ANNUAL EXAMINATION

CLASS – IX

SUBJECT – SCIENCE

TIME – 3 HOURS **MAX. MARKS - 80**

Instructions:

A) All questions are compulsory.

B) Section A is of 26 marks

C) Section B is of 26 marks

D) Section C is of 28 marks

E) Internal choices are given

SECTION – A

PHYSICS

Choose the correct option:

1. An object of mass 2kg is sliding with a constant velocity of 4 ms – 1 on a frictionless horizontal table. The force required to keep the object moving with the same velocity is

a) 32N

b) 0N

c) 2N

d) 8N

2. The mass of moon is about 0.012 times that of the earth and its diameter is about 0.25 times that of earth. The value of G on the moon will be.

a) Same as that on the earth

b) about one – fifth of that on the earth

c) About one – sixth of that on the earth

d) about one – fourth of that of that on the earth

3. when a body like earth is moving in a circular path the work done in that case is zero because:

a) Centripetal force acts in the direction of motion of the body

b) Centripetal force acts along the radius of circular path

c) Gravitational force acts along the radius of circular path

d) Centrifugal force acts perpendicular to the radius of circular path

4. The momentum of a bullet of mass 20g fired from a gun is 10kg m/s. the kinetic energy of this bullet in KJ will be:

a) 25

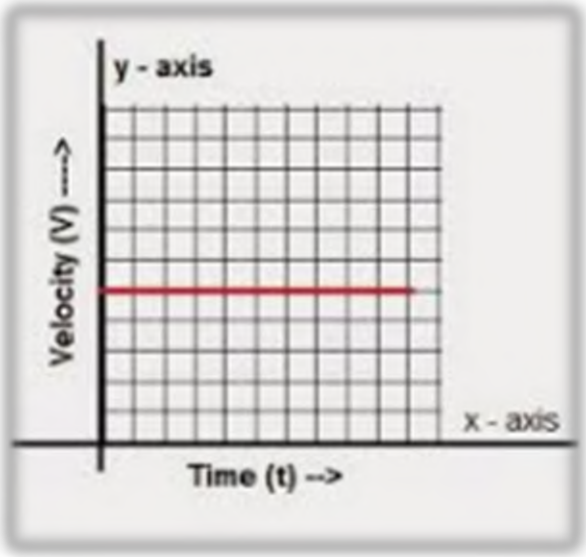
b) 2.5

c) 0.25

d) 5

one-word answer

Question 2. From the give velocity – time graph (figure)



The object is moving with ……

Question 3. Find the energy in KWh consumed in 10 hours by a machine of power 500W.

Question 4. Define 1 watt of power.

Question 5. Define universal gravitational constant (G)

OR

It is dangerous to jump out of a moving bus. Why?

Short answer type $\mathbf{3 \times 3 = 9}$

Question 6. A bodybuilder lifts a dumbbell of 10kg and raises it 2m above the ground. Calculate the work done by him on lifting the weight.

OR

Derive K. E = $\frac{1}{2}mv^2$

Question 7. Why is the law of gravitation said to be universal? Given the equation for universal gravitation. Explain clearly the significance of this law.

Question 8. A train travels the first 15km at a uniform speed of 30km/h; the next 75km at a uniform speed of 50km/h; and the last 10km at a uniform speed of 20km/h. calculate the average speed for the entire train journey.

Long question type **5 marks**

Question 9. A stone is dropped from the edge of a roof.

a) How long does it take to fall 4.9?

b) How fast does it move at the end of 7.9?

c) How does it move at the end of 7.9m?

d) An object of mass 2 kg falls with an acceleration of 9.8 m/s 2 towards the ground. With what acceleration will an object of mass 4kg fall? (g = 10 m/s^2).

e) Draw velocity – time graph for a uniformly accelerated object. Using velocity – time graph, derive $\boldsymbol{s = ut + \frac{1}{2}at^2}$

OR

The distance – time graph of trains are given figure L.

