Test Booklet Series

A

Paper No.

01

Written Test Paper, 2021

SKILL INSTRUCTOR (MECHANICAL)

Test Booklet No.

Name of Applicant ..... Answer Sheet No. .....

Application No. : SVSU/2020/Estt/NT/ ..... Signature of Applicant : .....

Date of Examination: **25 / 12 / 2021**

Signature of the Invigilator(s)

1. .....

Time of Examination : .....

2. .....

Duration : 60 Minutes] **[Maximum Marks : 50**

IMPORTANT INSTRUCTIONS

(i) The question paper is in the form of Test-Booklet containing **50 (Fifty)** questions. All questions are compulsory. Each question carries four answers marked (A), (B), (C) and (D), out of which only one is correct.

(ii) On receipt of the Test-Booklet (Question Paper), the candidate should immediately check it and ensure that it contains all the pages, i.e., **50** questions. Discrepancy, if any, should be reported by the candidate to the invigilator immediately after receiving the Test-Booklet.

(iii) A separate Answer-Sheet is provided with the Test-Booklet/Question Paper. On this sheet there are **50** rows containing four circles each. One row pertains to one question.

(iv) The candidate should write his/her Application number at the places provided on the cover page of the Test-Booklet/Question Paper and on the Answer-Sheet and NOWHERE ELSE.

(v) No second Test-Booklet/Question Paper and Answer-Sheet will be given to a candidate. The candidates are advised to be careful in handling it and writing the answer on the Answer-Sheet.

(vi) For every correct answer of the question **One (1) mark will be awarded.** For every unattempted question, Zero (0) mark shall be awarded. **There is no Negative Marking.**

(vii) Marking shall be done only on the basis of answers responded on the Answer-Sheet.

(viii) To mark the answer on the Answer-Sheet, candidate should **darken** the appropriate circle in the row of each question with Blue or Black pen.

(ix) For each question only **one** circle should be **darkened** as a mark of the answer adopted by the candidate. If more than one circle for the question are found darkened or with one black circle any other circle carries any mark, the question will be treated as cancelled.

(x) The candidates should not remove any paper from the Test-Booklet/Question Paper. Attempting to remove any paper shall be liable to be punished for use of unfair means.

(xi) Rough work may be done on the blank space provided in the Test-Booklet/Question Paper only.

(xii) *Mobile phones (even in Switch-off mode) and such other communication/programmable devices are not allowed inside the examination hall.*

(xiii) No candidate shall be permitted to leave the examination hall before the expiry of the time.

DO NOT OPEN THIS QUESTION BOOKLET UNTIL ASKED TO DO SO.

[P.T.O.

1. Effects of a force on a body depends upon
   (A) Magnitude
   (B) Direction
   (C) Position or line of action
   (D) All the above

2. Which of the following is a vector quantity?
   (A) Energy
   (B) Mass
   (C) Momentum
   (D) Angle

3. Which of the following is not a laminar composite?
   (A) Cladding
   (B) Bimetallic
   (C) Wood
   (D) Paints

4. Mild steel belongs to the following category
   (A) Low carbon steel
   (B) Medium carbon steel
   (C) High carbon steel
   (D) All the above

5. Slow and plastic deformation of metal under constant stress
   (A) Creep
   (B) Fatigue
   (C) Toughness
   (D) All the above

6. Delta iron occurs at the temperature of
   (A) Above melting point
   (B) At room temperature
   (C) b/w 1400 and 1539
   (D) b/w 910 and 1400

7. What we call the resistance of a material against any external force.
   (A) Malleability
   (B) Stiffness
   (C) Hardness
   (D) Strength

8. Which hardness test uses the steel ball as indenter?
   (A) Rockwell C hardness test
   (B) Brinell Hardness test
   (C) Rockwell B hardness test
   (D) Vickers hardness test

9. In which test, the specimen will be used in the form of the supported beam
   (A) Charpy Test
   (B) Brinell Test
   (C) Izod test
   (D) Rockwell hardness test

