WRITTEN TEST FOR EDUCATION ASSISTANT 'A'

Name of the Candidate:_____   **Full Marks: 100**

Signature:_____   **Duration: 2 Hours**

Roll No._____   Date: 22.11.2023.

General Instructions:-

1. All the questions are compulsory.
2. To answer objective type questions put a (✔) mark on the correct answer in the question paper itself from the alternatives given below each question. No negative marks for wrong answers.
3. For answering Descriptive type question, use separate sheet to be provided.
4. No mobile phones/smart watch will be allowed in the examination hall.

_____

Objective questions   **(60 marks)**

Each question carries 1 mark. Choose the most appropriate answer:

1. If the sum of the 10 terms of an A.P. is 4 times to the sum of its 5 terms, then the ratio of first term and common difference is

   a) 1 : 2   b) 2 : 1

   c) 2 : 3   d) 3 : 2

2. A bag contains 2 white and 4 black balls. A ball is drawn 5 times with replacement. The probability that at least 4 of the balls drawn are white is

   a) 8/141   b) 10/243

   c) 11/243   d) 8/41

3. $196 \times 948 \div 158 = ?$

   a) 1156   b) 1200

   c) 1188   d) 1176

4. By selling a bicycle for Rs 2850, a shopkeeper gains 14%.If the profit is reduced to 8 %, then the selling price will be

a) 2600   b) 2700

c) 2800   d) 3000

5. The value of (1+ 1/x)[(1+1/(x+1)][(1+1/(x+2)][(1+ 1/(x+3)] will be?

a) 1+ 1/(x+4)   b) x+4

c) 1/x   d) (x+4)/x

6. A man completes a journey in 10 hours. He travels first half of the journey at the rate of 21 km/hr and second half at the rate of 24 km/hr. Find the total journey in km.

a) 220 km   b) 224 km

c) 230 km   d) 234 km

7. How many days are there in x weeks x days?

a) 7x2   b) 8x

c) 14x   d) 7

8. Find the odd man out.

396, 462, 572, 427, 671, 264
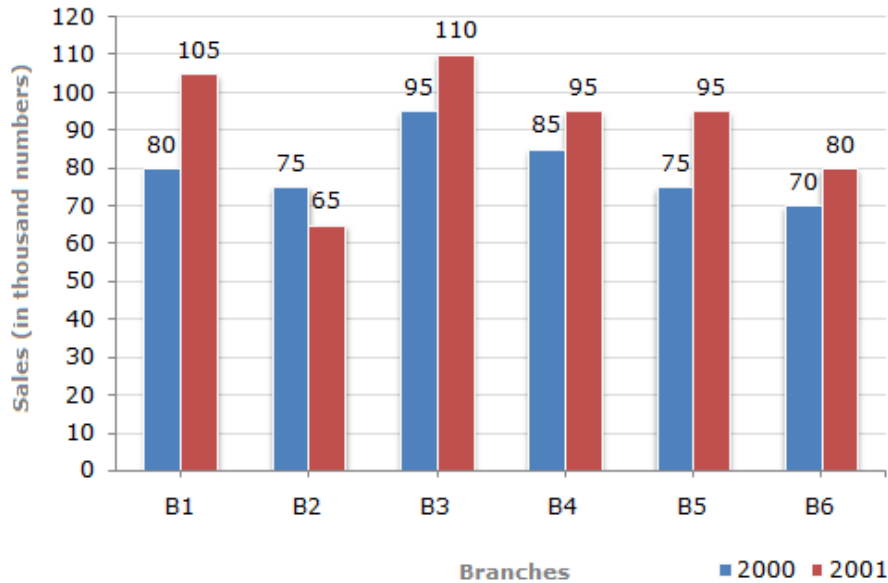
   a) 396   b) 427
   c) 671   d)264

9. If log 2 = 0.3010 and log 3 = 0.4771, the value of $\log_5$ 512 is:

 a) 2.870   b) 2.967
c) 3.876   d) 3.912

10. The bar graph given below shows the sales of books (in thousand number) from six branches of a publishing company during two consecutive years 2000 and 2001.

      Sales of Books (in thousand numbers) from Six Branches - B1, B2, B3, B4, B5 and B6 of a
      publishing Company in 2000 and 2001.

Total sales of branch B6 for both the years is what percent of the total sales of branches B3 for both the years?

a) 68.54%   b) 71.11%

c) 73.17%   d) 75.55%

11. Blueberries cost more than strawberries.

   Blueberries cost less than raspberries.

   Raspberries cost more than strawberries and blueberries.

