



ST. MARYS CO-ED SCHOOL, HARDA

ONLINE CLASS HOME WORK

SUBJECT – CHEMISTRY

CLASS- IX

- 1 Convert 300K into Celsius scale and -10°C into Kelvin scale. 1

ANS: (i) $300\text{ K} - 273 = 27^{\circ}\text{C}$

(ii) $-10^{\circ}\text{C} + 273 = 263\text{ K}$

- 2 Name the property of gases due to which it is possible to fill CNG in cylinders for using as fuel in cars. 1

ANS: Gases can be easily compressed.

- 3 Rubber band change its shape. Is it solid? 1

ANS: Yes, it is solid because it regains its shape.

- 4 List any two properties of particles of matter. 1

ANS: (i) They attract each other.

(ii) The particles of matter are extremely small in size which cannot be seen even with a powerful microscope.

- 5 Give reasons to explain why it takes longer to dry wet clothes in humid weather? 1

ANS: It is because air is already saturated with water vapours therefore it will not be able to hold more water vapours easily.

- 6 Convert 370 K into Celsius Scale ($^{\circ}\text{C}$). 1

ANS: $370\text{ K} - 273 = 97^{\circ}\text{C}$.

- 7 How does spreading of wet clothes quicken their drying? Explain. 1

ANS: It increases exposed surface area due to which water gets evaporated at faster rate.

- 8 What is dry ice? What happens when the pressure under which it is stored is decreased to 1 atmosphere? 1

ANS: Dry ice is solid carbon dioxide. If pressure is decreased it will change into vapours.

- 9 With which name is the phenomenon of changing of a liquid into its vapours at temperature below its boiling point known? 1

ANS: Sublimation, Evaporation.

10 The melting points of three solids X, Y and Z are 298 K, 314 K and 398 K respectively. Arrange these in increasing order of their inter particle force of attraction. 1

ANS: $X < Y < Z$ is the order of increasing inter particle attraction. Higher the force of attraction, higher will be melting point.

11 Write one important characteristic property of particles of matter. 1

ANS: Particles of matter attract each other.

12 Sponge is solid but still it can be compressed. Why? 1

ANS: Sponge has pores which has air, therefore, it can be compressed.

13 What is evaporation? 1

ANS: It is process of converting liquid into vapours.

14 Convert the following thermometer readings into kelvin -100°C , 200°C . 1

ANS: $-100^{\circ}\text{C} + 273 = 173\text{ K}$, $200^{\circ}\text{C} + 273 = 473\text{ K}$

15 What happens to the boiling point of a liquid when atmospheric pressure decreases? 1

ANS: Boiling point of liquid is the temperature at which its vapour pressure becomes equal to external pressure (atmospheric pressure).

Thus, when atmospheric pressure decreases, boiling point of liquid also decreases.

16 (a) Why path of light is not visible in a solution when a beam of light is passed through it?
(b) Classify each of the following as solution, colloid or suspension:
(i) a mixture whose particles are big enough to scatter to beam of light passing through it.
(ii) a mixture whose particles settle down when it is left undisturbed. 3

ANS: (a) It is because particles of true solution are very small and cannot scatter light.

(b) Colloidal solution have particles bigger than particles of true solution and they scatter light and path of light becomes clearly visible, e.g. when beam of light enters the dark room we can see the dust particles in air which make its path visible. Suspension has particles which are bigger and they get settle down under the force of gravity, e.g. if we keep muddy river water undisturbed for some time, particles will settle down.

17 With the help of an activity show that diffusion become faster with the increase in temperature. 3

ANS: Activity/Project:

To study the variation of rate of diffusion with temperature of solid in liquid.

Materials Required : Copper sulphate, two beakers, cold water and hot water.

Procedure: • Take 50 ml of cold water in a beaker.

• Take 50 ml of hot water in another beaker.

• Add a crystal of copper sulphate into the beaker containing 50 ml of cold water.

• Add a crystal of copper sulphate into the beaker containing 50 ml of hot water.

- Leave them undisturbed.
- Record the observations.

Observations: The colour of solution in first beaker becomes blue slowly whereas the colour becomes blue faster in second beaker.

Conclusion: The rate of diffusion increases with increase in temperature because kinetic energy of molecules increases.

18 Give reasons for the following:

- Camphor disappears if kept in open air for a few days.
- Wet clothes do not dry easily on a rainy days.
- We sweat more on humid days.

