JUNIOR LAB ASSISTANT (MME)

PART-A

1. Identify the error (if any) in the sentence given below:
The call of the seas have always found an echo in me.
   A. The call of the seas
   B. have always found
   C. an echo in me
   D. No error

2. Ramesh has a meeting with Rohit at the same date.
   A. Ramesh has
   B. a meeting with Rohit
   C. at the same date
   D. No error

3. In the following question, pick out the most effective word from the given choices to fill in the blank to make the sentence meaningfully correct.
Irregular supply of electricity can ..... in wastage of electricity.
A. cause B. affect C. effect D. result

4. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives given, choose the one which best expresses the same sentence in Passive/Active voice.
I saw him leaving the house.
   A. He had been seen leaving the house.
   B. He was seen to be leaving the house.
   C. Leaving the house he was seen by me.
   D. He was seen leaving the house by me.

5. In the following question, a sentence has been given in Direct/Indirect Speech. Out of the four alternatives given, choose the one which best expresses the same sentence in Indirect/Direct Speech.
He said to her, "Don't read so fast."
   A. He told her not to read so fast.
   B. He advised her don't read so fast.
   C. He requested her not to read so fast.
   D. He ordered her not to read so fast.

6. Who was the founder of Nanda dynasty in Magadha?
A. Mahapadma Nanda B. Dhana Nanda C. Nandi Vardhan D. Mahanandin

7. The layer which is found below the crust of the earth is?
A. Trench B. Mantle C. Core D. Ridge

8. What does GNP stand for?
A. Gramin Nigam Limited
B. Gramin Nisak Product
C. Gross National Product
D. Grocery National Production

9. Where is the National Institute of Hydrology (NIH) located?
A. Roorkee B. Shimla C. Guwahati D. Chennai

10. Who is the first Asian man to be nominated for International Tennis Hall of Fame?
A. Leander Paes B. Mahesh Bhupathi C. Rohan Bopanna D. Yuki Bhambri

11. How many 3-digit numbers are there in between 100 and 300, having first and the last digit as 2?
A. 9 B. 10 C. 11 D. 12

12. A man's basis pay for a 40 hours' week is Rs. 200. Overtime is paid at 25% above the basic rate. In a certain week, he worked over time and his total was Rs. 300. He, therefore, worked for a total of (in hours)?
A. 52 B. 56 C. 58 D. 62

13. Four years ago, the average age of A and B was 18 years. At present the average age of A, B and C is 24 years. What would be the age of C after 8 years.
A. 25 years B. 28 years C. 32 years D. 36 years

14. Raghav spends 80% of his income. If his income increases by 12% and the savings decrease by 10%, then what will be the percentage increase in his expenditure?
A. 20.5 B. 16 C. 17.5 D. 22

15. A carpenter is designing a table. The table will be in the form of a rectangle whose length is 4 feet more than its width. How long should the table be if the carpenter wants the area of the table to be 45 sq ft?
A. 6 ft B. 9 ft C. 11 ft D. 13 ft

16. In the following question, there is a certain relationship between two given words on one side of : : and one word is given on another side of : while another word is to be found from the given alternatives.
Milk : Emulsion : : Butter : ?
A. Aerosol B. Suspension C. Sol D. Gel

17. Select the number that can replace the question mark (?) in the following series.
87, 89, 92, 97, 104, 115, ?, 145
A. 125 B. 128 C. 133 D. 132

18. In the following question consist of two words each that have a certain relationship to each other, followed by four lettered pairs of words. Select the lettered pair that has the same relationship as the original pair of words printed in bold.
Termite : Wood
A. Neem : Cotton B. Fibre : Jute C. Thread : Cloth D. Moth : Wool

19. Unscramble the letters in the words given in this question and find the odd one out?
A. ULME B. RIGTE C. KYDENO D. LCEAM

20. Study the following alphabetical sequence and answer the question following it.
ABBCDEFEIBCAFECBBACAOBNUVW
Question: If all the vowels are dropped from the series, then which alphabet will be eighth from the left end?
A. C B. B C. N D. F

