NALANDA PUBLIC SCHOOL, CUTTACK

SCHOLARSHIP CUM ENTRANCE TEST - 2022

Time Allowed : 90 Mins.   **Maximum Marks : 60**

GENERAL INSTRUCTIONS :
1. *Before starting the paper, fill up the required details in the blank space provided in the answer sheet.*
2. *The question paper consists of '60' objective type questions. Each question carry 1 marks and all of them are compulsory.*
3. *Each question contains four alternatives out of which only ONE is correct.*
4. *There is NO NEGATIVE marking.*

PHYSICS

1.   What is the rate of flow of electric charges called?
    (a) Electric potential
    (b) electric conductance
    (c) Electric current
    (d) none of these
2.   Which of the following is the SI Unit of Electric Current?
    (a) ohm
    (b) ampere
    (c) volt
    (d) faraday
3.   Which instrument is used for measuring electric potential?
    (a) Ammeter
    (b) galvanometer
    (c) voltmeter
    (d) potentiometer
4.   When one unit electric charge moves from one point to another point in an electric circuit, then the amount of work done in joules is known as?
    (a) Electric current
    (b) electric resistance
    (c) electric conductance
    (d) potential difference
5.   A concave mirror gives virtual, refract and enlarged image of the object but image of smaller size than the size of the object is
    a. At infinity
    b. Between F and C
    c. Between P and F
    d. At E
6.   In optics an object which has higher refractive index is called
    a. Optically rarer
    b. Optically denser
    c. Optical density
    d. Refractive index
7.   Which energy source is the largest source used in India?
    a. CNG
    b. LPG
    c. Coal
    d. Bio Gas
8.   Which of the following is normally used in solar cookers for trapping solar energy?
    a. Solar panels
    b. Silicon cells
    c. Mirrors
    d. Any of above
9.   The amount of light entering the human eye is controlled by

a. Ciliary muscles
b. Pupil
c. Cornea
d. Iris

10. The part of the eyes refracts light entering the eye from external objects?
    a. Lens
    b. Cornea
    c. Iris
    d. Pupil

11. What happens to the current in short circuit?
    a. reduces substantially
    b. .does not change
    c. increases heavily
    d. vary continuously

12. An alpha particle is diverted towards west is deflected towards north by a field. The field is magnetic. What will be the direction of field?
    a. Towards south
    b. towards east
    c. downward
    d. upward

CHEMISTRY

13. Which of the following statements about the given reaction are correct ?

    a) $3Fe(s) + 4H_2O(g) \rightarrow Fe_3O_4(s) + 4H_2(g)$

    i) Iron metal is getting oxidised

    ii) Water is getting reduced

    iii) Water is acting as reducing agent

    iv) Water is acting as oxidising agent

    a) (i), (ii) and (iii)

    b) (ii) and (iv)

    c) (i), (ii) and (iii)

    d) (ii) and (iv)

14. Oxidation is a process which involves
    a) addition of oxygen
    b) addition of hydrogen
    c) removal of oxygen
    d) removal of hydrogen

15. When Ag is exposed to air it gets a black coating of
    a) $AgNO_3$ b) Ag_2S c) Ag_2O d) Ag_2CO_3

16. In terms of acidic strength, which one of the following is in the correct increasing order ?
    a) Water < Acetic acid < Hydrochloric acid
    b) Water < Hydrochloric acid < Acetic acid
    c) Acetic acid < Water < Hydrochloric acid
    d) Hydrochloric acid < Water < Acetic acid

17. Tomato is a natural source of which acid ?
    a) Acetic acid   b) Citric acid   c) Tartaric acid d) Oxalic acid

18. $Na_2CO_3 .10H_2O$ is
    a) Washing soda   b) Baking soda
    c) Bleaching powder   c) Tartaric acid

19. The most abundant metal in the earth's crust is
    a) Iron   b) Aluminium   c) Calcium   d) Sodium

20. The poorest conductor of heat among metals is
    a) Lead   b) Mercury   c) Calcium   d) Sodium

21. Which of the following are not ionic compounds ?

i) KCl   ii) HCl   iii) CCl_4 d) NaCl

a) (i) and (ii)   b) (ii) and (iii)   c) (iii) and (iv)   d) (i) and (iii)