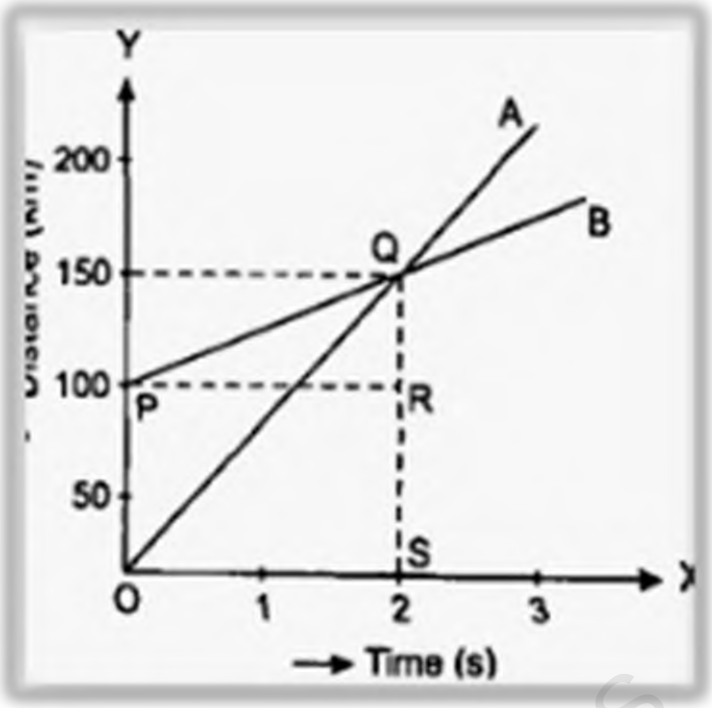


Figure L

The trains start simultaneously in the same direction.

i) How much ahead of A is B when the motion starts?

ii) what is the speed of B?

iii) When and where will A Catch B?

iv) Is the speed of both the trains uniform or non – uniform? Justify your answer.

v) Derive the expression $V^2 = U^2 + 2as$

SECTION – B

CHEMISTRY

1. How would you confirm that a colourless liquid given to you is pure water? 1

2. Define solubility of a substance. How does it very with temperature? 1

3. State one application of centrifugation. 1

Question 4. For the given question two statements are given one labelled Assertion (A) and the other labelled reason (R). select the correct answer to the question from codes. (a), (b) , (c) and (d) given below:

a) both A and R are true and R is the correct explanation of A.

b) both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) both A and R are false.

Assertion: The formula of sodium carbonate is Na_2CO_3

Reason: While writing formula of a compound, the valences of the cation and anion are crossed.

Question 5. Question (a) to (d) are based on following paragraph.

Ravi was performing some experiments related to the laws of chemical combination in the science laboratory under the guidance of his chemistry teacher Mr. John. Ravi found when he burned 1 gram of hydrogen gas in 8 grams of oxygen gas in a closed vessel; he obtained 9 grams of water. He repeated this experiment many times but obtained the same results every time.

a) Write the balanced chemical equation for the reaction between hydrogen and oxygen and oxygen to form water. Also write the names of all substances involved below their formula in the equation.

b) what are the reactants and products in the above reaction?

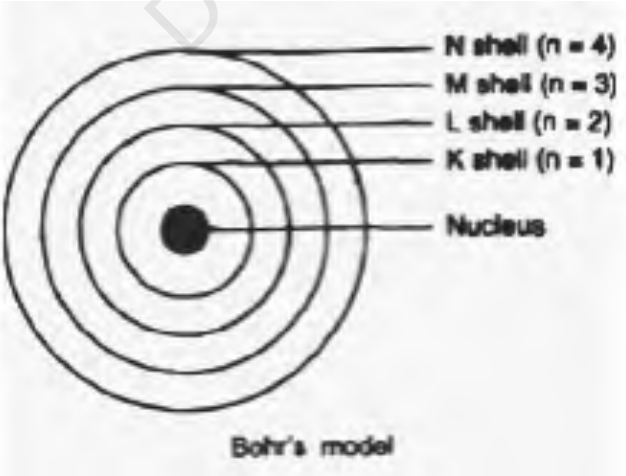
c) which law of chemical combination is illustrated the fact that Ravi burned 1g of hydrogen in 8g of oxygen, he obtained 9g of water?

d) What mass of water will be obtained if 1g of hydrogen is burned in 10g of oxygen? Which law of chemical combination will govern your answer?

OR

Read the passage and answer four question:

Only certain special orbits known as discrete orbits of electrons are allowed inside the atom. While revolving in discrete orbits the electrons do not radiate energy. Neutrons are present in the nucleus of all atoms, except hydrogen. In general, a neutron is represented as 'n' the mass of an atom is therefore given by the sum of the masses of protons and neutrons present in the nucleus. The maximum number of electrons present in a shell is given by the formula $2n^2$, where 'n' is the orbit number or energy level index, 1, 2, 3, … electrons are not accommodated in a given shell unless the inner shells are filled.



