CBSE Class 9 Science Sample Paper
Solution Set 4

SECTION – A

Q.1. Newton /Metre ^{2} or Pascal.   1

Q.2. If 1 kW of power is consumed by an appliance in 1 hour ,
the energy spent is said to be 1 kWh.   1

Q.3. Leguminous plant   1

Q.4. a) As most of alpha particles passed straight through the
gold foil, Rutherford concluded that most of the space
inside the atom is empty.   1

b) As isotopes have same number of electrons so
they –have same chemical properties.   1

Q.5. Density of block = Mass/volume = 216/80 = 2.7 g/cm^3
Relative density = Density of a substance /   1
Density of water = 2.7/1=2.7   1

Q.6.   2

Sr. No.	Gymnosperm	Angiosperm
1	They produce cones formed of sporophylls	Presence of fruits, flowers and seeds
2	The sporophylls carry male and female sex organs.	Presence of xylem and vessels
3	The plants bear naked seeds, e.g. Pinus, Deodar	Presence of distinct root, stem and leaves e.g. Mustard, Plant, lemon

Q.7.   2

Sr. No.	Longitudinal waves	Transverse waves
1	The individual particles of the medium move in a direction	The individual particles of the medium move about their mean positions in a

	parallel to the direction of propagation of the disturbance.	direction perpendicular to the direction of wave propagation.
2	Sound is a longitudinal wave	Light is a transverse wave.
3	They travel in the form of compression and rarefaction	They travel in the form of crest and trough.

Q.8. i) Burning of fossil fuels such as petrol diesel, transportation and industrial purpose.   3

ii) Burning of wood and charcoal for heating and cooking.

iii) cutting of trees /deforestation.

Q.9.   3

Atms	Atomic no.	Mass no.	Valency
X	5	11	3
Y	8	18	2
Z	15	31	3,5

Q.10. I have the feeling of Sanyama for the body and the body has Svasthya, Sanyam is basic to Svasthya. Sanyam is the feeling of responsibility in the self to ensure the nurturing, protection and right utilization of the body. Svasthya has two elements one that body acts according to the self and secondly there is a harmony between the parts of the body.   3

Q.11. (a) Mollusca
(b) Echinodermata
(c) Porifera   3

Q.12. Monocots- One cotyledon/ parallel venation/ fibrous roots, wheat, maize, rice.
Dictos- Two cotyledons /reticulate venation/tap root, green gram, pea.   3

Q.13. (a)   In ca chemical substance the elements are always resent in definite proportion by mass.

   (b)   For 3g of Carbon, 8g of Oxygen are needed.
   (c)   For 1g of Carbon, 8/3g of Oxygen are needed.
   (d)   For 9g of Carbon, 8/3g x 9g= 24g Oxygen are needed.   3

Q.14. (a)   Number of molecules of Na_2SO_4= No. of moles x 6.022×10^{23}
Number of moles = 71/142 = 0.5
Number of molecules = $0.5 \times 6.022 \times 10^{23}= 3.011 \times 10^{23}$

   (b)   A group of atoms carrying a charge are called poly atomic ions   3
e.g. SO_4^{2-}

Q.15. a)   Two conditions need to be satisfied for work to be done:

   (i)   a force should act on an object, and

   (ii)   he object must be displaced.

   b)   P = 60W, t= 10 hours
E = P x t = 60 x 10 = 600 Wh = 0.6 kWh
Bill = 0.6x3.5 x 30 = Rs. 63   3

Q.16. (a)   Loudness depends on amplitude while pitch depends on frequency.
   (b)   2d = v × t
2x 17.2 = 344 x 7
T = 34.4/344 =0.1s   3

Q.17. (i)   Archimedes principle states that when a body is immersed fully or partially in fluid (liquid) it experiences an upward force that is equal to the liquid (fluid) displaced.

   (ii)   In present problem density of water
PW =   1 gm cm^{-3}
mass   =   50 gm
Volume   =   20 cm^3 3

(iii)   Density of substance = m/v = 50 gm /20 cm^3 = 2.5 gm cm^{-3}, greater density will sink. So it will sink.

Q.18. (a)   Virus (H_1N_1)

(b)   Spraying pesticides/ cleaning of garbage dumps/ disposal of sewage /cleaning of drains and sewers.   3

Q.19. •   Avoiding direct contact with the infected persons

•   Not sharing articles used by infected persons

•   Use of mask/gloves/handkerchief   5

Q.20. (i)   (a)   Time taken by sound to travel from child to cliff   t   =   4/2 = 2S

speed of sound in air, v   =   340 m/s

Distance of cliff from the child = v x t = 340m/s x 2 s = 680 m

b)   Since wave length is the distance travelled by the wave during the time particle of the medium complete one vibration, therefore, if λ wave length and T is the time period, then the wave travels a distance λ in time T, hence wave velocity = Distance/ time or λ = V x T or V = λ / T or

Parts   5

1)   Pinna   (2)   Hammer   (3)   Anvil   (4)   Starup
5)   oval window (6)   auditory nerve (7)   Cochlea
(8)   Eardrum or tympanic Membrane   (9)   auditory canal
(10)   Eustachian tube

Q.21. (i)   They are found on land but need water to complete their life cycle.

