NEW STANDARD ACADEMY

Marks: 150

Date : 28-04-25 **CLASS : 11TH** **Time: 2 hours**

PHYSICS

1. Light year is the unit of
   (a) time (c) velocity
   (b) distance (d) acceleration
2. Order of magnitude of height of a man is
   (a) Zero (b) 1
   (c)-1 (d) none of these.
3. Order of magnitude of radius of earth in metre is
   (a) 10^{6} (b) 10^{-6}
   (c) 10^{7} (d) 10^{4}
4. Parsec is the unit of
   (a) Time (b) Velocity
   (c) Pressure (d) Distance.
5. Dimensional formula for angular momentum is
   (a) $[M L^{2} T]$ (b) $[M L^{2} T^{-1}]$
   (c) $[M^{-1} L^{-1} T^{-2}]$ (d) $[M L^{-2} T^{1}]$
6. Dimensional formula for Planck's constant is.
   (a) $[M L^{2} T^{-1}]$ (b) $[M^{-1} L^{2} T^{-3}]$
   (c) $[M^{-1} L T^{-2}]$ (d) $[M^{-2} L^{3} T^{-1}]$
7. Which of the following is dimensional variable?
   (a) force (b) exponential e
   (c) angle (d) velocity of light in vacuum.
8. Momentum per unit volume has dimensions
   (a) $[ML T^{-1}]$ (b) $[ML T^{-2}]$
   (c) $[M L^{-2} T^{-1}]$ (d) $[M L^{2} T^{-1}]$
9. The dimensional formula of pressure gradient is
   (a) $[M^{0} L T^{-1}]$ (b) $[M L^{0} T^{-1}]$
   (c) $[M L^{2} T^{-2}]$ (d) $[M^{0} L^{0} T]$
10. The number of significant figures in 0.008 are
    (a) 1 (b) 3
    (c) 4 (d) 2
11. The number of significant figures in 20340 are
    (a) 3 (b) 4
    (c) 5 (d) 2
12. What will be the number of significant figures in $0.00\ 7 m^{2}$
    (a) 1 (b) 2
    (c) 3 (d) 4
13. What is the dimensional formula of gravitational constant?
    (a) $[M^{-1} L^{3} T^{-2}]$ (b) $[M^{-2} L^{3} T^{-2}]$
    (c) $[M^{-1} L^{2} T^{-2}]$ (d) $[M^{-1} L^{3} T^{-1}]$
14. Which of the following pairs does not have similar dimensions?
    (a) Stress and pressure
    (b) Tension and surface tension
    (c) Planck's constant and angular momentum
    (d) Angle and strain.
15. Length cannot be measured by
    (a) Fermi (b) debye
    (c) micron (d) light year.
16. The dimensions of torque are:
    (a) $[M L^{3} T^{-3}]$ (b) $[M L^{-1} T^{-1}]$
    (c) $[M L^{2} T^{-2}]$ (d) $[M L^{-2}]$
17. Using mass (M), length (L), time (T) and current (A) as fundamental quantities, the dimensions of permeability are:
    (a) $[M^{-1} L T^{-2} A]$ (b) $[M L^{-2} T^{-2} A^{-1}]$
    (c) $[ML T^{-2} A^{-2}]$ (d) $[ML T^{-1} A^{-1}]$
18. Parsec' is the unit of:
    (a) time (b) distance
    (c) frequency (d) angular acceleration.
19. The ratio of the dimensions of Planck's constant and that of moment of inertia is the dimensions of:
    (a) velocity (b) angular momentum
    (c) time (d) frequency.
20. The magnetic moment has dimensions of:
    (a) [LA] (b) $[L^{2} A]$
    (c) $[L T^{-1} A]$ (d) $[L^{2} T^{-1} A^{-1}]$
21. Dimensions of electrical resistance is :
    (a) $[M L^{2} T^{-3} A^{-1}]$ (b) $[M L^{2} T^{-3} A^{-2}]$
    (c) $[M L^{3} T^{-3} A^{-2}]$ (d) $[M^{-1} L^{3} T^{3} A^{2}]$
22. In an electrical circuit containing L, C and R which of the following does not denote the dimensions of frequency?
    (a) LC (b) $1/\sqrt{LC}$
    (c) 1/(RC) (d) R/L
23. Taking into account the significant figures, what is the value of 9.99m – 0.0099 m?
    (a) 9.9801 m (b) 998 m
    (c) 9.980 m (d) 9.9m
24. Dimensions of stress are
    (a) $[MLT^{-2}]$ (b) $[M L^{2} T^{-2}]$
    (c) $[M L^{0} T^{-2}]$ (d) $[M L^{-1} T^{-2}]$
25. The area of a rectangular field (in m^{2}) of length 55.3 m and breadth 25 m after rounding off the value for correct significant digit is:

