

**Chettinad**

College of Engineering & Technology

Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai.

Department Mechanical Engineering**ME8491- Engineering Metallurgy****Unit I - MCQ Bank**

1. How much carbon is present in cast irons?
 - A. Less than 0.05%
 - B. Up to 1.5%
 - C. 1.5% to 2%
 - D. **More than 2%**Answer: (D)
2. Cast iron is a _____ alloy.
 - A. **Eutectic**
 - B. Eutectoid
 - C. Peritectic
 - D. PeritectoidAnswer: (A)
3. Which of the following is not a name for phases present in a system of material in various conditions?
 - A. Phase diagram
 - B. Equilibrium diagram
 - C. **Interstitial diagram**
 - D. Constitutional diagramAnswer: (C)
4. Which of the following cannot be obtained using a phase diagram?
 - A. Melting temperatures of various phases
 - B. Temperature range for solidification
 - C. Equilibrium solid solubility
 - D. **Purity of materials**Answer: (D)
5. A specific body of material or a series of alloys with the same compositions is/are known as _____
 - A. Component
 - B. **System**
 - C. Alloy
 - D. SoluteAnswer: (B)

6. How many types of systems are applicable for phase diagrams?
A. One
B. Two
C. Three
D. **Four**
Answer: (D)
7. The maximum concentration of solute that can be added is defined as _____
A. Solution limit
B. **Solubility limit**
C. Concentration
D. Degrees of freedom
Answer: (B)
8. How is Gibb's phase rule defined?
A. $C+P+1$
B. $C+P+2$
C. **$C-P+2$**
D. $C-P$
Answer: (C)
9. Separation of single-phase solid regions from two-phase solid regions is done by _____
A. Solidus line
B. Liquidus line
C. **Solvus line**
D. Eutectic point
Answer: (C)
10. The point at which two liquidus lines meet is known as _____
A. Eutectic point
B. Isothermal point
C. Solvus point
D. **Peritectic point**
Answer: (D)
11. Which reaction does this equation denote?
 $\text{Liquid} + \text{Solid 1} \rightarrow \text{Solid 2}$
A. Eutectic
B. **Peritectic**
C. Eutectoid
D. Peritectoid
Answer: (B)

12. Which reaction does this equation denote?



- A. Eutectic
- B. Peritectic
- C. Eutectoid
- D. **Peritectoid**

Answer: (D)

13. Alloys containing 2.0-6.7% carbon are considered as _____

- A. Steel
- B. **Cast-iron**
- C. Aluminum
- D. Brass

Answer: (B)

14. The existence of two or more crystal structures for any substance, depending on temperature, is known as _____

- A. **Allotropy**
- B. Solidification
- C. Solubility
- D. Interstices

Answer: (A)

15. Pure iron exists in _____ allotropic forms.

- A. One
- B. Two
- C. **Three**
- D. Four

Answer: (C)

16. What is the crystal structure of γ iron?

- A. Body-centered cubic
- B. **Face-centered cubic**
- C. Hexagonal closely packed
- D. Body-centered tetrahedral

Answer: (B)

17. At what temperature range is δ iron stable?

- A. Up to 908°C
- B. 908-1388°C
- C. **1388-1535°C**
- D. 1535-1800°C

Answer: (C)

18. Which of the following is applicable to α iron?

- A. Soft
- B. Ductile
- C. Magnetic
- D. **Can be hot worked**

Answer: (D)

19. Which of the following is a nonmagnetic iron?

- A. Ferrite
- B. **Austenite**
- C. Cementite
- D. Alnico

Answer: (B)

20. Cementite is magnetic up to _____

- A. 100°C
- B. **250°C**
- C. 600°C
- D. 850°C

Answer: (B)

21. _____ is a eutectic mixture of α iron and Fe₃C.

- A. Pearlite
- B. Martensite
- C. **Ledeburite**
- D. Sorbite

Answer: (C)

22. The eutectic point in the iron-iron carbide phase diagram occurs at _____ weight % composition of carbon.

- A. 0.022
- B. 0.77
- C. 2.11
- D. **4.30**

Answer: (D)

23. At what temperature does δ ferrite melt?

- A. 1674 F
- B. 1990 F
- C. 2541 F
- D. **2800 F**

Answer: (D)

24. What is the solubility of α ferrite at 0°C?

- A. 0.1%
- B. 0.02%
- C. **0.005%**
- D. 0.0004%

Answer: (C)

25. What is the crystal structure of austenite upon heating?

- A. Body-centered cubic
- B. **Face-centered cubic**
- C. Hexagonal closely packed
- D. Body-centered tetrahedral

Answer: (B)

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