

**K.V.NO.1.ARMAPUR**  
**FIRST PRE-BOARD (2020-21)**  
**CLASS - X -A**  
**SCIENCE (SET-I)**

**TIME:3HOURS.**

**GENERAL INSTRUCTIONS:**

- (i) There are total 36 questions divided into four sections A, B, C and D.**
- (ii) Section - A: Question no. 1 to 20 - All questions and parts thereof are of one mark each. These questions contain multiple choice questions (MCQs), very short answer questions and assertion - reason type questions.**
- (iii) Section - B: Question no. 21 to 26 are short answer type questions, carrying 2 marks each.**
- (iv) Section - C: Question no. 27 to 33 are short answer type questions, carrying 3 marks each.**
- (v) Section - D: Question no. 34 to 36 are long answer type questions carrying 5 marks each.**

**Note: There is no overall choice. However, internal choices have been provided in some questions.**

**SECTION-A**

1. Read the following passage and answer any four questions . 1\*4=4

**Scattering of Light.**

When we enter a dark room, usually we cannot see the path of light. But with the help of the laser beam, we are able to see the path. This is due to the scattering of light by small particles of air in the path of the laser beam. The phenomenon in which path of the light incident on the particle is redirected in a different direction this is called scattering of light.

Light of shorter wavelengths is scattered much more than the light of longer wavelengths. Sometimes we do wonder why does the sky appear blue? Since the wavelength of the blue color is smaller than the wavelength of the red color, the scattering



of the blue light by the particles in earth's atmosphere is very large. Although the violet light is scattered more than the blue light, our eyes are not very sensitive to violet light. This is the reason we see the sky as blue. The cloud is composed of dust particles and molecules of water. These particles are large and do not obey the law of scattering. Therefore all the colors are scattered equally. So the clouds are white. At sunrise or sunset, sunlight has to travel through the atmospheric air for longer distance. As a result, a large number of air particles come in its way. These particles scatter most of the blue light and make the sun look orange and red.

(1) Very fine particles mainly scatter \_\_\_\_\_ colored light.

- A) Blue
- B) Green
- C) Yellow
- D) Orange

(2) Which is the incorrect statement

- A) Two rainbows are formed primary and secondary.
- B) One internal reflection takes place in primary rainbows whereas two in secondary rainbow.
- C) Both rainbows are bright in Color.
- D) Reflection, Refraction and internal reflection takes place in formation of rainbows.

(3) Clouds are white in Color

- A) Due to atmospheric refraction.
- B) Angle of critical is formed.
- C) Distance is far.
- D) Particles are bigger in size and do not obey laws of scattering.

(4) Scattering of light means

- A) Reflection of light from an object in all directions .
- B) Refraction of light due to layers of different densities.
- C) None of the above
- D) Both A&B are correct

(5) Sea appears blue due to scattering of light .( True/False).

2 Read the following and answer any four

1\*4=4

All living cells require energy for various activities. This energy is available by the breakdown of simple carbohydrates either using oxygen or without using oxygen.

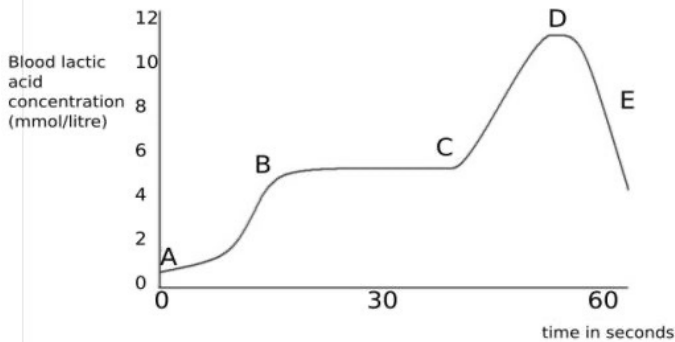
(i) Energy in the case of higher plants and animals is obtained by

- a) Breathing
- b) Tissue respiration
- c) Organ respiration
- d) Digestion of food

(ii) The graph below represents the blood lactic acid concentration of an athlete during a race of 400 m and shows a peak at point D.