3

ANS: (a) Camphor has weak inter particle forces of attraction which can be overcome by room temperature and it changes from solid state to vapours directly and disappears.

(b) On rainy day, air is saturated with water vapours, therefore it cannot take more vapours, therefore wet clothes do not dry up easily.

(c) We sweat more on humid days because our sweat does not get evaporated easily due to higher content of water vapours in atmosphere, therefore, we sweat more and feel uncomfortable in coastal areas where humidity is high.

19 (a) Wax is heated in a china dish. How will the following change during heating—

- kinetic energy of particle
- inter particle distance

(b) Melting points of three substances A, B, C are 52°C , 175°C and 80°C . Arrange them in the decreasing order of the interparticle force of attraction in each of them. Give reason for your answer.

3

ANS: (a) (i) Kinetic energy of particles will increase.

(ii) Inter particle distance will increase.

(b) $B > C > A$

'B' has strongest interparticle force of attraction therefore more energy is needed to convert it into liquid. So it has highest melting point. 'C' has less interparticle force of attraction than 'B' therefore it has less melting point 'A' has least inter particle force of attraction. Thus, least energy is needed to convert it into liquid. It has lowest melting point.

20 Differentiate between evaporation and boiling. Give any three differences.

3

ANS:

Evaporation	Boiling
(i) It takes place at all temperatures.	(i) It takes place only at boiling point.
(ii) It causes cooling.	(ii) It does not cause cooling.
(iii) It is surface phenomenon, i.e. starts from the surface.	(iii) It is bulk phenomenon, i.e. starts from bulk.

21 Define the following terms.

- Latent heat of fusion.
- Melting point.
- Fusion.

3

ANS: (a) Latent Heat of Fusion: The amount of energy that is required to change 1 kg of a solid into liquid at atmospheric pressure without any change of temperature at its melting point is called latent heat of fusion.

(b) Melting Point: The temperature at which solid changes into liquid completely is called melting point. Melting point of solids gives indication of the strength of intermolecular forces of attraction. Higher the melting point, more will be intermolecular forces of attraction.

(c) Fusion (Melting): The process in which solid changes into liquid is called melting. It is also called fusion.

22 Give reasons for the following:

(a) Why does Ice float on water?

(b) Why does a gas fill completely the vessel in which it is kept?

(c) Latent heat of evaporation of two liquids A and B is 100 J/kg and 150 J/kg respectively. Which one can produce more cooling effect and why?

ANS: (a) It is because ice is lighter, i.e. it has lower density than water.

(b) It has very less force of attraction between particles and particles have high kinetic energy.

(c) 'B' has more heat of evaporation and will take more heat from the surroundings, therefore, it will cause more cooling.

23 (a) "Evaporation causes cooling". Explain the reason for this effect.

(b) Explain two examples from our daily life where we feel the effect of cooling due to evaporation.

ANS: (a) (i) In evaporation, heat is taken from surroundings to overcome intermolecular force of attraction which causes cooling.

(b) (ii) When we take bath with hot water, after taking bath we feel more cold because hot water gets evaporated faster.

When we place nail polish remover or perfume on our palm, we feel coldness because it takes heat from the palm and causes cooling.

24 (a) What is meant by the word 'Latent' in latent heat.

(b) Explain with example of water:

(i) latent heat of fusion, and

(ii) latent heat of vaporization

ANS: (a) The meaning of latent is hidden as it is stored in solid or liquid.

(b) (i) Latent heat of fusion: When ice is melted at 0 °C, ice change into water completely but the temperature remains constant. The energy required to melt one mole of ice into water at 0 °C is called latent heat of fusion.

(ii) Water on heating changes into vapours. When temperature reaches 100 °C water changes into steam completely but the temperature remains constant. The energy required to convert 1 mole of liquid into vapours completely at its boiling point is called latent heat of vapourisation.

25 (a) Convert 574 K to the Celsius scale.

(b) What will be the state of water at:

(i) 108°C (ii) 275 K (iii) 370 K

(c) Give reason-why water at room temperature is a liquid?

ANS: (a) $574 - 273 = 301\text{ }^{\circ}\text{C}$

- (b) (i) Steam (gas) (ii) liquid (iii) liquid.
(c) At room temperature, forces of attraction between molecules of water are not high and position of particle are not fixed, particles are moving and water can flow from higher level to lower level. It shows water is liquid at room temperature.