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PART- B

1) The miller indices of the face planes of any cubic system is
   A. 110
   B. 120
   C. 111
   D. 100
2) In BCC unit cell, the highest atomic density lies in _____ plane
   A. 111
   B. 120
   C. 110
   D. 001
3) Highest planar density in HCP structure is on _____ plane
   A. Basal
   B. Pyramidal
   C. Prismatic
   D. None of the options
4) The highest packing efficiency is obtained in
   A. BCC unit cell
   B. FCC unit cell
   C. SC unit cell
   D. BCT unit cell
5) Packing fraction of simple cubic (SC) structure is
   A. 0.34
   B. 0.52
   C. 0.74
   D. 0.68
6) The reaction in which a liquid phase transform into two different solid phases is called
   A. Eutectoid reaction
   B. Peritectic reaction
   C. Eutectic reaction
   D. Peritectoid reaction
7) White iron structure consists of
   A. Pearlite
   B. Cementite
   C. Ferrite
   D. Pearlite and cementite
8) Which of the following phase of steel is NOT present in Iron-Carbon phase diagram?
   A. Ferrite
   B. Martensite
   C. Cementite
   D. Austenite
9) What is the range of the carbon content in steel?
   A. 0 - 0.8 wt.%
   B. 0 - 2.0 wt.%
   C. 0 - 4.4 wt.%

D. 0 - 6.67 wt.%

10) The eutectic percentage of carbon in iron is
   A. 0.025 wt.%
   B. 0.15 wt.%
   C. 2.03 wt.%
   D. 4.33 wt.%

11) The reaction in which a liquid phase transform into two different solid phases is called
   A. Eutectoid reaction
   B. Peritectic reaction
   C. Eutectic reaction
   D. Peritectoid reaction

12) When solidification starts, iron will appear in _____ form.
   A. Alpha
   B. Beta
   C. Delta
   D. Gamma

13) γ- iron has _____ structure:
   A. BCC
   B. HCP
   C. SC
   D. FCC

14) Impact testing is used to measure the fracture toughness of material by evaluating
   A. Energy absorbed
   B. Strain endured
   C. Stress absorbed
   D. Both stress and strain

15) Which kind of hardness measurement is based on depth of indentation?
   A. Brinell
   B. Vickers
   C. Knoop
   D. Rockwell

16) Failure by fatigue occurs predominantly by
   A. Mixed mode
   B. Brittle fracture
   C. Ductile fracture
   D. Fibrous fracture

17) DBTT stands for
   A. Ductile Brittle Transition Test
   B. Ductile Brittle Test Temperature
   C. Ductile Brittle Transformation Test
   D. Ductile Brittle Transition Temperature

18) Which one of the following is the 1D defect in a material?
   A. Grain boundary
   B. Voids
   C. Cracks

D. Dislocations

19) Plastic deformation region of stress-strain plot is expressed by
   A. Arrhenius Type Relation
   B. Hook's law
   C. Power law
   D. Anstis Equation

20) Resilience is expressed as area under the stress-strain plot till
   A. Necking point
   B. Yield point
   C. UTS point
   D. Failure point

21) What kind of deformation is related to hardness measurement
   A. Elastic
   B. Viscoelastic
   C. Anelastic
   D. Plastic

22) In edge dislocation, the dislocation line and slip Vector is
   A. randomly oriented to each other
   B. Perpendicular to each other
   C. Parallel to each other
   D. None of the options

23) Which one of the following has lowest toughness
   A. Composites
   B. Polymers
   C. Ceramics
   D. Metals

24) Strain hardening occurs
   A. After YS
   B. After UTS
   C. After necking
   D. After uniform elongation

25) As compared to engineering stress, true stress at necking start point is
   A. Same
   B. Unrelated
   C. Higher
   D. Lower

26) The cooling rate must be _____ the critical cooling rate for hardening of steel by quenching
   A. Higher than
   B. Lower than
   C. Equal to
   D. Half to