### Respiration in athletics

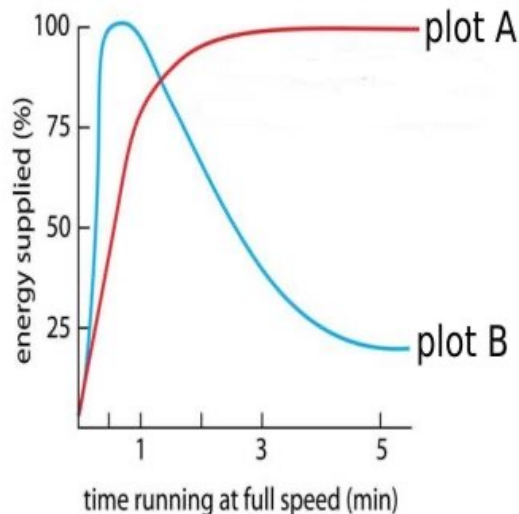
The blood of an athlete was tested before, during and after a 400m race:



Lactic acid production has occurred in the athlete while running in the 400 m race. Which of the following processes explains this event?

- a) Aerobic respiration
- b) Anaerobic respiration
- c) Fermentation
- d) Breathing

(iii) Study the graph below that represents the amount of energy supplied with respect to the time while an athlete is running at full speed.



Choose the correct combination of plots and justification provided in the following table.

	Plot A	Plot B	Justification
a)	Aerobic	Anaerobic	Amount of energy is low and inconsistent in aerobic and high in anaerobic
b)	Aerobic	Anaerobic	Amount of energy is high and consistent in aerobic and low in anaerobic
c)	Anaerobic	Aerobic	Amount of energy is high and consistent in aerobic and low in anaerobic
d)	Anaerobic	Aerobic	Amount of energy is high and inconsistent in anaerobic and low in aerobic

(iv) The characteristic processes observed in anaerobic respiration are

- i) presence of oxygen
- ii) release of carbon dioxide
- iii) release of energy
- iv) release of lactic acid

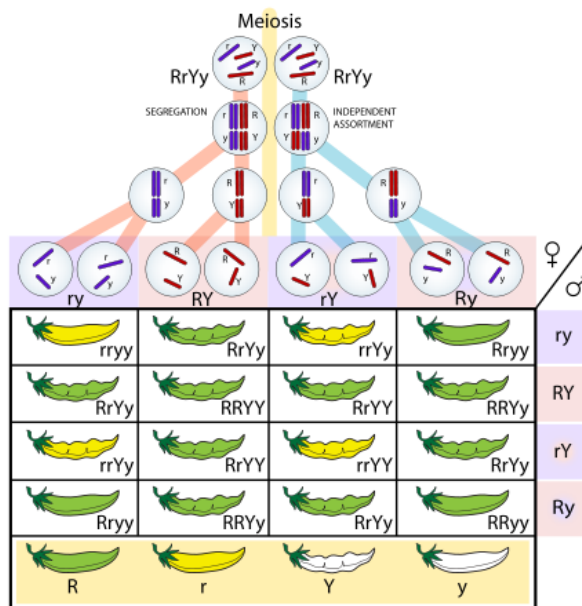
- a) i) ,ii) only
- b) i), ii), iii) only
- c) ii), iii), iv) only
- d) iv) only

(v) Study the table below and select the row that has incorrect explanation

		<b>Aerobic</b>	<b>Anaerobic</b>
a)	<b>Location</b>	Cytoplasm	Mitochondria
b)	<b>End Product</b>	CO <sub>2</sub> and H <sub>2</sub> O	Ethanol and CO <sub>2</sub>
c)	<b>Amount of ATP</b>	High	Low
d)	<b>Oxygen</b>	Needed	Not needed

3. Read the following passage below and attempt any four. 1\*4=4

The idea of particulate inheritance of genes can be attributed to the Moravian monk Gregor Mendel who published his work on pea plants in 1865. However, his work was not widely known and was rediscovered in 1901. It was initially assumed that Mendelian inheritance only accounted for large (qualitative) differences, such as those seen by Mendel in his pea plants – and the idea of additive effect of (quantitative) genes was not realised were inheritable. His pea plant demonstration became the foundation of the study of Mendelian Traits. These traits can be traced on a single locus.



- (I) If a round green - seeded pea plant RRYy is crossed with wrinkled,yellow seeded pea plant rrYY ,the seeds produced in F1 generation are
- Round and Yellow
  - Round and Green
  - Wrinkled and Green
  - Wrinkled and Yellow

(2) Mendel carried out an experiment to study law of inheritance of two traits in garden pea and gave the law

A

- a) Law of segregation
- b) Law of Dominance
- c) Law of independent assortment
- d) All of the above