26 Write your observation when the following processes take place.

- (a) An aqueous solution of sugar is heated till it gets dried up.
(b) A saturated solution of potassium chloride prepared at 60 °C is allowed to cool at room temperature.
(c) A mixture of iron filings and sulphur powder is heated strongly.
(d) A beam of light is passed through a colloidal solution.
(e) Dil-HCl is added to the mixture of iron filings and sulphur powder.

5

ANS: (a) Sugar remains as residue in the form of a solid mass.

- (b) Potassium chloride crystallises out.
(c) A black coloured compound is formed.
(d) The path of the light become visible.
(e) A colourless gas is evolved.

27 (a) Define diffusion. Explain the rate of order of diffusion in solids, liquids and gases.

- (b) State the effect of temperature on diffusion.

5

ANS: (a) Diffusion: The process of intermixing of two or more substance is called diffusion.

The rate of diffusion is fastest in gases due to more kinetic energy and less inter molecular forces of attraction.

The rate of diffusion is less in liquids due to less kinetic energy and more force of attraction between particles. The rate of diffusion is minimum in solids due to least kinetic energy and maximum inter particle force of attraction.

(b) The rate of diffusion increases with increase in temperature because kinetic energy of molecules increases.

28 (a) List any two properties that liquids have in common with gases.

- (b) Give two reasons to justify that an iron almirah is a solid at room temperature.
(c) What happens to the heat energy which is supplied to the solid once it starts melting?

5

ANS: (a) (i) Liquids and gases can flow, e.g. water can flow from higher level to lower level. The smell of food can reach as while sitting away from kitchen.

(ii) Liquids and gases can take the shape of container e.g. milk will take the shape of container and bromine gas can fill up whole test tube and when we transfer it to round bottom flask, it will fill in the whole flask.

- (b) (i) It has fixed shape and volume
(ii) It cannot move, i.e. it is rigid and hard.
(c) Heat supplied is used to overcome the force of attraction between particles of solids.

29 (a) Define matter. Name the state of matter in which the forces between the constituent particles are:

- (i) strongest. (ii) weakest.
(b) Give reasons for the following:
(i) A liquid generally flows easily.
(ii) Ice at 0°C appears colder to the mouth than water at 0°C. Why?

5

(iii) Doctors advise to put strips of wet cloth on the forehead of a person having high temperature.

ANS: (a) Matter is a substance which has mass and occupies space.

(i) In solids, force of attraction between particles is strongest.

(ii) In gases, force of attraction between particles is weakest.

(b) (i) It is due to less force of attraction between particles in liquids than solids.

(ii) Ice takes latent heat of fusion from mouth to melt and therefore we feel more cold than water at 0°C.

(iii) It is because water absorbs heat from body to get evaporated and causes cooling, i.e. decrease in body temperature.

30 (a) What is matter? Write two properties of solids and two properties of liquids.

(b) Ramesh took two beakers A and B containing hot water and cold water respectively. In each beaker he dropped a crystal of copper sulphate. He kept the beakers undisturbed. After some time what did he observe? Why?

5

ANS: (a) Matter is a substance which has mass and occupies space.

Properties of solids:

(i) They have fixed shape and fixed volume

(ii) These are not compressible.

Properties of liquids:

(i) They have fixed volume but not shape

(ii) They can flow from higher level to lower level.

(b) Copper sulphate will dissolve faster in hot water than cold water because solubility increases with increase in temperature. Copper sulphate solution will be dark blue in hot water and light blue in cold water.

31 Seema took a 100 ml beaker and filled half the beaker with water and marked the level of water. She dissolved some salt with the help of a glass rod and recorded water level again.

1

Choose the correct observation related to above activity.

(i) The water level increases appreciably

(ii) The water level decreases

(iii) The water level remains the same

(iv) There is little increase in water level.

ANS: (c)

32 Which of the following is not a characteristic of matter?

1

(i) Matter is made up of extremely small particles

(ii) There is no space between particles of matter

(iii) The particles of matter are continuously moving

(iv) The particles of matter attract each other.

ANS: (b)

33 Which one of the following sets of phenomenon would increase on raising the temperature?

1

- (i) Diffusion, evaporation and compression of gases.
- (ii) Evaporation, compression of gases and solubility of solid in liquid.
- (iii) Evaporation, diffusion, expansion of gases and solubility of solid in liquid.
- (iv) Evaporation, solubility of gas in liquid, diffusion and compression of gases.

