ALPHA +1, +2 SCIENCE INTEGRATED SCHOOL

SCREENIG EXAMINATION FOR HSE 2021 - 2023

Total Questions

Duration : 2 Hrs

Part 1 : 80

Maximum Marks : 100

Part 2 : 20

Total Marks : 100

➢ **PART - I**

(Each question carries 1 mark)

➢ **SUBJECTS (BASED ON 10ᵗʰ SYLLABUS)**

◆ **Physics** - 20 questions

◆ **Chemistry** - 20 questions

◆ **Mathematics** - 20 questions

◆ **Biology** - 20 questions

➢ **PART - II ENGLSIH**

➢ **COMPREHENSIVE ESSAY**
(Each question carries 10 marks)

Total Questions : 2
Total Marks : 20

PHYSICS

1. The SI unit of work is

   Ans :-

2. Differentiate Reflection and Refraction

   Ans :-

3. Displacement is scalar quantity; True or False

   Ans :-

4. Define Vibration

   Ans :-

5. State Newton's First law

   Ans :-

6. In an incandenscent electric bulb, the filament of the bulb is made up of which metal ?

   Ans :-

7. What are the factors on which pressure on a body depends ?

   Ans :-

8. Give applications of Archimedes principle

   Ans :-

9. Which lens is converging lens

   Ans :-

10. Define electric current

    Ans :-

11. 'Every Action has equal and opposite reaction' . Which law states this

    Ans :-

12. Unit of resistivity is

    Ans :-

13. Define Kinetic energy

    Ans :-

14. Reflection and Refraction are properties of light. True or False

    Ans :-

15. If R_1 and R_2 are connected in series, then effective resistance is

    Ans :-

16. Give two examples of Opaque objects

    Ans :-

17. Work done is always stored in the form of

    Ans :-

18. Force is a vector quantity. True or false

    Ans :-

19. Give an important property of magnet

    Ans :-

20. Which mirror is divergeng mirror

    Ans :-

CHEMISTRY

21. Calculate the number of molecules in 124 g of phosphorus (Atomic mass of P = 31u)
    Ans :-
22. Calculate the number of particles in 46 g of Na atom. (Atomic mass of Na = 23u)
    Ans :-
23. Calculate the molecular mass of NH_3 (Atomic mass of N = 14 u, H= 1u)
    Ans :-
24. The atomic number of three elements x, y and z are 3, 11, 17 respectively. State giving reasons which two elements will show similar chemical properties
    Ans :-
25. How does the atomic radius of the element changes on going from left to right in a period
    Ans :-
26. Arrange Be, Ca, Mg and Rb in the increasing order of the size of their respective atoms
    Ans :-
27. Where would you locate the element with electronic configuration 2,8 in the modern periodic table
    Ans :-
28. Write the formula of the compound formed by the union of Ca(20) and the element x (2,8,7)
    Ans :-
29. Write the name and formula of the 2nd member of homologous series having general formula C_nH_{2n}
    Ans :-
30. Select saturated hydrocarbon from the following
    C_3H_6 , C_5H_{10} , C_4H_{10} , C_6H_{14} , C_2H_4
    Ans :-
31. Write the IUPAC name of CH_3CO-CH_3
    Ans :-
32. Name the organic acid present in vinegar
    Ans :-
33. What would be the colour of litmus in a solution of sodium carbonate
    Ans :-
34. Name the acid present in antsing
    Ans :-
35. Which has a higher pH value, HCl or NaOH solution
    Ans :-
36. Identify the compound of calcium which is used for plastering of fractured bones
    Ans :-
37. Name the metal which has very low melting point and can melt with heat of your palm
    Ans :-
38. Write balanced equation for the reaction of iron with steam
    Ans :-
39. Why blue colour of copper sulphate solution disappears when iron filings are added to it
    Ans :-
40. An element x forms an oxide which turns red litmus blue. Identify whether x is a metal or non-metal
    Ans :-

