

TATA STEEL JET EXAMINATION METALLURGY SAMPLE PAPER (Sample 50 questions)

A. DOMAIN

1. Fundamental concepts of metallurgy is derived from
(A) Physics (C) Crystallography
(B) Chemistry (D) All of the Above

2. Identify the wrong statement
(A) Plastic deformation takes place by the mechanism called slip
(B) Edge Dislocations move in response to applied stress parallel to dislocation line
(C) Dislocations are the regions of disturbances due to presence of extra half plane of atoms
(D) Edge and screw dislocations are distinguished according to their motion.

3. Metallurgical fields dealing with Mining, Extraction, refining of metals is known as
(A) Physical Metallurgy (C) Extractive Metallurgy
(B) Chemical Metallurgy (D) Mechanical Metallurgy

4. Physical Metallurgy deals with
(A) Physical Characteristics (C) None of these
(B) Mechanical Characteristics (D) Both (a) & (b)

5. Solids having Regular Repetitive and Periodic arrangement of atom in are known as
(A) Metallic Solids (C) Crystalline Solids
(B) Amorphous Solids (D) Ionic Solids

6. From Liquid to Solid, Crystallization starts with
(A) Atomic arrangement (C) Crystal Growth
(B) Nuclei Formation (D) Metallic Bond

7. The basic building block of crystal lattice is
(A) Grain (C) Miller Indices
(B) Unit Cell (D) Lattice Constant

8. Crystal arrangement of atoms within a grain is called
(A) Grain boundary (C) Lattice
(B) Unit Cell (D) None of the above

9. Crystal structure of Niobium is
(A) BCC (C) FCC
(B) HCP (D) SC

10. Crystal structure of Tungsten is
(A) SC (C) BCC
(B) FCC (D) HCP

11. Carbon, Nitrogen, Hydrogen, Oxygen are _____ element / elements
(A) Interstitial (C) Both (a) & (b)
(B) Substitutional (D) None of the Above
12. At _____% of Carbon Eutectic reaction takes place as per Iron Carbon Diagram
(A) 0.09 (C) 0.18
(B) 0.54 (D) 4.3
13. Pure Iron remains in _____ structure from 1539 to 1394 degree centigrade
(A) BCC (C) BCC+FCC
(B) FCC (D) Liquid
14. A tetrahedral site forms at the vicinity of _____ atom
(A) 8 (C) 6
(B) 4 (D) 3
15. Phase Mixture of Gamma Iron and Cementite is called
(A) Pearlite (C) Ledeburite
(B) Bauxite (D) None of these
16. If a steel having carbon percentage 0.25% is heated above 1200 degree centigrade, it is in _____ phase
(A) Delta (C) Gamma
(B) Alpha (D) Alpha + Gamma
17. To get complete Austenite in hyper eutectoid steel, it is required to heat above _____ Line
(A) A1 (C) ACM
(B) A2 (D) None of these
18. Carbon Percentage greater than 2.14 % in iron is called Steel
(A) Steel (C) Cast Iron
(B) Sponge Iron (D) None of these
19. Steels having greater than 0.83% Carbon is called
(A) Hyper Eutectoid Steel (C) Hypo Eutectoid Steel
(B) Hypo Eutectic Steel (D) Hyper Eutectic Steel
20. Eutectoid reaction takes place at _____ degree centigrade
(A) 1147 (B) 1050
(B) 800 (D) None of these
21. Vacancy, Interstitialcy is / are which kind of defect
(A) Point (B) Crystal
(B) Both (a) & (b) (D) None of these

22. _____ is a phase mixture of Alpha Iron and Cementite
(A) Pearlite (B) Bauxite
(B) Sternalite (D) Bainite
23. Curie Temperature of pure iron is _____ degree centigrade
(A) 770 (B) 727
(B) 800 (D) 750
24. Cementite contains _____ % wt of Carbon
(A) 6.67 (B) 6.50
(B) 7 (D) 6.75
25. Identify Surface Defect / defects
(A) Grain Boundary (B)Twin Boundary
(B) Stacking Fault (D)All

