

JET-2022 Metallurgy Sample Construct

• Domain

1. Steels having greater than 0.83% C is called
 - a) Hyper Eutectoid Steel
 - b) Hypo Eutectoid Steel
 - c) Hypo Eutectoid Steel
 - d) Hyper Eutectic Steel
2. If a steel having carbon percentage 0.25% is heated above 1200°C, it is in _____ phase
 - a) Delta
 - b) Gamma
 - c) Alpha
 - d) Alpha + Gamma
3. To get complete Austenite in hyper eutectoid steel, it is required to heat above _____ Line
 - a) A1
 - b) A3
 - c) Acm
 - d) Any of above
4. Which property of the materials is the most important in its rolling or forging
 - a) Ductility
 - b) Malleability
 - c) Hardness
 - d) Creep
5. The slag produced by Blast Furnace is
 - a) always basic in nature
 - b) always acidic in nature
 - c) molten oxide product of smelting
 - d) heavier than iron
6. Pellet is of _____ shape agglomerate product
 - a) cuboid
 - b) spherical
 - c) cylindrical
 - d) All of these
7. What is the main checkpoint before opening the cast?
 - a) Check the Centre of the tap hole
 - b) Check the torpedo
 - c) Check the granulation water/ slag pot
 - d) All of the above
8. What precaution is taken to prevent the metal flow in slag runner?
 - a) Always measuring the difference between Iron dam & Slag dam height
 - b) Lance the iron dam when the metal flow is very low
 - c) Both A & B
 - d) None of the above
9. The highest degree of turbulence possible during
 - a) Top Lance purging
 - b) Bottom purging
 - c) During Tapping
 - d) None of the above
10. Metallurgical length in slab caster is
 - a) Length of a mold containing liquid steel
 - b) Length of Dynamic Soft Reduction segments
 - c) Length from the meniscus to end of solidification point
 - d) Length from the meniscus to Torch cutting point
11. A tundish, turbos top helps to create
 - a) More mixed flow
 - b) More Plug flow
 - c) More turbulent flow
 - d) All the above
12. Negative strip time is defined as
 - a) The time when the mould is moving down
 - b) The time when the mould is moving up
 - c) The time when the mould is moving down slower than the billet
 - d) The time when the mould is moving down faster than the billet
13. The destructive distillation process is the heating of coal _____
 - a) in absence of air
 - b) in excess of air
 - c) with the stoichiometric amount of air
 - d) with less percentage of air

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13. The connector pipe between tundish and mould
 - a) Shroud
 - b) SEN
 - c) Riser
 - d) All of the above
14. What is the major difference between alumina castable and alumina mortar (grain size/bond/both)
 - a) grain size
 - b) bond
 - c) both a & b
 - d) None of the above
15. Which material is best for cold gunning in the ladle?
 - a) silica powder
 - b) magnesia powder
 - c) alumina powder
 - d) All the above
16. Lime added to bauxite during digestion in Bayer's process
 - a) prevents the dissolution of silica
 - b) causes the formation of insoluble calcium silicate
 - c) prevent the loss of alumina
 - d) All the above
17. Lead impurities in silver are removed by _____ process
 - a) Parks
 - b) amalgamation
 - c) poling
 - d) zone refining
18. The thermite process is used to extract metals when their
 - a) sulphides cannot be converted into oxides by roasting
 - b) oxide cannot be reduced by carbon
 - c) carbonates do not yield oxides by thermal decomposition
 - d) melting points are very high
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20. Which of the following metals is not extracted by pyrometallurgical method from its ore
 - a) lead
 - b) copper
 - c) tin
 - d) aluminium
21. How many types of annealing are there
 - a) 2
 - b) 3
 - c) 4
 - d) 5
22. CCT refers as
 - a) Cold Coil temperature
 - b) Controlled Cooling Transformation
 - c) Continuous Cooling Temperature
 - d) Continuous Cooling Transformation
23. Heating the Steel above upper critical temperature and then cooling in air is the process of
 - a) Annealing
 - b) Normalizing
 - c) Tempering
 - d) Spheroidizing
24. In High carbon grades for better Machinability which technique is used
 - a) Tempering
 - b) Annealing
 - c) Spheroidizing
 - d) Normalizing
25. In 6 HI rolling mill, "HI "stands for
 - a) Horizontal axis
 - b) Horizontal Inserted
 - c) High
 - d) Horizontal Inverted