(a) 138×10^{1} (b) 1382
(c) 1382.5 (d) 14×10^{2}

CHEMISTRY

26. The unit J Pa^{-1} is equivalent to
(1) m^3 (2) $c\ m^3$
(3) $d\ m^3$ (4) $m\ m^3$
27. Significant figures in 0.00051 are:
(1) 5 (2) 3
(3) 2 (4) 4
28. The proper value of significant figures in 38.0 +0.0035+ 0.00003 is
(1) 38 (2) 38.0035
(3) 38.00353 (4) 38.0
29. Irrespective of the source, pure sample of water always yields 88.89% mass of oxygen and 11.11% mass of hydrogen. This is explained by the law of
(1) Conservation of mass
(2) Constant composition
(3) Multiple proportions
(4) Constant volume
30. One gram mole of a gas at NTP occupies 22.4 L. This fact was derived from
(1) Law of gaseous volumes
(2) Avogadro's hypothesis
(3) Dalton's atomic theory
(4) Law of constant proportions
31. A sample of calcium carbonate ($CaCO_3$) has the following percentage composition: Ca = 40% C = 12% 0 = 48% If the law of constant proportions is true, the weight of calcium in 4 g of a sample of calcium carbonate from another source will be
(1) 0.016 g (2) 0.16 g
(3) 1.6 g (4) 16 g
32. Which one of the following pairs of compounds illustrates the law of multiple proportions?
(1) H_2O Na_2O (2) MgO, Na_2O
(3) Na_2O, BaO (4) $SnCl_2$, $SnCl_4$
33. 20.8 g of $BaCl_2$, on reaction with 9.8 g of H_2SO_4 produces 7.3 g of HCl and some amount of $BaSO_4$, The amount of $BaSO_4$, formed is
(1) 23.3 g (2) 20.8 g
(3) 9.8 g (4) 10.4 g
34. When 100 g of ethylene polymerizes to polyethylene according to equation
$n CH_2 = CH_2 \longrightarrow +(-CH_2, -CH_2-)_n$
The weight of polyethylene produced will be
(1) $\frac{n}{2}\ g$ (2) 100 g
(3) $\frac{100}{n}$ g (4) 100n g
35. How many molecules are present in one gram of hydrogen?
(1) 6.023×10^{23} (2) 6.023×10^{22}
(3) 3.0125×10^{23} (4) 3.0125×10^{-12}
36. Number of atoms in 4.25 g of NH_3 is nearly
(1) 1×10^{23} (2) 1.5×10^{23}
(3) 2×10^{23} (4) 6×10^{23}
37. Which of the following contains the greatest number of atoms?
(1) 1.0 g of butane (C_4H_{10})
(2) 1.0 g of nitrogen (N_2)
(3) 1.0 g of silver (Ag)
(4) 1.0 g of water (H_2O)
38. The number of atoms present in 2.8 litres of diatomic gas is
(1) 7.5×10^{22} (2) 6.023×10^{23}
(3) 3.01×10^{23} (4) 15×10^{22}
39. Given that one mole of N_2. at NTP occupies 22,4 litre the density of N_2, is
(1) 1.25 g/L (2) 0.80 g/L
(3) 2.5 g/L (4) 160 g/L
40. Modern atomic weight scale is based on
(1) ^{1}H (2) ^{12}C
(3) ^{14}C (4) ^{16}C
41. Number of molecules in 100 ml of each of O_2 NH_3 and CO_2 at STP are
(1) The same
(2) In the order $NH_3 < O_2 < CO_2$
(3) In the order $CO_2 < O_2 < NH_3$
(4) NH3 = $CO_2 < O_2$
42. The element whose atom has a mass of 10.86×10^{-26} kg is
(1) Boron (2) Calcium
(3) Silver (4) Zinc
43. One gram of hydrogen is found to combine with 80 g of bromine, one gram of calcium valency = 2 combines with 4 g of bromine. The equivalent weight of calcium is
(1) 10 (2) 20
(3) 40 (4) 80
44. Which of the following has smallest number of molecules?
(1) 11.2 L of O_2 at NTP
(2) 8.0 g of O_2
(3) 0.1 mole of O_2
(4) 2.24×10^{4} mL of O_2
45. 0.4 g of dihydrogen is made to react with 7.1 g of dichlorine to form hydrogen chloride. The volume of hydrogen chloride formed at 273 K and 1 bar pressure is
(1) 4.54 L (2) 90.8 L
(3) 45.4 L (4) 9.08 L
46. Vapour density of a metal chloride is 83. If equivalent weight of the metal is 6, its atomic weight will be
(1) 12 (2) 24
(3) 18 (4) 60