22. C_3H_8 belongs to the homologous series of

a) Alkynes   b) Alkenes   c) Alkanes   d) Cyclo alkanes

23. The number of isomers of pentane is

a) 2   b) 3   c) 4   d) 5

24. Where would you locate the element with electronic configuration 2, 8 in Modern Periodic Table ?

a) Group 8   b) Group 2   c) Group 18   d) Group 10

MATHEMATICS

25. For which value of 'a' and 'b' does the following pair of linear equations have an infinite number of solutions.

2x +3y = 7; (a-b)x + (a+b)y = 3a+b-2

a) a=5, b=1   b) a=4, b = 2   c) a = 1, b= 5   d) a=2, b= 4

26. If the LCM of a and 18 is 36 and the HCF of a and 18 is 2, then a =

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

27. Four watches are ringing alarm bells in the interval of 6, 12, 15 and 15 seconds. If they start at the same time, how many times they will ring together in 4 hours ?

a) 80   b) 81   c) 20   d)21

28. Find the nature of solution of the system of linear equations give by 3x+ 4y =5 and 4x – 6y = 8

a) Unique solution   b) No solution

c) infinitely many solutions   d) inadequate data

29. If x +y = 5 ; then find the value of $x^3 + y^3 + 15xy -125$

a) 5   b) 0   c) 1   d) 25

30. The value of x + y in the solution of equations

$\dfrac{x}{4}+\dfrac{y}{3}=\dfrac{5}{12}$ and $\dfrac{x}{2}+ y =1$ is

a) $\dfrac{1}{2}$ b) $\dfrac{3}{2}$ c) 2   d) $\dfrac{5}{2}$

31. In an examination, 34% of the students failed in Mathematics and 42% failed in English. If 20% of the students failed in both the subjects, then the percentage of students who passed in both the subject was

a) 44   b) 50   c) 54   d) 54

32. In a Δ ABC , $\angle C = 3\angle B = 2(\angle A + \angle B)$. Find the three angles

a) $20^0, 40^0, 120^0$ b) $60^0, 20^0, 100^0$

c) $120^0, 20^0, 40^0$ d) $10^0, 40^0, 130^0$

33. The clustering of data around a central value of known as :

a) mean   b) mode   c) media   d) central tendency

34. Find a quadratic polynomial whose zeroes are (2a+1) and (2b+1) if a and b are the zeroes of the polynomial f(t) =$2t^2$ -7t + 6 .

a) $2t^2$ -9t + 10   b) t^2 -9t + 20   c) t^2 - 7t + 10   d) $2t^2$ - 7t + 10

35. In a right triangle, perpendicular is 1 and hypotenuse is 2. Find the value of

    a) $\sqrt{3}$ b) $\dfrac{1}{\sqrt{3}}$ c) $\dfrac{1}{2}$ d) $\dfrac{1}{\sqrt{2}}$

36. Which of the following is a pair of coprimes ?
    a) (14, 35)   b) (18, 25)   c) (31, 93)   d) 32, 62)

BIOLOGY

37. The chlorophyll in photosynthesis is used for
    I. Absorbing light
    II. Breaking down water molecule
    III. No function
    IV. Reduction of CO_2

38. Proteins after digestion are converted into
    I. Carbohydrates
    II. Small globules
    III. Amino acids
    IV. starch

39. Carbohydrates in the plants are stored in the form of
    I. Glycogen
    II. Starch
    III. Glucose
    IV. Maltose

40. Main site of photosynthesis
    I. Leaf
    II. Stem
    III. Chloroplast
    IV. Guard cells

41. The small pores present of leaf's surface are called
    I. Stomata
    II. Chlorophyll
    III. Guard cells
    IV. None of these

42. Photosynthesis is a
    I. Catabolic process
    II. Parabolic process
    III. Amphibolic process
    IV. Photochemical l process

43. Opening and closing of pores is a function performed by
    I. Stomata
    II. Chlorophyll
    III. Chloroplast
    IV. Guard cells