BIOLOGY

41. Name the power house of cell
    Ans :-

42. What is cytology
    Ans :-

43. Who coined the term Protoplasm
    Ans :-

44. Name the model which explain the structure of plasma membrane
    Ans :-

45. Where does light reaction take place
    Ans :-

46. Maximum photosynthesis occur in which type of light
    Ans :-

47. The water soluble photosynthetic pigment is
    Ans :-

48. Two hormones secreted by adrenal gland
    Ans :-

49. Hormone helps in the reabsorption of water in the kidney
    Ans :-

50. Two hormones secreted by thyroid gland
    Ans :-

51. The gap between two neurons is called
    Ans :-

52. What is reflex action
    Ans :-

53. Part of brain which plays a major role in maintenance of homeostasis
    Ans :-

54. Basic structural unit of nervous system
    Ans :-

55. The part where the exchange of gases occur during respiration in human being
    Ans :-

56. Double layered protective membrane of the lungs
    Ans :-

57. The bean shaped opening found on the lower surface of the leaves for gaseous exchange
    Ans :-

58. The contraction and expansion movement of the walls of the oesophagus is called
    Ans :-

59. Disease caused by the deficiency of vitamin A
    Ans :-

60. Name the major components present in food
    Ans :-

MATHEMATICS

61. Which is the smallest prime number ?
    Ans :-

62. Find the zeroes of the polynomial $x^2 - 3$
    Ans :-

63. Solve the following equations for x and y
    $x + y = 6$
    $x - y = 2$
    Ans :-

64. What is the area of a circle with radius 7 cm ?
    Ans :-

65. Find two numbers whose sum is 27 and the product is 182
    Ans :-

66. Find the discriminant of the quadratic equation
    $2x^2 + 3x + 7 = 0$
    Ans :-

67. Find the 10th term of the A.P: 2, 7, 12
    Ans :-

68. Find the sum of first 20 terms of the A.P = 5, 11, 17, 23, ...
    Ans :-

69. The smallest sides of a right angled triangle are 7 cm, 24 cm. Find the length of its hypotenuse
    Ans :-

70. Find the point on the X-axis which is equidistant from (4, -5) and (-4, 9)
    Ans :-

71. Find the area of the triangle whose vertices are (1, 0), (2, 5), (3, 6)
    Ans :-

72. If sin A = 3/4, find cot A ?
    Ans :-

73. The angle subtended by the diameter of a semicircle is
    Ans :-

74. Find the area of the sector of the circle with radius 6 cm and of angle 100°
    Ans :-

75. Find the median of the following data
    85, 114, 93, 95, 92, 110, 27, 34, 59, 107, 99
    Ans :-

76. A bag contains a blue ball, 2 black balls and 5 red balls. You are taking a ball from the bag without looking into it, What is the probability that the ball taken is red in colour
    Ans :-

77. What is the probability of an impossible event
    Ans :-

78. How many 3-digits numbers are divisible by 3
    Ans :-

79. Find the value of k if the distance between the points (2, k), (7, 9) is $\sqrt{61}$
    Ans :-

80. Find the length of a rectangle with breadth 11 cm and perimeter 52 cm
    Ans :-

COMPREHENSIVE ESSAY

1. Online Classes - Advantages and Disadvantages

2. The positive environmental impacts during Covid 19 Lockdown Period

MOCK TEST

ANSWER KEY

PHYSICS

1. Joule
2. Reflection is bouncingback of light to the same mdeium
   Refraction is bending of light when it travels from one medium to another
3. False
4. To and Fro motion or fast oscillations
5. A body at rest remains at rest or, if in motion at constant velocity unless acted on by an external force
6. Tungsten
7. Force and area
8. * Designing of ships
   * Designing of submarines
   * Fish float
   * Hot air balloon rises and floats
   * Hydrometer
9. Convex
10. Electric current is total charge by total time, rate of flow of charge carriers
11. Newton's 3rd law
12. Ohm meter
13. Energy possessby a body by virtue of its motion
14. True
15. $R_1 + R_2$
16. Wood, Metal, Concrete
17. Energy
18. True
19. Attractive property, Repulsive property
20. Convex

CHEMISTRY

21. Molecular mass of P_4 = 4 x 31 = 124 u
    Number of molecules = $\frac{124}{124}$ x 6.022 x 10^{23}
    $$= 6.022 \times 10^{23} \text{ molecules}$$
22. Molar mass of of Na = 23 g
    Number of particles = $\frac{46}{23}$ x 6.022 x 10^{23}
    $$= 12.044 \times 10^{23} \text{ particles}$$
23. Molecular mass = 14 + 3 x 1
    $$= 14 + 3 = 17 \text{ u}$$
24. X and Y show similar chemical properties as these have same valence electrons
25. Atomic radius decreases
26. Be < Mg < Ca < Rb
27. 2nd period and 18th group
28. Ca ⟍⟋ x
    2 ⟋⟍ 1
    Formula Cax_2

29. C_3H_6
30. C_4H_{10}, C_6H_{14}
31. Propanone
32. Ethanoic acid/Acetic acid
33. Blue
34. Methanoic acid/Formic acid
35. NaOH
36. Plaster of paris (calcium sulphate hemihydrate)
37. Gallium or caesium
38. $3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$
39. Iron is more reactive than copper. So it displaces copper from copper sulpahte solution
    $CuSO_4 + Fe \rightarrow FeSO_4 + Cu$
40. Metal, because metal oxides are basic in nature.

BIOLOGY

41. Mitochondria
42. It is the scientific study of structure of the cell
43. J.E. Purkinje (1839)
44. Fluid Mosaic Model
45. Grana
46. Red light
47. Anthocyanin
48. Adrenaline and Noradrenaline
49. ADH / Vasopressin
50. Thyroxine, Triiodothyronine, Thyrocalcitonin
51. Synapse
52. Involunatry rapid action in response to a stimulus controlled by Central Nervous system
53. Hypothalamus
54. Neuron/Nerve cell
55. Alveoli
56. Pleura
57. Stomata
58. Peristalsis
59. Night blindness/Xerophthalmia
60. Carbohydrates, Proteins, fats

MATHEMATICS

61. 2
62. $x^2 - 3 = (x + 3)(x - 3)$
    zeroes = $-\sqrt{3}$, $\sqrt{3}$
63. x = 4 and y = 2
64. Area = $\pi r^2 = 49\ \pi\ cm^2$
65. 13, 14
66. $b^2 - 4ax = 9 - 4.2.7 = 9 - 56 = -47$
67. 47
68. 1240
69. 25
70. (7/2, 0)
71. 2 sq. units
72. cot A = $3/\sqrt{7}$

73. 90°
74. $10\ \pi$
75. 93
76. 5/8
77. 0
78. 300
79. $k = 3$
80. 15 cm