

**AKAL ACADEMIES**  
**Final Term Examination (2023-24)**  
**Class-IX**  
**Subject – SCIENCE**

**Time- 3 hours**

**M.M-80**

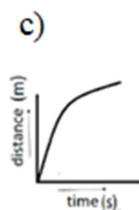
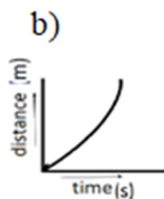
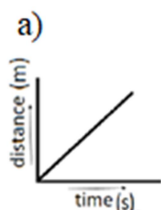
**General Instruction:**

- i. This question paper consists of 39 questions in 5 sections.
- ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- iii. Section A consists of 20 objective type questions carrying 1 mark each.
- iv. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- v. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
- vi. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
- vii. Section E consists of 3 source-based / case-based units of assessment of 04 marks each with sub-parts

**SECTION- A**

**Question 1 to 20 carry 01 marks**

- 1.) Which of the following figures represent uniform motion of a moving object correctly



- 2.) Slope of a velocity time graph gives:-

- a) the distance      b) the displacement      c) the acceleration      d) the speed

- 3.) Rocket works on the principle of conservation of

- a) mass      b) energy      c) momentum      d) velocity

- 4.) The value of acceleration due to gravity

- a) is same on equator and poles      b) is least on poles  
c) is least on equator      d) increases from pole to equator

- 5.) In the  $f = G \frac{Mm}{d^2}$  relation of the quantity G

- a) Depends on the value of g at the place of observation  
b) is used only when the earth is one of the two masses  
c) is greatest at the surface of earth  
d) is universal constant of nature

- 6.) Law of gravitation give the gravitational force between
- a) The Earth and the point mass only      b) the earth and seen only  
c) Any two bodies having same mass      d) two changed bodies only
- 7.) Which of the following is not a matter?
- a) vacuum      b) air      c) common salt      d) chalk
- 8.) Which of the following type of matter has the weakest interparticle force of attraction?
- a) steam      b) liquid water      c) sand      d) iron
- 9.) Tincture of iodine has antiseptic properties. This solution is made by dissolving
- a) Iodine in potassium iodide      b) Iodine in Vaseline  
c) Iodine in water      d) Iodine in alcohol
- 10.) Law of conservation of mass was put forward by
- a) J.L.Proust      b) Antoine Lavoisier      c) J. J.Thomson      d) John Dalton
- 11.) Atomic mass unit is
- a)  $1/10^{\text{th}}$  of the mass of carbon -12 isotope      b)  $1/10^{\text{th}}$  of the mass of oxygen- 16 isotope  
c)  $1/12^{\text{th}}$  of the mass of carbon -12 isotope      d)  $1/12^{\text{th}}$  of the mass of oxygen- 16 isotope
- 12.) Which of the following organelle is called protein factories
- a) mitochondria      b) vacuole      c) ribosomes      d) cell membrane
- 13.) Nerve cell does not contain
- a) axon      b) tendons      c) nerve endings      d) dendrites
- 14.) Husk of coconut is made up of
- a) sclerenchyma tissue      b) parenchyma      c) collenchyma      d) chlorenchyma
- 15.) Girth of stem increases due to
- a) apical meristem      b) lateral meristem      c) intercalary meristem      d) vertical meristem
- 16.) Which of the following is not an exotic breed of cow
- a) Jersey      b) Holstein-friesian      c) Sahiwal      d) Brown Swiss
- 17.) What is the value of the acceleration due to gravity on the surface of the Earth?
- a)  $9.8 \text{ m/s}^2$       b)  $18.8 \text{ m/s}^2$       c)  $4 \text{ m/s}^2$       d)  $12 \text{ m/s}^2$

**Directions:** In question 18 to 20 a statement of Assertion is given, and a corresponding statement of Reason is given just below it. Of the statements, given below, mark the correct answer as:

- a) Both assertion and reason are 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) Assertion is false, but reason is true.

18.) **Assertion:** A gas can easily be compressed by applying pressure.

**Reason:** Since the inter-particle spaces between gases are very large, they can decrease by applying pressure.

19.) **Assertion:** Inter cropping prevents pests.

**Reason:** Plant pests can be controlled biologically by their natural parasites and pathogens.

20.) **Assertion:** The speed of sound in solids is maximum though their density is large.

**Reason:** The coefficient of elasticity of solid is large.

### **SECTION B**

**\*Questions 21 to 26 carry two marks each**

21.) Differentiate between homogeneous and heterogeneous mixtures.

22.) Which postulate of Dalton's atomic theory is a result of law of definite proportions?

23.) Define power with its units.

24.) Write the main function of cardiac muscle.

25.) A ball is thrown up with the speed of 15 m/s . How high will it go before it begins to fall?

26.) Why lysosomes are known as suicidal bags?

### **SECTION – C**

#### **\*Question 27 to 33 carry 3 marks each**

27.) What is evaporation? In what way it is different from boiling?

28.) Name the following:

- a) kitchen of a cell    b) powerhouse of cell    c) brain of the cell

29.) Draw a well labelled diagram of Neuron.

**OR**

Differentiate between voluntary muscles and involuntary muscles.

30.) Calculate the molecular mass of the following – (1.5+1.5)

- a)  $\text{Al}_2(\text{SO}_4)_3$                       b)  $\text{CaCO}_3$

31.) Why are xylem and phloem called complex tissue? How are they different from one another ?

