properties of thermosetting polymers.
6. Write the properties of thermosplastic polymers.

05/10 Marks Question

1. Write at least 10 Properties of elastomers.
2. Write Properties and application of thermosetting and thermoplastic polymers.
3. Differentiate between thermosetting and thermoplastic polymers.

Chapter 10.0 Composites and Ceramics

02/03 Marks Questions

1. What is composite. Give two examples.
2. What is ceramics. Give two examples.
3. Write properties and uses of particulate based composite.
4. Write properties and uses of fibre reinforced composite.
5. Classify ceramics.
6. Write uses of ceramics.

05/10 Marks Question

1. Write Classification, composition, properties and uses of particulate based composites.
2. Write Classification, composition, properties and uses of fibre reinforced composites.
3. Write Classification and uses of ceramics