10. Which metal from the following has the non-crystalline structure?
   (A) Quartz
   (B) Silica Glass
   (C) Tungsten
   (D) Iron

11. Which of the following has less crystallinity?
   (A) Nickel
   (B) Iron
   (C) Low-density polythene
   (D) High-density polythene

12. Which of the following axis system is being satisfied by tetragonal crystal system?
    (A) $a \neq b \neq c, \alpha = \beta = \gamma = 90°$
    (B) $a = b \neq c, \alpha = \beta = \gamma = 90°$
    (C) $a = b = c, \alpha \neq \beta = \gamma = 90°$
    (D) $a = b = c, \alpha = \beta = \gamma = 90°$

13. Which one of the following is least symmetrical?
    (A) Simple Cubic
    (B) Triclinic
    (C) Monoclinic
    (D) Tetragonal

14. ASTM stands for?
    (A) American Society for Testing and Materials
    (B) American Society for Tool Measurement
    (C) American Society for Tensile Material
    (D) American Society for Tensile Measurement

15. What is the scale range of the Mohs hardness test?
    (A) 1 - 10
    (B) 1 - 1000
    (C) 100 - 200
    (D) 1 - 3000

16. What is the first step involved in the process of preparing test samples for microstructural examination?
    (A) Fine grinding
    (B) Rough polishing
    (C) Etching
    (D) Fine polishing

17. Etching of specimen is done to achieve
    (A) Invisible grain boundary
    (B) Visible grain boundary
    (C) Hardness
    (D) Toughness

18. Which equipment can be used for the inspection of the inside portion of the hollow chamber or narrow tube?
    (A) Telescope
    (B) Endoscope
    (C) Flexiscope
    (D) Borescope

19. Which of the following property is the fine-grained structure?
    (A) Corrosion resistance
    (B) Ductility
    (C) Hardness
    (D) Creep resistance

20. Which penetrating liquid is used for the liquid penetration test?
    (A) Fluorine based solvent
    (B) Petroleum-based carrier fluid
    (C) Chlorine-based solvent
    (D) Water

21. Which of the following non-destructive testing is used to detect the change in the composition of any material?
    (A) Ultrasonic Test
    (B) Liquid penetration test
    (C) Radiography
    (D) Eddy current test

22. What is the melting point of iron (in ºC)?
    (A) 1535
    (B) 1410
    (C) 910
    (D) 768

23. What is the Iron-Carbon phase diagram?
    (A) Unary phase diagram
    (B) Binary phase diagram
    (C) Tertiary phase diagram
    (D) Ternary phase diagram

24. Which of the following reaction does not exhibit a mushy zone in the Fe-C phase diagram?
    (A) Peritectic reaction
    (B) Eutectic reaction
    (C) Peritectoid reaction
    (D) Eutectoid reaction

25. Which of the following material has the carbon varying from 2.1 to 4.3%?
    (A) Mild steel
    (B) Dead steel
    (C) Cast iron
    (D) Medium carbon steel

26. Which of the following material has the carbon varying from 4.3 to 6.67%?
    (A) Mild Steel
    (B) Pig Iron
    (C) Cast Iron
    (D) Medium carbon steel

27. Which equation represents the Gibbs phase rule?
    (A) $F = C - P + 2$
    (B) $F = C + P + 2$
    (C) $F = C + P - 1$
    (D) $F = C + P + 1$

28. The invariant reaction involving a liquid phase decomposing into two different solids on cooling is known as
    (A) Eutectic point
    (B) Eutectoid point
    (C) Peritectoid point
    (D) Peritectic point

29. The Line joining a liquid phase with liquid and solid phase mixture is known as
    (A) Solidus
    (B) Liquidus
    (C) Solvus
    (D) Tie line

30. The line joining a solid phase with liquid and solid phase mixture is known as
    (A) Solidus
    (B) Liquidus
    (C) Solvus
    (D) Tie Line