44. Which element is used in the synthesis of proteins?
    I. Hydrogen
    II. Oxygen
    III. Nitrogen
    IV. Carbon dioxide

45. Temporary finger like extensions on amoeba are called
    I. Cell membrane
    II. Cell wall
    III. Pseudopodia
    IV. Cilia

46. Bile juice is secreted by
    I. Stomach
    II. Pancreas
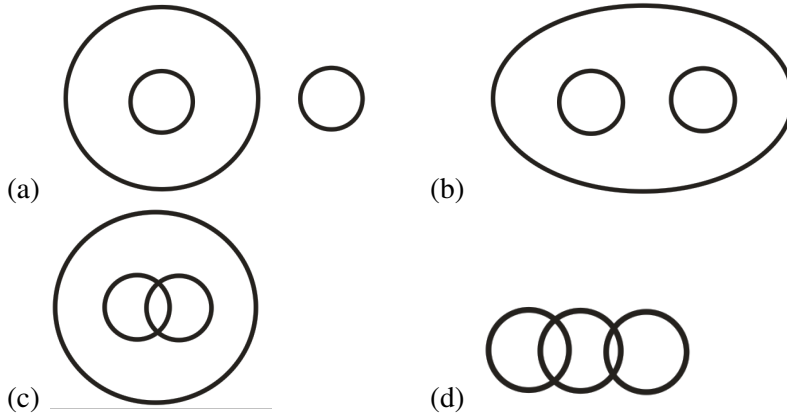   III. Small intestine
    IV. Liver

47. Which of these juices is secreted by pancreas?
    I. Trypsin
    II. Pepsin
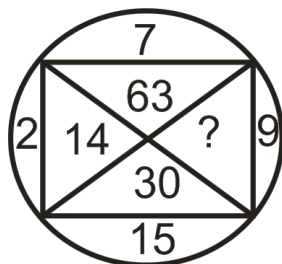   III. Bile juice   IV. Both I and II

48. Lipase acts on
   I. Amino acids
   II. Fats
   III. Carbohydrates
   IV. All of these

MENTAL ABILITY

49. Oxygen : Burn : : Carbon Dioxide :
   (a) isolate   (b) foam   (c) extinguish   (d) explode

50. Of the four words three are alike in some way. Choose the odd one out.
   (a) Electricity   (b) Optics   (c) Matrix   (d) Magnetism

51. Find the missing number in the series.
   2, 6, 11, 17, ... , 32.
   (a) 22   (b) 23   (c) 28   (d) 24

52. If SPACE is coded as ROZBD, how will TRAIN be coded?
   (a) SQZHM   (b) SQZJM   (c) SQZHO   (d) SQZJO

53. Pointing to a lady, a girl said, 'She is the daughter in law of the grandmother of my father's only son'. How is the lady related to the girl?
   (a) Sister – in – law   (b) Mother   (c) Mother – in – law   (d) Aunt.

54. A man walks 30 m towards South, then turned to his right and walked 30m. Then turned to his left and walked 20m. Again turned to his left, walked 30m. How far is he from the initial position?
   (a) 10 m   (b) 20 m   (c) 60 m   (d) 50 m

55. Which of their diagrams best illustrates the relation between Protons, Electrons and atoms?

(a)   (b)

(c)   (d)

56. Rohit ranked thirteenth from the top and twenty sixth from the bottom in the annual examine a class. It six students failed, what was the total number of students in the class?
   (a) 38   (b) 44   (c) 39   (d) 45

57. If '+' means '÷' , ' – ' means '+', 'x' mean ' – ' and '÷' means 'x', then –
   8 ÷ 4 – 6 + 3 x 4 = ?
   (a) 46   (b) 4   (c) 13   (d) 30

58.

Find the value of the unknown no. ?
   (a) 33   (b) 145   (c) 135   (d) 18

Q.   *1) There are five friends, A, B, C, D, E.*
     2) A is shorter than B, but taller than E.
     3) C is the tallest.
     4) D is shorter than B but taller than A.

59. Who is the shortest?
   (a) A   (b) B   (c) D   (d) E

60. If they stand in the order of their heights, who will be in the middle?
   (a) E   (b) D   (c) C   (d) A