47. In the final answer of the expression $\frac{(29.2-20.2)\,(1.79\times10^5)}{1.37}$ The number of significant figures is
(1) 1 (2) 2
(3) 3 (4) 4

48. In the reaction, $N_2 + 3H, \rightarrow 2NH_3$, the ratio of volume of nitrogen, hydrogen and ammonia is 1:3:2. These figures illustrate the law of
(1) constant proportions
(2) Gay-Lussac
(3) multiple proportions
(4) reciprocal proportions

49. Irrespective of the source, pure sample of water always yield 88.89% mass of oxygen and 11.11% mass of hydrogen. This is explained by the law of
(1) Conservation of mass
(2) Constant composition
(3) Multiple proportion
(4) Constant volume

50. How many moles of electrons weigh one kg?
(1) 6.023×10^{23}
(2) $\frac{1}{9.108}\times 10^{31}$
(3) $\frac{6.023}{9.108}\times 10^{54}$
(4) $\frac{1}{9.108\times6.023}\times 10^{8}$

BIOLOGY

51. The chief component of the middle lamella in plant cell is:
(a) Calcium (b) Potassium
(c) Magnesium (d) Phosphorus

52. Cristae are found in which cell organelle?
(a) Nucleus (b) Mitochondrion
(c) Chloroplast
(d) Endoplasmic reticulum

53. Krebs' cycle occurs in:
(a) cytoplasm (c) mitochondria
(b) chloroplast (d) both (a) and (b)

54. The smallest organelles in the cell are:
(a) lysosomes (b) ribosomes
(c) microsomes (d) dictyosomes

55. Subunits in prokaryotic ribosome are:
(a) 60S-40S (b) 50S-30S
(c) 40S-30S (d) 50S-20S

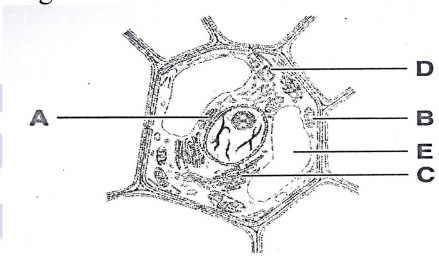
56. In Chloroplasts , chlorophyll is present in the
(a) stroma (b) Thylakods
(c) Outer membrane (d) inner membrane

57. The non – membranous organelles are :
(a) Nucleoli (b) centrioles
(c) ribosomes (d) all of these

58. Ribosomal RNA is actively synthesized in
(a) lysosomes (b) nucleolus
(c) Nucleoplasm (d) ribosomes

59. Who proposed the fluid mosaic model of plasma membrane?
(a) Camillo Golgi (b) Robert Brown
(c) Singer and Nicolson
(d) Schleiden and schwann

60. The diagram of the ultrastructure of a plant cell is given below. Identify the functions of the organelle labelled A. B, C, D, E in the diagram:



(a) A: Intracellular transport, B: Site of oxidative phosphorylation, C: Principle director of macro-molecular traffic, D: Site of photophosphorylation,
(b) A. Site of photophosphorylation, B: Storage of cell sap, C Intracellular transport, D Site of oxidative phosphorylation, E Principle director of macro molecular traffic
(c) A Storage of cell sap, B Site of oxidative phosphorylation, C molecular traffic, D E: Intracellular transport Principle director of macro-Site of photophosphorylation,
(d) A: Principle director of macromolecular traffic, B. Site of oxidative phosphorylation, C Intracellular transport, D: Site of photophosphory-lation, E: Storage of cell sap