27) Phase transformation during hardening transforms _____
   A. BCC to FCC
   B. FCC to BCT

C. BCT to HCP
D. FCC to HCP

28) _____ is defined as the ease of forming martensite.
A. Hardness
B. Hardenability
C. Toughness
D. Strength

29) Hardenability of a material can be measured using _____ test.
A. Jominy end-quench
B. Charpy
C. Rockwell
D. Izod

30) The purpose of flux in blast furnace is to
A. Bring down the softening point of the gangue materials
B. Reduce the viscosity of the slag
C. To maintain proper basicity
D. All the options

31) High top pressure in the blast furnace
A. Decreases the time of contact between gas and solid
B. Increases the time of contact between gas and solid
C. Increases fuel consumption
D. Increases the rate of solution loss reaction

32) The deadman's zone in the blast furnace consists of
A. Closely packed central column of coke limestone and iron ore
B. Gases only
C. Closely packed central column of coke only
D. Column of hot metal and slag

33) Scaffolding is a
A. Large mass of that material gets stuck to the furnace wall
B. excessive blast pressure resulting in counteracting the downward movement of stock
C. Both the options
D. None of the options

34) Select the correct statement for a blast furnace
A. Hearth diameter is greater than bosh diameter
B. Stack is water cooled
C. Liquid slag comes out through tuyeres
D. Tuyeres are located above the bosh

35) Identify the incorrect statement with reference to L.D. steel making
A. The temperature of L.D. furnace is maintained at around 1600°C
B. The basicity of slag is maintained at around unity
C. Dephosphorisation and decarburisation should proceed simultaneously
D. High silicon hot metal may lead to sloping

36) In continuous casting of liquid steel, the mould is made of
A. Water cooled steel

B. Water cooled copper
C. Refractory oxide
D. Silicon carbide

37) The nozzle used in the lance of the L.D. steel making process is
A. Convergent
B. Divergent
C. Convergent-divergent
D. Divergent-Convergent

38) Modern electric arc furnace uses
A. Low current high voltage
B. High current high voltage
C. High current low voltage
D. Low current low voltage

39) Which of the following are the protective measures to prevent the metals from corrosion?
A. Non-metallic coatings
B. Coating with paint
C. Enamelling
D. All the options

40) Crevice corrosion takes place due to _____
A. Localized peeling of oxide layer
B. Concentration difference of ions in solution
C. High stresses at localized portion
D. Alloying of two different type of materials

41) Which kind of corrosion is difficult to monitor and is very dangerous for metal?
A. Pitting corrosion
B. Stress corrosion
C. Galvanic corrosion
D. Crevice corrosion

42) Which thermosetting resin is used in the mounting of the specimen in metallography
A. Thiolyte
B. Bakelite
C. Silicone
D. Urea formaldehyde

43) How much pressure is applied for molding of Bakelite during mounting?
A. 1000 psi
B. 2000 psi
C. 4000 psi
D. 6000 psi

44) Which of the following welding processes uses non-consumable electrodes?
A. TIG welding
B. MIG welding
C. Manual arc welding
D. Submerge arc welding

45) Arc stability is better with
A. AC welding

B. DC welding
C. Both AC and DC welding
D. Rectified supply

46) The gases used in tungsten inert gas welding are
A. Helium and neon
B. Argon and helium
C. Ozone and neon
D. None of the options

47) Which one of the following is the permanent mould casting process
A. Investment casting process
B. Full mould process
C. Vacuum casting process
D. Die casting process

48) Additive manufacturing is also called
A. Non-traditional manufacturing
B. 3-D printing
C. Laser welding technique
D. Plasma addition manufacturing

49) Hot working of metals is carried out
A. At the recrystallization temperature
B. Below the recrystallization temperature
C. Above the recrystallization temperature
D. Just above the melting temperature

50) The commonly used frequency range for ultrasonic testing is
A. 5Hz-10Hz
B. 10Hz-20Hz
C. 20kHz-10MHz
D. 50MHz -100MHz

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