(3) Which is the recessive trait

- a) Tall plant
- b) Purple flower
- c) Green seed Color
- d) Terminal flower

(4) The ratio of phenotypic di hybrid cross is

- a) 9:3:3:1
- b) 9:7
- c) 1:2:1
- d) 15:13

(5) The plant selected by Mendel *Pisum sativum* or *Solanum tuberosum*

4. Read the passage carefully and answer only four

1\*4 = 4

**Resistivity**, electrical **resistance** of a conductor of unit cross-sectional area and unit length. A characteristic property of each material, resistivity is useful in comparing various materials on the basis of their ability to **conduct electric currents**. High resistivity designates poor conductors. Resistivity, commonly symbolized by the Greek letter rho,  $\rho$ , is quantitatively equal to the resistance  $R$  of a specimen such as a wire, multiplied by its cross-sectional area  $A$ , and divided by its length  $l$ ;  $\rho = RA/l$ . The unit of resistance is the **ohm**. In the metre-kilogram-second (mks) system, the ratio of area in square metres to length in metres simplifies to just metres. Thus, in the metre-kilogram-second system, the unit of resistivity is **ohm-metre**. If lengths are measured in centimetres, resistivity may be expressed in units of ohm-centimetre.

The resistivity of an exceedingly good electrical conductor, such as hard-drawn **copper**, at 20° C (68° F) is  $1.77 \times 10^{-8}$  ohm-metre, or  $1.77 \times 10^{-6}$  ohm-centimetre. At the other

extreme, electrical insulators have resistivities in the range  $10^{12}$  to  $10^{20}$  ohm-metres.

1) The resistivity of a certain material is 0.6 ohm metre .The material is most likely to be:

- a) an insulator
- b) A superconductor
- c) A conductor
- d) A semiconductor

(2) Electrical resistivity of wire depends upon:

- a) it's length
- b) it's thickness
- c) it's shape
- d) Nature of the material

(3) Electrical resistivities of some substances, in ohm-meter, at  $20^{\circ}\text{C}$  are given as follows :

Silver  $1.60 \times 10^{-4}$

Copper  $1.62 \times 10^{-4}$

Tungsten  $5.2 \times 10^{-8}$

Mercury.  $94 \times 10^{-8}$

Iron.  $10 \times 10^{-8}$

Nichrome  $10 \times 10^{-6}$

Out of silver and copper which is the best conductor.

(4) A wire is pulled to double its length .What will its new resistivity.

- a) same
- b) decreases
- c) Increases
- d) None of the above

(5) Choose the correct statement in regarding of alloys

- a) They have low resistivity
- b) They get oxidised easily
- c) Cannot be used in bulbs
- d) High resistivity allows dissipation of electrical energy in the form of heat.

5. Name the calcium compound along with its Chemical formula which is a yellowish white powder is used as a disinfectant and also in textile industry.

6. Why are magnetic field lines more crowded towards the pole of the magnet.

OR

What is magnetic field.

7. What are the components of the transport system in highly organised plants.

8. Select the saturated hydrocarbons from the following:

$C_3H_6$  ,  $C_5H_{10}$ ,  $C_4H_{10}$ ,  $C_6H_{14}$ ,  $C_2H_4$

OR

Which element exhibit the properties of catenation to maximum extent and why ?

9. Name the causative agent of the disease “Kala-Azar” and it’s mode of reproduction.

10. How is ammeter and voltmeter connected in a circuit.

11. The atomic no of three elements A, B and C are 12, 18 & 20 respectively. State giving reason, which two elements will show the similar properties.



12. What is the effect of DNA copying which is not perfectly accurate on the reproduction process.

OR

Red colour rose flower is dominant over the white colour flower. If a cross is carried between these two flowers, give answer to the following questions

(a) Mention the genes for the traits of the parents.

(b) Write the ratio of genotype in F<sub>2</sub> generation .

13. Draw the pattern of magnetic field formed around the current carrying solenoid. Compare this field to that of a bar magnet.

14. Name the non-metal which is lustrous and a metal which is non-lustrous.

OR

Give reasons in spite of being highly reactive, aluminium is still used for making utensils.

15. Give reason Oxygenated and deoxygenated bloods are separated in the heart of mammals.

16. Why do we prefer a convex mirror as a rear view mirror in vehicles.

17. What is the role of seminal vesicles and the prostate gland .

For question numbers 18, 19 and 20, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- a) Both A and R are true, and R is correct explanation of the assertion.
- b) Both A and R are true, but R is not the correct explanation of the assertion.
- c) A is true, but R is false.
- d) A is false, but R is true.

18. **ASSERTION(A)** : Electric wires are coated with polyvinyl chloride.

**REASON (R)**: Metals are generally good conductor of heat.

19. **ASSERTION (A)**: When two ends of a metallic wire are connected across the terminals of a cell, then some potential difference is set up between its ends. The direction of electrons are from positive terminal of the cell.