Bohr's model

i) who discovered a subatomic particle which had no charge and a mass nearly equal to that of a proton?

a) Ernest Rutherford

b) J.J. Thomson

c) J. Chadwick

d) Neil Bohr

ii) the maximum number of electrons that can be accommodated in the outermost orbit is –

a) 8

b) 9

c) 5

d) 2

iii) Electronic configuration of phosphorus (15) is –

a) 2, 8, 1

b) 2, 8, 2

c) 2, 8, 5

d) 2, 7

iv) the total number of the electron that can be accommodated in the third orbit or m – shell is –

a) 18

b) 16

c) 15

d) 17

Question 6. The atomic number of an element x is 16. 2

a) Write down electronic configuration of x.

b) What will be valence of X?

Question 7. If 25ml of acetone is present in 150ml of its aqueous solution, calculate the concentration of solution: 2

Question 8. Covert into moles; 3

i) 12g of oxygen gas

ii) 20g of water

iii) 22g of carbon di oxide

(Atomic masses: O = 16u, H = 1u, C = 12u)

Question 9. Complete the following statements: 3

1. Magnesium has 2 valence electrons in the ….. shell.

2. the valence of nitrogen is N_2 molecule is ……

3. Isotopes have different mass numbers because their nuclei contain different number of …..

Question 10. What is chromatography? Give two applications. 3

Question 11. Explain with examples

i) Atomic number

ii) Mass number

iii) Isotopes

iv) Isobars.

Give any two uses of isotopes. 5

OR

Calculate the molecular mass of:

i) CH_4 ii) NH_3 iii) O_2 iv) CH_3OH

v) Cl_2

SECTION – C

BIOLOGY

1. When is World's T.B day?

2. Which type of skeletal tissue contain chordin and Ossian respectively?

OR

Which type of tissue is most abundant in animals?

3. What will happen if:

a) Apical meristem is damaged or cut?

b) Lymph is not returned to blood?

OR

Fill the blanks:

a) Lining of blood vessels is made up of…

b) Epithelial cells with cilia are found in our …. Of body.

4. What is protoplasm?

For Question 5, 6 and 7, a statement of Assertion is followed by a statement of reason. Mark the correct choice as

a) both assertion and reason true, and reason is the correct explanation of assertion

b) Both assertion and reason are true, but reason is not the correct explanation of assertion

c) Assertion is true, but reason is false

d) Reason is true, but assertion is false

e) Both Assertion and reason are false

5. Assertion: Rudolf Virchow proposed cell theory.

Reason: his cell theory states that all plants and animals ae composed of cells.

6. Assertion: chromosomes are constituted by DNA and protein.

Reason: these are thread like structures present in nucleus.

7. Assertion: Prokaryotic cells lack cytoplasmic organelles

OR

Assertion: surface of skin is impervious to water.

Reason: Surface of skin is covered by stratified cuboidal epithelium.

8. Read the following statement and give answer:

Kiran read an article on "AIDS – A killer syndrome" in a leading newspaper. She also recalled that few days back there was a declamation contest in her school on 'AIDS' where in participants expressed their views about its cause, way of transmission, symptoms, and possible preventive measures. As a responsible citizen, kiran wanted to explain details of AIDS disease to her friends who had no knowledge about it?

i) Expand the abbreviation AIDS. Name its causative organism.

ii) Why AIDS is considered as syndrome and not merely a disease. Comment.

iii) list at least three ways in which AIDS can be transmitted from an infected person to other.

iv) what values are displayed by kiran?

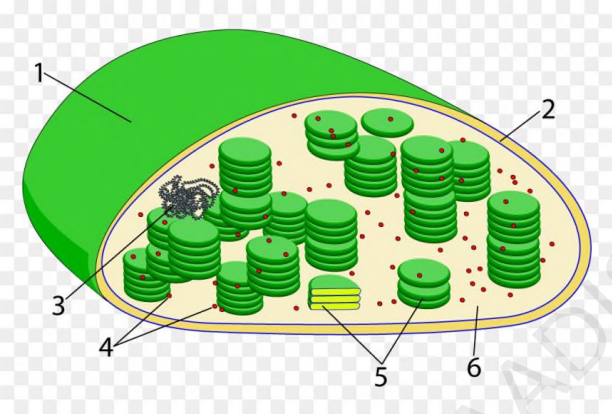
9. Name the biomolecules present in plasma membrane.

10. Lysosomes are also called digestive bags. Why?

OR

Write a note on collenchyma.

11. Label the following diagram:



12. Explain the following:

i) Mitochondria

ii) Nucleus

OR

Explain the following:

i) Tuberculosis

ii) Polio

13. Draw well labelled diagram of the following:

i) Neuron

ii) cardiac muscle

14. “Prevention of disease is more desirable than its treatment” justify the statement by discussing three major strategies to be adopted for the prevention of infectious diseases.

OR

What do you know about complex tissue? Classify and explain its different types in plants with suitable diagrams.