61. What is a tonoplast?
(a) Membrane boundary of the vacuole of plant cells
(b) Outer membrane of mitochondria
(c) Inner membrane of chloroplast
(d) Cell membrane of a plant cell

62. The Golgi complex plays a major role:
(a) as energy transferring organelles
(b) in digesting proteins and carbohydrates
(c) post translational modification of proteins and glycosidation of lipids
(d) in trapping the light and transforming it into chemical energy

63. Choose the matched ones.
(A) Vibrio Rod-like bacteria
(B) Mesosome Helps in cell wall Formation
(C) Smooth Endoplasmic reticulum Synthesis of lipids
(D) Vacuoles Rich in hydrolytic enzymes
(a) (B) and (C) only
(b) (A) and (D) only
(c) (A), (B) and (C) only
(d) (B) and (D) only

(e) (B),(C) only

64. Which of these is/are not a property of facilitated transport?
A. Requires special membrane proteins
B. Highly selective
C. Uphill transport
D. Requires ATP energy
(a) A and B only (b) C and D only
(c) A and C only (d) B and C only
(e) B and D only

65. Rough endoplasmic reticulum is actively involved in:
(a) lipid synthesis
(b) protein synthesis
(c) hormone synthesis
(d) carbohydrate synthesis

66. Which one of the following cell organelles is enclosed by a single membrane?
(a) Nuclei (b) Lysosomes
(c) Chloroplasts (d) Mitochondria

67. A cell organelle containing hydrolytic enzymes is
(a) Ribosome (b) Mesosome
(b) Lysosome (d) Microsome

68. The term mitochondria was coined by:
(a) Palade (b) Benda
(c) Altman (d) de Duve

69. The Golgi apparatus:
(a) is found only in animals.
(b) is found in prokaryotes.
(c) is a site of rapid ATP production.
(d) modifies and packages proteins.

70. What are the sac-like reticulum? structures of endoplasmic
(a) Cristae (b) Tubules
(c) Cisternae (d) Thylakoids

71. Schleiden and Schwann proposed:
(a) phenomenon of Brownian movement
(b) protoplasm as a physical basis of life
(c) cell theory or cell doctrine
(d) none of the above

72. Flagella of prokaryotic and eukaryotic cells differ in:
(a) Microtubular organization and function
(b) Type of movement and placement in cell
(c) Location in cell and mode of functioning
(d) Microtubular organization and type of movement

73. The term lysosome was coined by:
(a) Palade (b) Benda
(c) Altman (d) de Duve

74. Which of these is wrongly matched?
(a) Chloroplasts chlorophyll
(b) Elaioplasts starch
(c) Chromoplasts carotenoids
(d) Amyloplasts carbohydrates
(e) Aleuroplasts proteins

75. The arrangement of outer and central microtubules in a cilium is called:
(a) 9+2 pattern (b) 8+2 pattern
(c) 9+1 pattern (d) 8+1 pattern

MATH

51. Solution of $|3-x| = x - 3$ is
(a) $x<3$ (b) $x>3$
(c) $x \geq 3$ (d) $x \leq 3$

52. Solution of $0< |3x+1| <1/3$ is
(a) (-4/9,-2/9) (b) [-4/9,-2/9]
(c) (-4/9,-2/9)-{-1/3} (d) [-4/9,-2/9]-{-1/3}t

53. Solution of $\left|\frac{1}{x} - 2\right| < 4$ is
(a) $(-\infty, -1/2)$ (b) $(1/6, \infty)$
(c) (-1/2,1/6)
(d) $(-\infty, -1/2) \cup \left(\frac{1}{6}, \infty\right)$

54. If $a^x = b$, $b^y = c$ and $c^z = a$ than find the value xyz.
(a) 1 (b) 2
(c) 0 (d) 3

55. Solve $\log_4{}^8 + \log_4(x+3) - \log_4(x-1) = 2$
(a) -5 (b) 0.05
(c) 0.5 (d) 5

56. Solve $\log(-x) = 2\log(x+1)$
(a) $\frac{-3+\sqrt{5}}{5}$ (b) $\frac{-3+\sqrt{8}}{2}$
(c) $\frac{-3+\sqrt{5}}{2}$ (d) $\frac{-3-\sqrt{5}}{2}$

