

# NEW STANDARD ACADEMY

Exam

NEET - JEE

Marks: 60

Date : 26-06-23

CLASS : 11<sup>TH</sup>

Time: 90:MIN

## PHYSICS

1. In  $S = a + bt + ct^2$ .  $S$  is measured in metres and  $t$  in seconds. What is the unit of  $c$  ?
2. If the unit of length and force be increased four times, then the unit of energy is ?
3. In C.G.S. system the magnitude of the force is 100 dynes. In another system where the fundamental physical quantities are kilogram, metre and minute, the magnitude of the force is
4. SI unit of permittivity is
5. Give the example of one physical quantities has the same dimensions.
6. The velocity of a freely falling body changes as  $g^p h^q$  where  $g$  is acceleration due to gravity and  $h$  is the height. The values of  $p$  and  $q$  are
7. If  $P$  represents radiation pressure,  $c$  represents speed of light and  $Q$  represents radiation energy striking a unit area per second, then non-zero integers  $x, y$  and  $z$  such that  $P^x Q^y c^z$  is dimensionless, are
8. The force  $F$  on a sphere of radius ' $a$ ' moving in a medium with velocity ' $v$ ' is given by  $F = 6\pi\eta av$ . The dimensions of  $\eta$  are
9. The period of oscillation of a simple pendulum is given by  $T = 2\pi\sqrt{\frac{l}{g}}$  where  $l$  is about 100 cm and is known to have 1mm accuracy. The period is about 2s. The time of 100 oscillations is measured by a stop watch of least count 0.1 s. The percentage error in  $g$  is
10. The percentage errors in the measurement of mass and speed are 2% and 3% respectively. How much will be the maximum error in the estimation of the kinetic energy obtained by measuring mass and speed

## CHEMISTRY

11. Explain the following. HCl is a covalent compound but it ionizes in the solution.
12. Given electron dot structure for carbon suboxide,  $C_3O_2$ . Write its structural formula.
13. The order of size of the hybrid orbitals is as follows  $sp < sp^2 < sp^3$ . Explain.

14. Draw the structure of the following compounds. Clearly indicate the number of bond pairs and lone pairs involved on central atom. Write (i) number of bond pairs and lone pairs on the central atom (ii) the shape of the molecules (iii) hybridization of the central atom.

a. (a)  $SF_4$  (b)  $XeOF_4$

15. Write Lewis structure of the following compounds and show formal charge on each atom.  
 $HNO_3, NO_2, H_2SO_4$
16. The electronic configuration of an element is  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$ . Locate the element in the periodic table.
17. Calculate the energy in joules required to convert all the atoms of sodium to sodium ions present in 2.3 mg of sodium vapours ? Ionization enthalpy of sodium is 495 kJ mol<sup>-1</sup> (Atomic mass of Na = 23).
18. The electron gain enthalpies of halogens decrease in the order  $F > Cl > Br > I$ . Comment upon the statement.
19. On the basis of quantum numbers justify that the sixth period of the periodic table should have 32 elements.
20. How many elements can be accommodated in the present set up of the long form of the periodic table ?

## BIOLOGY

21. What is phyllode? Give one example of it.
22. Define hypogynous and epigynous flower with example?
23. Give the floral formula of Solanaceae family ?
24. what is the difference between tap root system and adventitious roots?
25. define-
  1. Stilt root
  2. prop root
26. What is pneumatophore give example
27. Give the difference between racemos and cymose inflorescence?
28. What is a tap root modification give the

example of tap root modification?

29 What is a epipetalous and epiphylous condition?

30 What is drup ,give example.

### MATHS

21. If both the roots of the quadratic equation  $x^2 - 2kx + k^2 + k - 5 = 0$  are less than 5, then k lies in the interval
22. Find the range of values of a, such that  $f(x) = \frac{ax^2 + 2(a+1)x + 9a + 4}{x^2 - 8x + 32}$  is always negative.
23. The set of values of p for which the roots of the equation  $3x^2 + 2x + p(p - 1) = 0$  are of opposite sign is
24. If  $\alpha, \beta$  be the roots of  $ax^2 + bx + c = 0$ ;  $\gamma, \delta$  be the roots of  $px^2 + qx + r = 0$ ; and  $D_1, D_2$  the respective discriminants. If  $\alpha, \beta, \gamma, \delta$  are in A.P. then  $D_1 : D_2 =$
25. Find the true set of values of p for which the equation  $p \cdot 2^{\cos^2 x} + p \cdot 2^{-\cos^2 x} - 2 = 0$  has real roots.
26. For the equation  $3x^2 + Px + 3 = 0, P > 0$  if one root of the equation is square of the other then P equals
27. If the roots of the equation  $x^3 - 12x^2 + 39x - 28 = 0$  are in A.P. then their common difference is
28. If  $\alpha, \beta$  are the roots of  $x + ax - b = 0$  and  $\alpha^4, \beta^4$  are the roots of  $x^2 - cx + d = 0$ , then prove that the equation  $x^2 - 4bx + 2b^2 - c = 0$  always has two equal roots.
29. If x is real then minimum value of  $x^2 - 8x + 17$  is
30. The values of 'a' for which  $(a^2 - 1)x^2 + 2(a - 1)x + 2$  is positive for any x is -

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