32.) Derive an expression for kinetic energy.

33.) A car acquires a velocity of 72 km/h in 10 seconds starting from rest. find -

- a) the acceleration    b) the average velocity    c) the distance travelled in this time.

### **SECTION – D**

#### **\*Question 34 to 36 carry 5 marks each**

34.) List the points of differences between plant cell and animal cell.

35.) Explain with examples: (1+1+1+1+1)

- a) atomic number    b) mass number    c) isotopes    d) isobars

e) Give any two uses of isotopes.

36.) State Newton second law of motion and establish that  $f = ma$ , where symbols have their usual meanings.

**OR**

A truck starts from rest and rolls down a hill with a constant acceleration. It travels a distance of 400m in 20s. Find its acceleration. Find the force acting on it if mass is 7 metric tonnes. (Hint: 1 metric tonne = 1000kg)

## **SECTION – E**

### **Question 37 to 39 carry 4 marks**

37.) Different crops require different climatic conditions, temperature and photoperiods for their growth and completion of their life cycle. Photoperiods are related to the duration of sunlight. Growth of plants and flowering are dependent on sunlight. As we all know, plants manufacture their food in sunlight by the process of photosynthesis. There are some crops, which are grown in rainy season, called the kharif season from the month of June to October, and some of the crops are grown in the winter season, called the Rabi season from November to April. Paddy, soyabean, pigeon pea, maize, cotton, green gram and black gram are kharif crops, whereas wheat, gram, peas, mustard, linseed are Rabi crops.

In India there has been a four times increase in the production of food grains from 1952 to 2010 with only 25% increase in the cultivable land area. This increase in production has been achieved through the practices involved in farming, we can divide it into three stages. The first is the choice of seeds for planting. The second is the nurturing of the crop plants. The third is the protection of the growing and harvested crops from loss. Thus, the major groups of activities for improving crop yields can be classified as: • Crop variety improvement • Crop production improvement • Crop protection management.

(i) What is kharif season period?

- |                      |                      |
|----------------------|----------------------|
| (a) June to July     | (b) June to October  |
| (c) June to November | (d) June to December |

(ii) What is Rabi season period?

- |                          |                         |
|--------------------------|-------------------------|
| (a) November to April    | (b) November to March   |
| (c) November to February | (d) November to January |

(iii) Plants manufacture their food in sunlight by the process called \_\_\_\_\_

- |                    |                 |                |                       |
|--------------------|-----------------|----------------|-----------------------|
| (a) Photosynthesis | (b) Photoperiod | (c) Photolysis | (d) None of the above |
|--------------------|-----------------|----------------|-----------------------|

(iv) Enlist the names of Kharif crops.

**OR**

What are the measures of crop improvement?

38.) Sound is produced by vibrating objects. The matter or substance through which sound is transmitted is called a medium. It can be solid, liquid or gas. Sound moves through a medium from the point of generation to the listener. When an object vibrates, it sets the particles of the medium around it vibrating. The particles do not travel all the way from the vibrating object to the ear. Sound waves are characterized by the motion of particles in the medium and are called mechanical waves. When a vibrating object moves forward, it pushes and compresses the air in front of it creating a region of high-pressure; this region is called a compression(C). When the vibrating object moves backwards, it creates a region of low pressure called rarefaction (R). Hence sound is longitudinal wave.

(i) Sound waves are

(a) Mechanical waves

(b) Electromagnetic wave

(c) Transverse waves

(d) None of these

(ii) Sound travel in medium with

(a) Compression and rarefaction

(b) Crest and trough

(c) Both can be possible

(d) None of these

(iii) Compression is the region of

(a) High pressure

(b) Low pressure

(c) Medium pressure

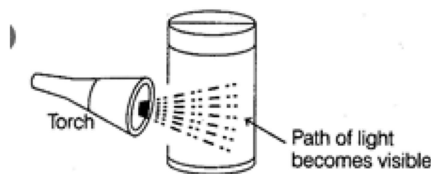
(d) None of these

(iv) What is sound and how is it produced?

**OR**

Why is sound wave called a longitudinal wave?

39.) The scattering of a beam of light by colloidal particles is called Tyndall effect. Due to scattering of light, the path of the light becomes visible. The source of light may be explored completely. The size of the scattering particles determines the colour of scattered light. The colloidal particles may be seen moving as points of light moving against a black backdrop. Ravi took some amount of substance X and added it into a transparent beaker containing water. He mixed the solution very well and then passed light through this solution by using a torch. The result observed by him is shown below:



Ravi wants to show this experiment to his younger brother. He kept the solution for 10 minutes and calls his brother and further repeat the experiment, but results are different at this time. The path is not visible.

i) What was the reason for change in result?

a) In first case, the path is visible because of the presence of impurities

b) In second case, the particles settle down

c) In second case, the concentration increases

d) In second case, the impurities dissolve in the solution

ii) What is the nature of solution obtained, when X is added to water?

a) Colloid

b) True solution

c) Suspension

d) Data insufficient

iii) What is Tyndall effect?

iv) What is size of colloidal particles?

**OR**

Which of the following is an example of colloidal solution?

a) Milk

b) Urea

c) Sugar in water

d) Common salt in water