57. Solve $\log_2(x-1) > 4$
(a) $x > 17$ (b) $x < 17$
(c) $x \leq 17$ (d) $x \geq 17$

58. The value of $\frac{log_3 135}{log_{15} 3} - \frac{log_3 5}{log_{405} 3}$ is
(a) 2 (b) 3
(c) 4 (d) none of these

59. The value of $49^{(1-log_7 2)} + 5^{-log_5 4}$ is
(a) 27/2 (b) 25/2
(c) 625/16 (d) none of these

60. If $a = \log_{12}18$ and $b = \log_{24}54$ then the value of $ab + 5(a-b)$ is
(a) 0 (b) 4
(c) 1 (d) none of these

61. If $(4)^{log_9 3} + (9)^{log_2 4} = (10)^{log_x 83,}$ then x is equal to
(a) 2 (b) 3
(c) 10 (d) 30

62. Solve $x^2-x-2 > 0$
(a) $(-\infty, 2) \cup (2, \infty)$ (b) $(-\infty, -1) \cup (2, \infty)$
(c) $(-\infty, 3) \cup (2, \infty)$ (d) $(-\infty, 1) \cup (3, \infty)$

63. Solve $x(x+2)^2(x-1)^5(2x-3)(x-3)^4 \geq 0$.
(a) $[0,1] \cup [\frac{3}{2}, \infty)$ (b) $[2,1] \cup [\frac{3}{2}, \infty)$
(c) $[3,1] \cup [\frac{3}{2}, \infty)$ (d) $[4,1] \cup [\frac{3}{2}, \infty)$

64. Solve $|x-3+|x-2|=1$.
(a) $2 \geq x \leq 3$ (b) $2 \geq x \geq 3$
(c) $2 = x \leq 3$ (d) $2 \leq x \leq 3$

65. Solve x^2-4|x|+3<0.
(a) $x \in (-3,-1) \cup (1,3)$
(b) $x \in (3,-1) \cup (1,3)$
(c) $x \in (-3,1) \cup (1,3)$
(d) none of these

66. The value of 7 log $\left(\frac{16}{15}\right) + 5log\left(\frac{25}{24}\right)$+3log$\left(\frac{81}{80}\right) is$
(a) 0 (b) 1
(c) log 2 (d) log 3

67. logab-log|b| =
(a) log a (b) log |a|
(c) - log a (d) none of these

68. $\log_4 18$ is
(a) rational (b) irrational
(c) prime (d) composite

69. Solve $\left(x^{log_{10}3}\right)^2 - \left(3^{log_{10}x}\right) - 2 = 0$
(a) $10^{log_3 2}$= x (b) $10^{log_4 2}$= x
(c)$10^{log_8 2}$= x (d) $10^{log_{16} 2}$= x

70. Find the value of $81^{\left(\frac{1}{log 5^3}\right)}$ +$27^{log_9 36}$ +$4^{\frac{1}{log_7 9}}$
(a) 890 (b) 790
(c) 105 (d) 690

71 The value of $\text{Log}_5 y_2 y_3 \log_2 512$ is
(a) 1 (b) 0
(c) -1 (d) 10

72. $\log_2(3x-2) = y_{\frac{1}{2}x}$
(a) x=1 (b) x=2
(c) x=3 (d) x= 4

73. If x =$\frac{1}{2}$ $\log_k b = \frac{1}{3}$ $\log_b c = \frac{1}{4}\log_c d$, then $\log_k d$ is
(a) $6x^3$ (b) $2x^3$
(c) $12x^3$ (d) $24x^3$

74. The value of $49^{log_6 18}$ ($3^{log_6 3}$
(a) 4 (b) 5
(c) 6 (d) 8

75. $\left(x-\frac{1}{2}\right)^3\left(x-\frac{1}{3}\right)^2\left(x-\frac{1}{5}\right) = 0$
(a) x∈ $(-\infty, \frac{1}{5}]\cup [\frac{1}{2}, \infty \cup \left\{\frac{1}{3}\right\}$
(b) x∈ $(-\infty, \frac{1}{5}]\cup [\frac{1}{2}, \infty \cup \left\{\frac{1}{2}\right\}$
(c) 1 (d) none of these