ANS: (c)

34 Shivam visited an LPG unit and found that the gas can be liquified at specific conditions of temperature and pressure. Help him to identify the correct set of conditions.

1

- (i) High temperature and high pressure.
- (ii) Low temperature and low pressure.
- (iii) Low temperature and high pressure.
- (iv) High temperature and low pressure.

ANS: (c)

35 During summer, water kept in earthen pot becomes cool due to phenomenon of

1

- (i) Diffusion
- (ii) Transpiration
- (iii) Distillation
- (iv) Evaporation

ANS: (d)

36 Which of the following is correct order of forces of attraction?

1

- (i) Water > Air > Sand
- (ii) Air > Sugar > Oil
- (iii) Air < Water < Sugar
- (iv) Salt > Air > Juice

ANS: (c)

37 If we keep cold drink bottle in freezer, what will happen?

1

- (i) Water will change into ice
- (ii) Cold drink bottle will break
- (iii) CO₂ gas will get solidified
- (iv) Nothing happens.

ANS: (b)

38 Choose the correct statement out of the following.

1

- (i) Conversion of solid into vapours without becoming liquid is called evaporation.
- (ii) Conversion of vapours into solid without becoming liquid is called sublimation.
- (iii) Conversion of solid into liquid is called sublimation.
- (iv) Conversion of liquid into vapours is called fusion.

ANS: (b)

39 Which of the following will produce severe burns ?

1

- (i) Cold water
- (ii) Hot water
- (iii) Boiling water
- (iv) Steam

ANS: (d)

40 Which of the following conditions will increase the rate of evaporation?

1

- (i) Increase in temperature of water.
- (ii) Decrease in wind speed.
- (iii) Decrease in surface area of water.
- (iv) Adding sugar to water.

ANS: (a)

41 Which of the following is incorrect? 1

- (i) Solids have fixed shape and fixed volume.
- (ii) Liquids have fixed volume but not shape.
- (iii) Gases have neither fixed shape nor volume.
- (iv) The particles have least intermolecular space but maximum kinetic energy in liquids.

ANS: (d)

42 Which of the following is correct order of density ? 1

- (i) Air < Exhaust from chimneys < Honey < Water < Chalk < Cotton < Iron.
- (ii) Air < Exhaust from Chimneys < Water < Honey < Cotton < Chalk < Iron.
- (iii) Air < Exhaust from Chimneys < Honey < Water < Chalk < Iron < Cotton
- (iv) Air < Exhaust from Chimneys < Water < Honey < Chalk < Cotton < Iron.

ANS: (b)

43 Ice floats on water because 1

- (i) it has higher density than water.
- (ii) it has lower density than water due to more volume.
- (iii) it is solid.
- (iv) it is low melting solid.

ANS: (b)

44 The physical state of a matter depends upon 1

- (i) temperature and pressure.
- (ii) temperature only.
- (iii) pressure only.
- (iv) nature of substance.

ANS: (a)

45 The boiling point of water at higher altitude is 1

- (i) 373 K

(ii) $< 373 \text{ K}$

(iii) $> 373 \text{ K}$

(iv) 273 K

ANS: (b)

46 Latent heat of fusion is amount of

1

(i) heat energy required to change 1 kg solid into liquid completely at its melting point.

(ii) heat energy required to convert 1 kg solid into liquid at room temperature.

(iii) heat energy required to change 1 g of solid into liquid completely.

(iv) heat energy required to change 1 kg of solid into liquid at any temperature.

ANS: (a)

47 The temperature at which vapour pressure of liquid becomes equal to atmospheric pressure is called

1

(i) melting point.

(ii) boiling point.

(iii) ignition temperature.

(iv) sublimation temperature.

ANS: (b)

48 Which of the following is not correct?

1

(i) SI unit of temperature is kelvin

(ii) SI unit of pressure is atm

(iii) SI unit of density is kg/m^3

(iv) $1 \text{ litre} = 1000 \text{ cm}^3 = 1 \text{ dm}^3$

ANS: (b)

49 Which of the following has minimum kinetic energy ?

1

(i) Particles of ice below 0°C .

(ii) Particles of water at 0°C .

(iii) Particles of water at 100°C .

(iv) Particles of steam at 100 °C.

ANS: (a)

50 Which of the following cannot be separated by sublimation?

1

- (i) Iodine and NaCl.
- (ii) Iodine and Ammonium chloride.
- (iii) Camphor and Sodium chloride.
- (iv) Naphthalene and Sand.