31. Cast iron is a product of
    (A) Bessemer converter
    (B) Cupola
    (C) Blast Furnace
    (D) Open hearth furnace

32. Wrought iron is a product of
(A) Bessemer converter
(B) Cupola
(C) Puddling furnace
(D) Blast furnace

33. Which of the following induces fine-grain distribution in alloy steel?
(A) Vanadium
(B) Nickel
(C) Titanium
(D) Manganese

34. Tensile strength of alloy steel can be improved by adding -
(A) Vanadium
(B) Nickel
(C) Titanium
(D) Manganese

35. Which of the following is the hardest constituent of steel?
(A) Austenite
(B) Ledeburite
(C) Martensite
(D) Bainite

36. Iron possesses BCC crystal structure up to (in degree centigrade)?
(A) 768
(B) 910
(C) 1410
(D) 1539

37. Which of the following form of iron is magnetic?
(A) α
(B) δ
(C) γ
(D) λ

38. Which of the following methods is best for examining surface flaws on the castings?
(A) Magnetic particle inspection
(B) Pressure test
(C) Acoustic emission test
(D) Visual Inspection

39. Which of the following types of light is preferred for using fluorescent penetrant in liquid penetrant testing (LPT) method?
(A) Monochromatic Light
(B) Normal Light
(C) Red Light
(D) Ultraviolet Light

40. Which of the following processes is preferred for preparing aluminium ingots for the liquid penetrant testing method?
(A) Caustic etching
(B) Machining
(C) Acid pickling
(D) Grinding

41. Which of the following inspections is used for detecting invisible surface defects in a nonmagnetic casting?
(A) Dye penetrant inspection
(B) Visual inspection
(C) Ultrasonic inspection
(D) Radiography examination

42. Which of the following methods is best for detecting interior flaws in the castings?
(A) Visual inspection
(B) Liquid penetrant test
(C) Ultrasonic inspection
(D) Magnetic particle inspection

43. Which of the following was not a classification of a subject taking the MFFT?
(A) Slow in-accurate
(B) Slow accurate
(C) Reflective
(D) Fast-Accurate

44. Which of the following parameter is used to assess the magnetic ability of a material?
(A) Magnetization
(B) Magnetic flux density
(C) Susceptibility
(D) Magnetic dipole moment

45. With an increase in temperature, the resistance of a semiconductor
(A) Decreases
(B) Increases
(C) Remains Constant
(D) First increases and then decreases

46. What is the polymerization of two or more chemically different monomers forming a long molecular chain?
(A) Copolymerization
(B) Addition Polymerization
(C) Chain growth polymerization
(D) Condensation polymerization

47. Which of the following is a secondary bond network of thermoplastics?
(A) 0-Dimensional
(B) 1-Dimensional
(C) 2-Dimensional
(D) 3-Dimensional

48. Which of the following are ceramics solids?
(A) Non-metallic, organic, and amorphous solids
(B) Non-metallic, inorganic, and crystalline solids
(C) Metallic, inorganic, and amorphous solids
(D) Non-metallic, inorganic, and amorphous solids

49. Angle between side cutting edge and end cutting edge in the top surface plane of the tool.
(A) Side relief angle
(B) Side rake angle
(C) Nose angle
(D) Side cutting edge angle

50. Which one of the following can act as a modifier in the glass-forming process?
(A) Sodium oxide
(B) Silicon dioxide
(C) Phosphorous oxide
(D) Magnesium oxide

ROUGH WORK

ANSWER KEY Skill Instructor(MECHANICAL))

1. D	26. B
2. C	27. A
3. C	28. A
4. A	29. B
5. A	30. A
6. C	31. B
7. D	32. C
8. B	33. A
9. C	34. B
10. B	35. C
11. C	36. A
12. B	37. A
13. C	38. D
14. A	39. D
15. A	40. C
16. A	41. A
17. B	42. C
18. D	43. B
19. B	44. C
20. B	45. A
21. C	46. A
22. A	47. B
23. B	48. D
24. B	49. D
25. C	50. D