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26. Which of the following combination describes a slip system
- | | |
|----------------------------------|--|
| a) grain boundary and slip plane | c) slip direction and grain boundary |
| b) slip plane and slip direction | d) recrystallisation temperature and new grain formation |
27. The major purpose of roll texturing in a rolling mill is
- | | |
|---|---|
| a) To decrease the roughness of rolls | c) To provide uniform roughness to the roll |
| b) To cover the defects generated during grinding | d) To measure the profile of rolls |
28. A time -temperature parameter used to predict stress rupture due to creep related to
- | | |
|------------------|------------------|
| a) Hayden Wulff | c) Fick's Hayden |
| b) Larsen Miller | d) Fick's only |
29. Slag analysis of steel slag or blast furnace slag done by
- | | |
|--------|----------------------|
| a) TGA | c) XRF |
| b) DTA | d) All of the option |
30. Fluorescent dye method of testing is used for detecting _____ of an object.
- | | |
|---------------------|-------------------------------|
| a) surface crack | c) structural characteristics |
| b) interior defects | d) flaws/sub crack |
31. VM of coal analysis carried out at _____ degree centigrade temperature
- | | |
|--------|---------|
| a) 105 | c) 900 |
| b) 450 | d) 1300 |
32. HT related to coal ash test is _____
- | | |
|------------------------------|------------------|
| a) hemispherical temperature | c) hardness test |
| b) heating temperature | d) None of these |
33. Pitting corrosion is
- | | |
|---|-----------------------------------|
| a) a uniform corrosion | c) a result of chemical reaction |
| b) a result of electrochemical reaction | d) due to homogeneities in metals |
34. Galvanic corrosion is
- | | |
|---|--|
| a) also called bi metallic corrosion | c) caused when there is no potential difference between two dissimilar metals in contact with a corrosive solution |
| b) caused when a pure metal is dipped in corrosive solution | d) None of these |
35. The formation of corrosion retarding films on metal surface is known as 'passivation' Passivation alters the
- | | |
|--|--------------------|
| a) Chemical activity of the metal | c) both a & b |
| b) position of the metal in the emf series | d) Neither a nor b |
36. Welding of which material essentially requires preheating
- | | |
|--------------|----------------------|
| a) aluminium | c) stainless steel |
| b) cast iron | d) high carbon steel |
37. _____ explains the equilibrium constant for any chemical reaction
- | | |
|-----------------------|------------------|
| a) Henry's law | c) Hess's Law |
| b) Law of mass action | d) None of these |
38. Exothermic reaction related to
- | | |
|-----------------|------------------|
| a) Heat release | c) Heat Capacity |
| b) Heat utilize | d) None of these |

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39. Free energy change of mixing two liquid substance is a function of the
- | | |
|---|---------------------|
| a) concentration of the constituents only | c) temperature only |
| b) quantities of the constituents only | d) All of the above |
40. If the pressure of 100 c.c air is halved then its volume of (at same temperature) would be _____c.c
- | | |
|--------|--------|
| a) 100 | c) 250 |
| b) 50 | d) 200 |
41. Which of the following is used for producing uniform packing of sand in the mould?
- | | |
|-------------------------------|----------------------|
| a) Diaphragm moulding machine | c) squeezing machine |
| b) sand slinger | d) Jolt machine |
42. Sand used on the face of the pattern before moulding is called the _____ sand
- | | |
|----------|------------|
| a) green | c) parting |
| b) loam | d) oil |

- **IoT**

43. Traditional culture of quality requirements focuses on
- | | |
|---------------------|----------------------|
| a) product oriented | c) customer oriented |
| b) process oriented | d) supplier oriented |
44. Which one is TQM vehicle?
- | | |
|---------|---------------------|
| a) PDCA | c) Daily Management |
| b) SDCA | d) TPM |
45. Who is the father of Machine Learning?
- | | |
|---------------------|----------------------------|
| a) Geoffrey Hill | c) Geoffrey Everest Hinton |
| b) Geoffrey Chaucer | d) None of the above |
46. Which of these terms is not associated with Association Analysis?
- | | |
|----------|---------------|
| a) Lift | c) Confidence |
| b) Trust | d) Support |
47. Which of these industries can use Robotic Process Automation (RPA)?
- | | |
|------------------|------------------------|
| a) Healthcare | c) Travel and Logistic |
| b) Manufacturing | d) All of the above |
48. How many design principles are applied for Industry 4.0?
- | | |
|------|------|
| a) 6 | c) 2 |
| b) 4 | d) 5 |
49. What is a Raspberry Pi?
- | | |
|----------------------|----------------------|
| a) A mini computer | c) A sensor |
| b) A wireless dongle | d) None of the above |
50. What is the benefit of applying advanced analytics in industries?
- | | |
|-----------------------|----------------------|
| a) Automation | c) Both (a) and (b) |
| b) Advanced analytics | d) None of the above |

Disclaimer: The sample paper is for illustrative purposes alone. The actual jet exam may contain different numbers of total questions or duration.

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