ANS: (b)

51 Which one of the following sets of phenomena would increase on raising the temperature?

1

- (i) Diffusion, evaporation, compression of gases.
- (ii) Evaporation, compression of gases, solubility.
- (iii) Evaporation, diffusion, expansion of gases.
- (iv) Evaporation, solubility, diffusion, compression of gases.

ANS: (c)

52 Seema visited a Natural Gas Compressing Unit and found that the gas can be liquefied under specific conditions of temperature and pressure. While sharing her experience with friends she got confused. Help her to identify the correct set of conditions. 1

- (i) Low temperature, low pressure
- (ii) High temperature, low pressure
- (iii) Low temperature, high pressure
- (iv) High temperature, high pressure

ANS: (c)

53 The property to flow is unique to fluids. Which one of the following statement is correct?

1

- (i) Only gases behave like fluids
- (ii) Gases and solids behave like fluids
- (iii) Gases and liquids behave like fluids

(iv) Only liquids are fluids

ANS: (c)

54 During summer, water kept in an earthen pot becomes cool because of the phenomenon of

1

(i) diffusion

(ii) transpiration

(iii) osmosis

(iv) evaporation

ANS: (d)

55 A few substances are arranged in the increasing order of 'forces of attraction' between their particles. Which one of the following represents a correct arrangement?

1

(i) Water, air, wind

(ii) Air, sugar, oil

(iii) Oxygen, water, sugar

(iv) Salt, juice, air

ANS: (c)

56 On converting 25 °C, 38 °C and 66 °C to Kelvin scale, the correct sequence of temperature will be

1

(i) 298 K, 311 K and 339 K

(ii) 298 K, 300 K and 338 K

(iii) 273 K, 278 K and 543 K

(iv) 298 K, 310 K and 338 K

ANS: (a)

57 The non S.I. and S.I. units of some physical quantities are given in column 'A' and 'B' respectively. Match the units belonging to same physical quantity.

1

Column I		Column II	
1.	degree celsius	(A)	metre
2.	centimetre	(B)	kelvin
3.	g cm ⁻³	(C)	pascal
4.	atm	(D)	kilogram
5.	mg (milligram)	(E)	kg m ⁻³

ANS: 1. (B), 2. (A), 3. (E), 4. (C), 5. (D)

58 The melting point of ice on kelvin scale is _____.

1

ANS: 273 K

59 The best evidence that particles of matter are constantly moving comes from the studies of diffusion and _____.

1

ANS: Brownian motion.

60 At room temperature the forces of attraction between the particles of solid substance are more than those which exist in gaseous state. [True/False]

1

ANS: True

61 At room temperature kinetic energy of particles in solids is less than that of particles of gaseous state. [True/False]

1

ANS: True

62 A pure substance/element contains

1

- (i) two or more types of particles
- (ii) one type of particles
- (iii) many types of particles
- (iv) two or more forms of matter.

ANS: (b)

63 Which of the following is a colloidal solution?

1

- (i) Starch solution
- (ii) Copper sulphate solution
- (iii) Chalk powder in water
- (iv) Kerosene oil and water.

ANS: (a)

64 Which of the following is not a mixture ?

1

- (i) Soap solution

- (ii) Blood
- (iii) Carbon dioxide
- (iv) Coal

ANS: (c)

65 Which of the following is a physical change?

1

- (i) Burning of a candle
- (ii) Rusting of iron
- (iii) Freezing of water
- (iv) Digestion of food.

ANS: (c)

66 Which of the following is a chemical change?

1

- (i) Melting of wax
- (ii) Mixing of iron filings with sulphur powder
- (iii) Cooking of food
- (iv) Dissolving salt in water.

ANS: (c)

67 Which of the following has the highest solubility at 293 K?

1

- (i) KNO_3
- (ii) NaCl
- (iii) KCl
- (iv) NH_4Cl

ANS: (d)

68 Which of the following has the highest solubility at 313 K?

1

- (i) KNO_3
- (ii) NaCl
- (iii) KCl

(iv) NH_4Cl

ANS: (a)

69 Which of the following statements is true ?

1

- (i) Homogeneous mixtures can have variable composition
- (ii) Homogeneous mixtures fixed composition
- (iii) Heterogeneous mixtures have fixed composition
- (iv) Salt solution is heterogeneous mixture.

ANS: (a)

70 Alloys are

1

- (i) pure substances
- (ii) homogeneous mixtures
- (iii) compounds
- (iv) of fixed composition.