If the first two statements are true, the third statement is

   a)   True   b) false   c)uncertain
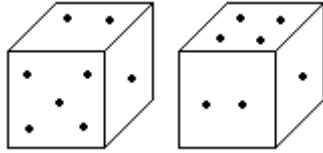
12. Here are some words translated from an artificial language.

           gorblflur means fan belt
           pixngorbl means ceiling fan
           arthtusl means tile roof

Which word could mean "ceiling tile"?

a) gorbltusl   b) flurgorbl
c) arthflur   d) pixnarth

13. Two positions of dice are shown below. How many points will appear on the opposite to the face containing 5 points?

  a)   3   b) 1

  c) 2   d) 4

14. A, B, C, D and E are sitting on a bench. A is sitting next to B, C is sitting next to D, D is not sitting with E who is on the left end of the bench. C is on the second position from the right. A is to the right of B and E. A and C are sitting together. In which position A is sitting?

a) Between B and D   b) Between B and C

c) Between E and D   d) Between C and E

15. AUGUST means
  a) Common   b) Ridiculous

  c) Dignified   d) Petty

16. What is the name of the submerged eighth continent that international scientists have created a refined map of?

  a) Lemuria   b) Zealandia

  c) Atlantis   d) Pangea

17. Which organization has hosted the "One Week One Lab" programme from 11th to 16th September 2023?

a) Indian Institute of Science

b) Ministry of Science and Technology

c) Department of Science and Technology
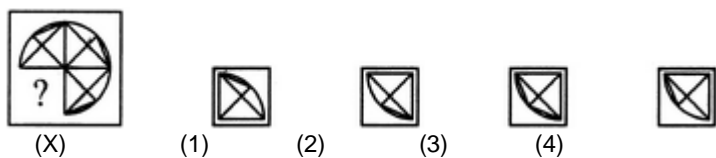
d) Council of Scientific and Industrial Research

18. In which country are scientists working on tooth regeneration to enable natural tooth regrowth, with clinical trials set to begin in 2024?

a) China   b) United States

c) Germany   d) Japan

19. In the last one decade, which one among the following sectors has attracted the highest foreign direct investment inflows into India?

    a) Chemicals other than fertilizers

    b) Services sector

    c) Food processing

    d) Telecommunication

20. Identify the figure that completes the pattern.

(X)　　　(1)　　(2)　　(3)　　(4)

