SUMMATIVE ASSESSMENT – II, 2015, SCIENCE, Class – IX

SAMPLE QUESTION PAPER

JST201501

Time allowed: 3 hours **Maximum Marks: 90**

1 mark Questions

1 Name the S.I. Unit of Pressure

2 Define the commercial unit of electrical energy.

3 In which type of plants are Nitrogen fixing bacteria present.

2 marks Questions

1 (i) Why do isotopes of an element show similar chemical properties? (ii) How did Rutherford come to the conclusion that most of the space in an atom is empty?

2 Find the relative density of copper block of mass 216g having volume of 80cm^3 (Density of Water = 1g/ cm^3).

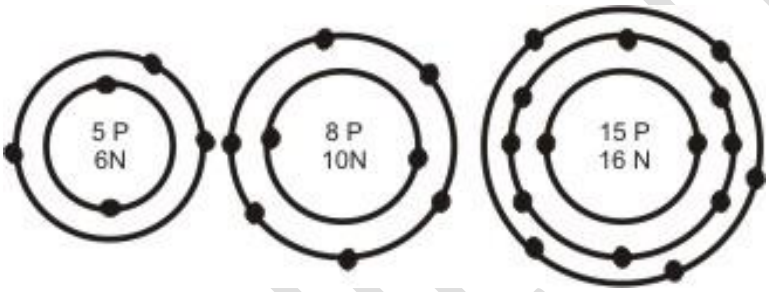
3 How do angiosperms differ from gymnosperms? Write one example each?

3 marks Questions

1 List differences between longitudinal waves and transverse waves

2 List any three human activities which would lead to an increase in the carbon dioxide content of air.

3 What information do you get from the figure given below about the atomic number, at mass number and valency of atoms X, Y and Z. Give your answer in tabular form.



4 Define Sanyam and Svasthya? How are the two related?

5 Differentiate between intensity and loudness of sound?

6 Differentiate between monocots and dicots. Give two differences and one example of each?

7 (a) State the law of Constant Proportion.
(b) In a compound Carbon and Oxygen react in a ratio 3: 8 by mass to form carbon dioxide. What mass of oxygen is required to repeat to react completely with 9g Carbon?

8 (a) Calculate the number of molecules present in 4.4g of CO_2. [At Mass: C=12, O=16 u, N_A = 6.02 x10^{23} mol $^{-1}$]
(b) What are polyatomic ion? Give one example.

9 (a) What are the conditions for work to be done?
(b) An electric bulb of 60W is lighted for 10 hours a day. What is the amount to be paid in a month of 30 days, if one unit of electricity of costs Rs. 3.50?

10 (a)On which characteristics of sound wave do the following properties depend? (i)loudness (ii)Pitch
(b)Calculate the time for which the sensation of sound persists in our brain if the minimum distance of the obstacle from the source of sound is 17.2m (speed of sound in air =344m /s)

11 (i) State 'Archimedes' principle'. (ii)The volume of 50g of a substance is 20 cm^3. If the density of water is 1gm cm 3, will the substance float or sink?

12 (a) What is the causal organism for Swine flu? (b)Suggest two measures that the local authorities of your

neighbourhood should take to bring down the incidence of diseases like malaria, typhoid and dengue?

OR List any three ways of preventing the spread of air borne diseases

5 marks Questions

1 a) A child hers an echo from a cliff 4 seconds after the sound from a powerful cracker is produced. How far away is the cliff from the child. Speed of sound = (340 m/s).

b) Derive a relation between wave length, frequency and wave velocity.

2 (i) Give reasons for the following:

(a) Bryophytes are called "amphibians of the plant kingdom."

(b)Spiders and scorpions are very different from each other but are placed in the same phylum –Arthropoda.

(c) Platyhelminths and Nematodes possess a Pseudocoelom.

(ii) Write the name of the following:- (a) Body is segmented (b)Reptile which has four chamber heart.

3 (i) Write one point difference between each , between the following

(a) Amphibian and Reptiles (b) Aves and mamals (c) Gymnosperm and angioosperm

(ii) Classify the following into respective Phylum/class: jellyfish; Earthworm; cockroach; Rat

4 An Element "X" has 13protons, 13electrons and 14 neutrons.

Answer the following questions:

a)What is its atomic number of 'X'?

b) Identify the element.

c) What is its valency? What is the number of valence electrons is "x"?

d) What is the type of ion formed by "X" ? Why?

e)Name the scientists who discovered electrons and protons.