(b)   They possess jointed legs.

(c)   True internal body cavity is absent

(ii)   a) Earth worm   b)   Crocodile   5

Porifera	Aves
Organisms are non motile / mostly marine/having pores/ simplest multicellular/ diploblastic / canal system/ skeleton/ Calcareous or siliceous e.g. Euspongia / spong/ sycon.	Warm Blooded / fore – limbs modified into wings / adaptation flight / four chambered heart / uricotelic animals / bones are air space light and spongy e.g. Birds

Q.22. (a)   13   (b)   A1   (c)   Valency , Valence Electrons = 3
     (d)   Ion formed by x = Cat ion as it needs to lose 3 electrons to
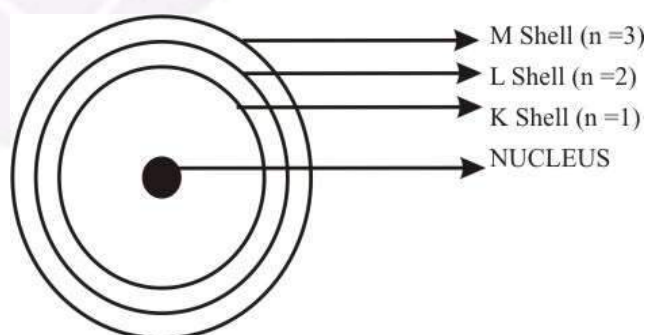
          acquire an octate

     (e)   Discoverer of protron = E Goldstein and that of electron was JJ

          Thomson

OR

(a)   Only certain special orbits called discrete orbits are present in
      an atom.

      While revolving in Discrete orbits, the electrons do not radiate
      energy.

(b)

M Shell (n =3)
L Shell (n =2)
K Shell (n =1)
NUCLEUS

(c)   The orbital revolution of the electrons is not expected to be

      stable.   Any   particle   in   a   circular   orbit   would   undergo

acceleration during which charged particles would radiate energy and fall into the nucleus. However this is not so as atoms are highly stable. 5

23. (a)   Consider a ball at a height h above the ground, say at point A

At A → P.E. = mgh, K.E. = 0

Total energy = mgh + 0 = mgh

Now let if fall freely from this height

At point B at a height h/2

P.E. = mgh /2,

K.E.= $1/mv^2$ = 1/2 x m x (2 gh/2) = mgh /2

Total energy = mgv /2 + mgh/2 = mgh

At point C just above the ground

P.E. = 0, K.E. = ½ mv^2 = 1/2 x m x2gh = mgh,

Energy at A = Energy at B = Energy at C

(b)   Weight of the boy, mg = 50 kg x 10 ms^{-2} = 500N

Height of the staircase, H = 45x15/100 m = 6.75m

Time taken to climb, t = 9S

Power, P = Work done /time taken

=   mgh/ t

=   500 N x 6.75 m /9S

=   375 W.   5

OR

(a)   Kinetic energy is the energy possessed by an object due to its motion

(b) **DERIVATION :**

Consider an object of mass, m moving with a uniform velocity, u. Let it now be displaced through a distance S when a constant force, F acts on it in the direction of its displacement.

The work done, W is Fs

The work done on the object will cause a change in its velocity.

Let its velocity change from u to –v

Let a be the acceleration produced.

K.E. $= W = FS = mas = 1/2\, m\, (v^2 - u^2)$, From $v^2 - u^2) = 2as$

If u = 0, K.e. $= \frac{1}{2} mv^2$

(d) W = change in 'kinetic energy' $= \frac{1}{2} m\, (v^2 - u^2)$

$= \quad 1/2 \times 20 \times (4 - 25)$

$= \quad 1/2 \times 20 \times (-21) = -210$ J

Q.24. (a) Green house gases (i) Co_2 (ii) CH_4

(iii) Nitrogen Oxide   (iv) Chlorofluoro Carbon

(b) Refer to fig – 14.7 on pg- 199 of NCERT   5

OR

(a) Evaporation – Condensation – Transpiration – Precipitation

(b) Refer to fig – 14.6 on g – 198 of NCERT

SECTION – B

Q. 25.   (d)   kg/m^3

Q. 26.   (b)   More

Q.27.   (a)   A

Q.28.   (a)   doubled

Q.29.   (c) mixing of salts

Q.30.   (a)   Walking

Q.31.   (a)   loaded slinky

Q.32.   (b)   conifers

Q.33.   (b)   Gymnosperm

Q.34.   (b)   Pileus and gill

Q.35.   (d)   Angiosperm

Q.36.   (a)   Bony fish

Q.37.   (a)   Pinna

Q.38.   (a)   conservation of mass

Q.39.   (d)   oxides of nitrogen and sulphur

Q.40.   (b)   tuberculosis

Q.41.   (d)   Person is lying on the ground

Q.42.   (a)   250 J