B. GENERAL APTITUDE

26. If 42 persons consume 144 kg of rice in 45 days; then in how many days will 30 persons consume 48 kg of rice?
(A) 6 days. (B) 7 days. (C) 8 days (D)12 days:
27. The area of a circle is 24.64 m^2 . The circumference of the circle is:
(A) 14.64 m (B)16.36m (C) 17.60.m (D) 18.40 m
28. A certain number of tennis balls were purchased for Rs: 450: Five more balls could have been purchased in the same amount if each ball was cheaper by Rs. 45. The number of balls purchased were:
(A) 10 (B) 15 (C) 20 (D)25
29. Which National Highway connects Delhi and Mumbai? -
(A) NH6 (B). NH 8 (C)NH10 (D) NH 12,
30. A two-digit number is 7 times the sum of its digits. The number formed by reversing its digits is 18 less than the original number. What is the number?
(A) 42 (B) 52 (C)62 (D) 72

C. ENGLISH

- 31.It was _____ hot that day and the cable suffered the brunt of the heat, AW
(A)treacherously (B) acceptably. (C). unfliningly (D). unbelievably -
32. _____ my knowledge, Mr. Akash has a prejudice _____ foreigners.
(A) in..... for (B) as..... towards. (C) for at (D) to.....against

Direction for questions 33-34:

In the following questions, you will find sentences part of which is bold.

Compare the bold part of each sentence with the expressions (A), (B) and (C) given below: Choose the expression which is an improvement upon the bold part. If none of the three expressions improve the sentence, then your answer is (D).

Questions:

33. It is high time she. **changes** her job.

- (A) must change (C) had changed
(B) changed (D) No improvement

34. I am surprised that **he dares speak** in such a tone to his father.

- (C) he dares to speak (C) he dare to speak
(D) he dare speak (D) No improvement

35. Choose the word which is **nearest in** meaning to the 'bold typed word. He could rise to this stature because of **his invincible** 'courage.

- (A) inviolable (B) unmanageable
(C) unbeatable (D) immeasurable

D. CURRENT INDUSTRY TRENDS

36. What is the full-form of AI in field of technology?

- A. Artificial Information
B. Artificial Intelligence
C. Additional Intelligence
D. Augmented Intelligence

37. TPM concept was first initiated by

- A. Suzuki
B. Nippon Densco
C. TOYOTA
D. Ford Automobiles

38. Full form of TOC is

- A. Theory of Constraints
B. Tata Overseas Company
C. Theory of Change
D. Theory of Commitment

39. The purpose of CPR in Industry Safety is to:

- (A) Maintain oxygenated blood circulation
- (B) Stabilize body temperature to avoid hypothermia
- (C) Build upper body strength
- (D) Dislodge blood clots within the victim's lungs

40. A confined space is deemed ready for employee entry when:

- (A) A company safety inspector has certified it
- (B) The unit operations foreman declares it ready
- (C) An engineer has completed the necessary calculations
- (D) Your supervisor assigns you to the job

E. INDUSTRIAL ORIENTED LEARNING

41. What kind of nozzle design leads to attainment of supersonic jet of oxygen during blowing?

- (A) Divergent convergent nozzle
- (B) Convergent divergent nozzle
- (C) Convergent nozzle
- (D) Divergent nozzle

42. At Dissolution stage

- (A) Soft oxygen blowing will be done
- (B) Hard oxygen blowing will be done
- (C) Blow varies
- (D) None of these

43. Oxygen used in blowing should have purity more than

- (A) 80%
- (B) 95%
- (C) 90%
- (D) 99.5%

44. Which of these gases comes as waste output in Desulphurization process?

- (A) Nitrogen
- (B) Calcium Fumes
- (C) Magnesium Fumes
- (D) All of these

45. Sulphur reversal is possible if

- (A) Bath contains high nitrogen PPM
- (B) Bath contains High Oxygen PPM
- (C) Bath Contains high argon PPM
- (D) All of these

46. Why desulphurization is needed?

- (A) Sulphur cause cracks
- (B) Sulphur cause pin hole
- (C) Sulphur reduces ductility
- (D) All

47. Clean steel means

- (A) Colour of final slag should be white
- (B) $\text{FeO} + \text{MnO} < 1\%$
- (C) Al/Ca ratio > 10
- (D) All

48. Calcium and aluminium ratio in secondary steel making is adjusted to _____ to achieve liquid product

- (A) 1.45
- (B) 1.32
- (C) 1.27
- (D) 1.17

49. High back pressure in nozzles of secondary cooling means?

- (A) High Flow
- (B) Damage
- (C) Low Flow
- (D) Chokege

50. The purpose of covering steel in Tundish with power is to?

- (A) Prevent reoxidation
- (B) Prevent heating of ladle slide gate
- (C) Both (a) & (b)
- (D) None of these