5 (a) Describe Bohr's model of an atom. Draw a sketch of Bohr's model of an atom with 3 shells.

(b) What was the drawback of Rutherford's model of an atom?

6 (a) Prove the law of conservation of energy for a stone moving vertically down.

(b) A boy of mass 50kg runs up a staircase of 45 steps in 9s. If the height of each step is 15cm, find his power [g= 10 ms^{-2}]

Or (a) Define the term 'kinetic energy'.

(b) Derive an expression for kinetic energy for an object of mass 'm' moving with a velocity 'v'.

(c) Certain force acting on a 20 kg mass changes its velocity from 5m/s to 2 m/s. Calculate the work done by the force.

Or (a)What are the green house gases?(b)Give a diagrammatic representation of Carbon Cycle in nature.

Or, (a) List four main processes involved in the water cycle.

(b) Give a diagrammatic representation of Nitrogen cycle in nature.

SECTION-B

25. S.I. Unit of density is :-

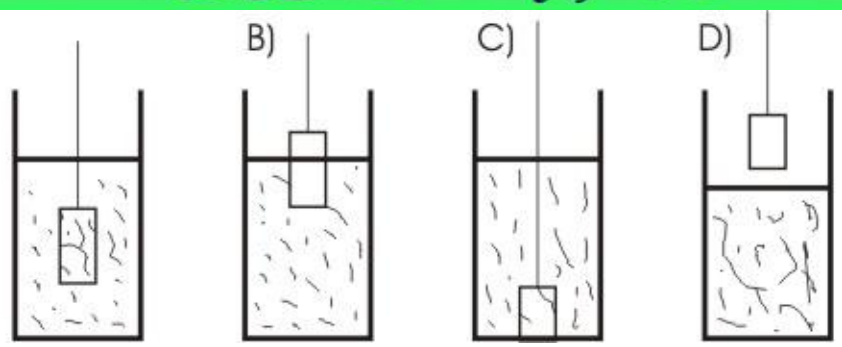
a) g/m^3 b) kg/m^2 c) g/m^2 b) kg/m^3

26. The density of salty water as compared to the density of pure water is always.

a) Less b) more c) same d) keep changing

27. In the experiment to find the density of a solid block, the volume is measured by measuring cylinder. The correct set up is shown in:-

A) B) C) D)



28. If the mass of a solid body is doubled, then the density is :-
a) doubled b)halved c) does not change d) becomes four times.

29. The sea water is denser than fresh water due to
a) evaporation b)mixing of sand c) mixing of salts d) stagnation

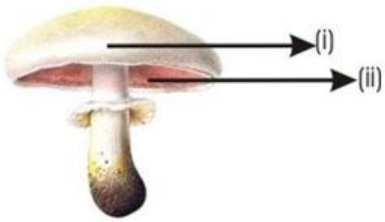
30. The pressure on the ground is more when a man is
a)walking b)standing c) sitting d) sleeping

31. Waves propagate well in
a) loaded stinky b) unloaded slinky c) equally in (a) and (b) d)None of these.

32. Trees with fine needle like leaves are usually found in hilly areas. They are called:-
a)mosses b) conifers c) algae d) fungi

33. The plants which have naked seeds belong to the group
a) Angio sperms b) gymnosperm c)Algae d) fungi

34. What are (i) and (ii) respectively , in the given diagram?
(a)Gills and annulus (b) Pileus and gills
c) Stipe and annulus d) Gills and pileus



35. To which group would a plant that Produces flowers belongs?
a) Bryophyta b) Pteridophyta c)Gymnosperms d) Angiosperms

36. On which types of fishes are the gills covered with operculum?
a)Bony fish b) Cartilaginous fish c) Both (a) and (b) d) neither (a) nor (b)

37. The outer ear is called
a)Pinna b)Malleus c)Incus d)stapes

38. Matter can neither be created nor be destroyed in law of:
a) conservation of mass b) Multi-proportion c)Constent proportion d) None of these

39. Acid rain contains:-
a) oxides of carbon b)oxides of nitrogen c)oxides of carbon & sulphur d) Oxides of nitrogen & sulphur

40. BCG vaccine is used to curb:
a)Pneumonia b) Tuberculosis c) Polio d) Amoebiasis

41. Potential energy of a person is minimum when:
a)Person is standing b)person is sitting in a chair.
c)Person is sitting on the ground d)Person is lying on the ground.