**REASON(R)** : Electrons are flowing through the conductors from its higher potential to its lower potential.

OR

**ASSERTION (A)**: In a series circuit, the current is constant throughout the electric circuit.

**REASON(R)**: All electric devices need equal currents to operate properly.

20. **ASSERTION (A)**: Variation is useful for the survival of species over time.

**REASON(R)**: Populations of organisms fill well defined places in the ecosystem, using their ability to reproduce.

## SECTION-B

21.(a) What does this symbol represent .



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(b) While diluting an acid, why is it recommended that the acid should be added to water, not water to the acid

OR

Give reasons for the following:

- (a) Dry HCl does not change the colour of dry litmus paper.  
(b) All alkalis are bases but all bases are not alkalis.

22. Size of image of an object by a mirror having a focal length of 20 cm is observed to be reduced  $\frac{1}{3}$ rd of its size. At what distance from the mirror the object has been placed? What is the nature of the image and mirror.

OR

What is meant by power of a lens? What does its sign (+ve or -ve) indicate? State its SI unit. How is it related to focal length of a lens.

23. Name the process by which amoeba reproduces. Draw the various stages of reproduction in a proper sequence.

24. Write the number of periods and groups in the Modern Periodic Table. How does the metallic character of elements vary on moving (i) from left to right in a period, and (ii) down a group.

25. Carbon has four electrons in its valence shell. Which type of compounds can be formed by carbon atom and why? Give any one example of such compounds.

26. Give reasons:

- (a) Rings of cartilage are present in trachea.  
(b) Lungs always contain a residual volume of air

## SECTION-C

27. (a) "Carbon tetrachloride is not a good conductor of electricity". Give reason to justify the statement.

(b) What is a homologous series of carbon compounds? List any two characteristics .

28. List the steps of preparation of temporary mount of a leaf peel to observe stomata.

29. (a) Define electromagnetic induction.

(b) Two coils P and S are wound over the same iron core .Coil P is connected to battery and key and coil S is connected to galvanometer. Draw a suitable diagram of this arrangement and write your observations when

(i) Current in the coil P is started by closing the key.

(ii) Current continues to flow in coil P

(iii) Current in coil P is stopped by removing the key.

30. In the formation of a compound  $XY_2$ , atom X denotes one electron to each Y atom .Show the electron dot structure of X and Y and the formation of  $XY_2$  .What is the nature of bond in  $XY_2$ ? Write any three properties of  $XY_2$  .The electronic configurations of three elements X and Y are as follows: X- 2,8,2,Y- 2,7.

31. What are the methods used by plants to get rid of excretory products.

OR

(a) What is the effect of DNA copying which is not perfectly accurate on the reproduction process.

(b) "It is a matter of chance whether a couple will give birth to a male child or a female child" .Justify this statement with the help of a flow chart showing the fusion of sex chromosome.

32.(a) Derive an expression for Joules law of heating.

(b) Give two examples for applications of heating effect of electric current.

(c) 200 J of heat is produced each second in a 8 ohm resistor. Find the potential difference across the resistor.

33. Study the following table in which positions of six elements A,B,C,D,E and F are shown in the modern periodic Table

Group →	1	2	3-12	13	14	15	16	17	18
Period ↓									
2	A					B			C
3				D	E				F

On the basis of the above table, answer the following questions.

- (i) Name the element which forms only covalent compounds.
- (ii) Name the element which is metal with valency three.
- (iii) Name the element which is a non metal with valency three.
- (iv) Out of D and E ,which is bigger in size and why.
- (v) Write the common name for the family to which the elements C and F belongs.

#### SECTION - D

34. Trace the changes that takes place in a flower from gamete formation to fruit formation.

35.(a) Explain the following terms related to spherical lenses

(i) Optical centre. (ii) Centre of curvature. (iii) Principal axis. (iv) Aperture. (v) Principal focus. (vi) Focal length.

(b) A converging lens has focal length of 12 cm. Calculate at What distance should the object be placed from the lens so that it forms an image at 48 cm on the other side of the lens.

OR

An object of height 4 cm is placed at a distance of 30 cm from the optical centre of a convex lens of focal length 20 cm .Draw a ray diagram to find the position and size of the image formed .Mark optical centre 'O' and Principal focus 'F' on the diagram.Also find the approximate ratio of size of the image to the size of the object.

36. (a) Write the chemical formula of hydrated copper sulphate and anhydrous copper sulphate. Giving an activity illustrate how these two are inter convertible.

(b) Write chemical names and formulas of plaster of Paris and gypsum.

OR

(a) What is the chemical name and Chemical formula of plaster of Paris.

(b) Write a reaction between plaster of Paris and water.

(c) Write to uses of washing soda.

(d) What is Chlor-alkali process name? Name two products obtained during this process.

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