    a) 1   b) 2
    c) 3   d) 4

21. Esterification is a reaction between carboxylic acid and
    a) Alcohol   b) Ketone

    c) Aldehyde   d) None of the above

22. Secondary amine reacts with nitrous acid to give
a) Alcohol   b) Nitrosoamine

c) Trialkylammonium nitrite   d) None of the above

23. The carbon-carbon distance in benzene ring is

a) 1.39 A^0 b) 1.54 A^0

c) 1.2 A^0 d) 0.4 A^0

24. The basicity order of the following is

 a) $C_6H_5NH_2 < NH_3 < CH_3NH_2$

 b) $C_6H_5NH_2 < CH_3NH_2 < NH_3$

 c) $NH_3 < C_6H_5NH_2 < CH_3NH_2$

 d) $NH_3 < CH_3NH_2 < C_6H_5NH_2$

25. Single electron movement in organic reaction mechanism represent by

a) double headed arrow

b) single headed arrow

c) double headed curved arrow

d) single headed curved arrow

26. The number of periods in modern periodic table is?

a) 6

b) 8

c) 5

d) 7

27. Baeyer's reagent is?

a) Alkaline KMnO4

b) Hot KMnO4

c) Conc. KMnO4

d) Acidic KMnO4

28. In the presence of _____, Chlorine act as a bleaching agent?

a) NaOH

b) HNO_3

c) HCL

d) H_2O

29. Ink spreads in water because of?

a) Dipole movement

b) Vapor pressure

c) Osmosis

d) Diffusion

30. The enormous quantity of water present on earth surface acts as giant thermostat due to its high?

a) Boiling Point

b) Density

c) Latent heat values

d) Heat Capacity

31. The rate of reaction can be calculated by dividing the change in mass or volume by

a) Total mass

b) Total volume

c) Time taken

d) Temp

32. Spermology is the study of

a) Seed

b) Leaf

c) Fruit

d) Pollen grain

33. Which of the following is not an Endocrine Gland?

a) Spleen   b) Pituitary

c) Thyroid   d) Adrenal

34. Only movable bone in the skull

a) Occipital bone   b) Frontal bone

c) Mandible   d) Temporal bone

35. Which of the following is known as the suicide bag of a cell?

a) Mitochondria   b) Golgi Complex

c) Lysosome   d) Nuclei

36. Which of the following cells release insulin when glucose levels elevate in the body?

a) gamma cells   b) beta cells

c) alpha cells   d) zeta cells

37. Which of the following enzyme is responsible for initiating DNA replication?

a) polymerase   b) ligase

c) primase   d) gyrase

38. The haploid set of human chromosomes consist of _____ chromosomes

a) 22   b) 23

c) 24   d) 25

39. ATP and GTP are _____

a) cells   b) receptors

c) nucleotides   d) nucleic acids

40. Which is not correctly matched?

a) Liver-Kupffer cells   b) Pancreas-Glisson's capsule

c) Kidney-nephrons   d) Testis-seminiferous tubules

41. Insulin deficiency causes

a) Diabetes insipidus   b) Goitre

c) Diabetes mellitus   d) All of the above

42. Most commonly used tranquilizers are derivates of :
a) Acetic Acid   b) Salicyclic Acid

c) Barbituric Acid   d) Sulphanilamide

43. In elephants, which teeth are grown into huge tusks?

   a) Incisors of the lower jaw   b)Canines of the upper jaw

   c) Incisors of the upper jaw   d)Molars of the lower jaw

44. Which of the following is NOT a conservative force?
a) Electrostatic force   b) Magnetic force

 c) Force in an elastic spring   d) Frictional force

45. Which of the following are the cases of use of concave mirrors?
a) Search-lights   b) Shaving mirrors

c) Solar furnaces   d) All of the above

46. An object covers distance which is directly proportional to the square of the time. Its acceleration is

a) increasing

b) decreasing

c) zero

d) constant

47. The unit of Electric Field is:

a) N/C   b) N/m

c) J/C   d) Volt

48. Rest mass energy of an electron is

a) 1.02 MeV(Million Electron Volts)

b) 0.511KeV(kilo Electron Volts)

c) 0.511 MeV

d) 2.02 MeV

49. Convex mirror formed image is_____

a) Real, erect and magnified   b) Virtual, real

c) Virtual, erect and diminished   d) Real and inverted

50. The work done in a moving body from one place to another place in a gravitational field is independent of …

a) The applied force   b) The path followed by the body

c) Force of gravity   d) The power Consumed

51. In SI base units, 1 Bq(Becquerel) is equal to

a) 10 disintegration per second   b) 5 disintegration per second

c) 1 disintegration per second   d) None of above

52. If Air is the dielectric between plates of a capacitor, by doubling the distance between the plates and reducing the area to 1/3 of the original value, its capacitance becomes

a) 6 times   b) 90 times

c) 10 times   d) 1/6 times

53. Shock absorbers of the car is a practical example of
a) Forced oscillations   b) Damped oscillations

c) Undamped oscillations   d) Simple oscillations

54. When the length of a microscope tube increase, its magnifying power
a)Does not Change

b)Increases

c)Decreases

d)May increase or decrease depending on the observer and the place of observation

55. The percentage errors in the measurements of mass and speed are 2% and 3% respectively. How much will be the maximum error in the estimate of the kinetic energy obtained by measuring mass and speed:

a) 5%   b)1%

c)11%   d) 8%

56. Which one of the following is a simple harmonic motion?

a) Wave moving through a string fixed at both ends

b) Particle moving in a circle with uniform speed

c) Earth spinning about its own axis

d) Ball bouncing between two rigid vertical walls

57. A ten-ohm electric heater operates on a 110 V line. Calculate the rate at which it develops heat in watts:

a) 1310 W   b) 810 W

c) 1210 W   d) 670 W

58. The transition zone for Raman spectra is _____

a) Between vibrational and rotational levels   b) Between magnetic levels of nuclei

c) Between electronic levels   d) Between magnetic levels of unpaired electrons

59. Luminescence is because of

a) Photons emitted while excited electrons drops down

b) Knocking out of electrons by photons

c) Photons stimulated by photons

d) All

60. The magnetic dipole moment of a solenoid having N turns, I current and A cross sectional area is given as -

 a)NIA^2 b) NIA

c) NI^2A d) NI^2A^2

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Descriptive questions (40 marks)

1. Write short notes (any two) from the following? 10X2

   a) Aditya L1 mission
   b) Covaxin
   c) Noble prize 2023 (Chemistry)
   d) G20 summit 2023

2. Answer any *one* questions : 20

   a) State and prove Gauss Divergence Theorem.
   b) Discuss water treatment by a) Ion-exchange b) Reverse osmosis c) Electro dialysis
   c) What do you mean by body symmetry? Classify animals on the basis of it.
   d) Calculate curl & divergence of: F = 2xi+ (5y+9z) j +(-9y)k