42. An object of mass 5 kg falls from a height of 5 m above the ground. The loss of potential energy of the mass is:- a) 250 J b) 25 J c) 2.5 J b) 50 J

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

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SAMPLE QUESTION PAPER SOLUTION

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1 mark Questions

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

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

Q.3. Leguminous plant

2 marks Questions

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

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

Q.2. Density of block = Mass/volume = 216/80 = 2.7 g/cm^3

Relative density = Density of a substance /

Density of water = 2.7/1=2.7

Q.3. Ans:

	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

3 marks Questions

Q.1. Ans: 2

	Longitudinal waves	Transverse waves
1	The individual particles of the medium move in a direction parallel to the direction of propagation of the disturbance.	The individual particles of the medium move about their mean positions in a 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.2. i) Burning of fossil fuels such as petrol diesel, transportation and industrial purpose.

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

iii) cutting of trees /deforestation.

Q.3. Ans: 3

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

Q.4. 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.

Q.5. loudness: it physically measures how strong sound is, moreover it is depend on intensity as well as sensitivity of ear, of sound greater amplitude, greater the sound and it measured in (db) decibel.

intensity: it is a amount of sound passing through a unit area per second, it does as loudness depend ,it is measure as watt/metre(square).

Q.6. Monocots- One cotyledon/ parallel venation/ fibrous roots, wheat, maize, rice.

Dictos- Two cotyledons /reticulate venation/tap root, green gram, pea.

Q.7. (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.

Q.8. (a)Number of molecules of Na_2SO_4= No. of moles x 6.022 x 10^{23}

Number of moles = 71/142 = 0.5

Number of molecules = 0.5x 6.022 x 10^{23}= 3.011x10^{23}

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

3

Q.9. 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

Q.10. (a) Loudness depends on amplitude while pitch depends on frequency.

(b)2d = v $\times$ t $\Rightarrow$ 2x 17.2 = 344 x 7 $\Rightarrow$ T = 34.4/344 =0.1s

Q.11. (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

P_w = 1 gm cm^{-3}

mass = 50 gm

Volume = 20 cm^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.12. (a) Virus (H_1N_1)

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

OR.
- Avoiding direct contact with the infected persons
- Not sharing articles used by infected persons
- Use of mask/gloves/handkerchief

Q.1. (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 $\lambda = V \times T$ or $V = \lambda / T$

Q.2. (i)(a) 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

Q.3 (i) (a) Reptiles lay eggs with tough coverings and do not need to lay their eggs in water, unlike amphibians.

(b) Aves are warm-blooded animals and have a four-chambered heart. They lay eggs. Whereas mamals are warm-blooded animals and have a four-chambered heart. They have mammary gland and give birth to child.

(c) Gymnosperm bear naked seeds where as angioosperm bear seeds inside fruit

(ii) Jellyfish - Coelenterate Cockroach - Arthropoda Rat – Mammalian Earthworm - Annelida

Q.4. (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

Q.5 (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)Drawback: 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.

Q.6. (a) Consider a ball at a height h above the ground, say at point A

At A $\rightarrow$ P.E. = mgh, K.E. = 0

Total energy = mgh + 0 = mgh

let if fall freely from this height

At point B at a height h/2

P.E. = mgh /2,

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

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

At point C just above the ground

P.E. = 0, K.E. = $\frac{1}{2} mv^2 = 1/2 \times m \times 2gh = mgh$,

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.

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 *F* s

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), Using $v^2 - u^2 = 2as \Rightarrow$ KE =

If u = 0, K.e. = ½ mv^2

(c) W = change in 'kinetic energy' = ½ m (v^2-u^2) = 1/2 x 20 x (4 - 25) = 1/2 x 20 x (-21) = -210 J

OR, (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

OR (a) Evaporation – Condensation – Transpiration – Precipitation

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