ANS: (b)

71 The size of particles of true solutions is

1

- (i) $< 1 \text{ nm}$
- (ii) Between 1 nm to 100 nm
- (iii) $> 100 \text{ nm}$
- (iv) $> 1000 \text{ nm}$

ANS: (a)

72 Which of the following is the most stable ?

1

- (i) True solution
- (ii) Colloidal solution
- (iii) Suspension
- (iv) Milk

ANS: (a)

73 40 g of common salt is dissolved in 320 g of water. The mass percentage of salt is

1

- (i) 11.1%
- (ii) 12.5%
- (iii) 15%
- (iv) 10%

ANS: (a)

74 Which of the following statements is not correct?

1

- (i) Colloidal solution is homogeneous
- (ii) Colloidal solution appears to be homogeneous but actually it is heterogeneous
- (iii) Colloidal solution shows Tyndall effect
- (iv) Sky is blue due to Tyndall effect.

ANS: (a)

75 The particles of suspension

1

- (i) can't be seen with naked eye
- (ii) can't be seen with the help of powerful microscope
- (iii) can be seen with naked eye
- (iv) can't be seen with electron microscope.

ANS: (c)

76 The particles do not settle down in case of

1

- (i) true solution
- (ii) colloidal solution
- (iii) suspension
- (iv) both (a) and (b).

ANS: (d)

77 The particles of colloidal solution can be separated by 1

- (i) evaporation
- (ii) filtration
- (iii) centrifugation
- (iv) distillation.

ANS: (c)

78 The dye from blue fountain pen ink can be separated by 1

- (i) evaporation
- (ii) distillation
- (iii) chromatography
- (iv) separating funnel.

ANS: (a)

79 What is the percentage of fat present in milk of full cream? 1

- (i) 6.0 %
- (ii) 4.0 %
- (iii) 3.0 %
- (iv) 1.5 %

ANS: (a)

80 The type of protein present in milk is 1

- (i) casein
- (ii) albumin
- (iii) soyabean
- (iv) keratin.

ANS: (a)

81 Kerosene oil and water can be separated by 1

- (i) separating funnel

- (ii) distillation
- (iii) centrifugation
- (iv) evaporation.

ANS: (a)

82 Mixture of Blue ink and red ink can be separated by

1

- (i) evaporation
- (ii) separating funnel
- (iii) chromatography
- (iv) distillation.

ANS: (c)

83 Acetone and water can be separated by

1

- (i) distillation
- (ii) fractional distillation
- (iii) steam distillation
- (iv) evaporation.

ANS: (a)

84 Which has the lowest boiling point?

1

- (i) O_2
- (ii) Ar
- (iii) N_2
- (iv) Br_2

ANS: (c)

85 Petrol is obtained from petroleum by

1

- (i) distillation
- (ii) fractional distillation
- (iii) steam distillation

(iv) distillation under reduced pressure.

ANS: (b)

86 Which of the following are homogeneous in nature ?

- (i) ice
- (ii) wood
- (iii) soil
- (iv) air

1

- (i) (i) and (iii)
- (ii) (ii) and (iv)
- (iii) (i) and (iv)
- (iv) (iii) and (iv)

ANS: (c)

87 Which of the following are physical changes?

- (i) Melting of iron metal
- (ii) Rusting of iron
- (iii) Bending of an iron rod
- (iv) Drawing a wire of iron metal

- (i) (i), (ii) and (iii)
- (ii) (i), (ii) and (iv)
- (iii) (i), (iii) and (iv)
- (iv) (ii), (iii) and (iv)

ANS: (c)

88 Which of the following are chemical changes?

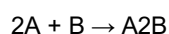
- (i) Decaying of wood
- (ii) Burning of wood
- (iii) Sawing of wood
- (iv) Hammering of a nail into a piece of wood

1

- (i) (i) and (ii)
- (ii) (ii) and (iii)
- (iii) (iii) and (iv)
- (iv) (i) and (iv)

ANS: (a)

- 89 Two substances, A and B were made to react to form a third substance, A_2B according to the following reaction



Which of the following statements concerning this reaction are incorrect?

- (i) The product A_2B shows the properties of substances A and B.
- (ii) The product will always have a fixed composition.
- (iii) The product so formed cannot be classified as a compound.
- (iv) The product so formed is an element.

1

- (i) (i), (ii) and (iii)
- (ii) (ii), (iii) and (iv)
- (iii) (i), (iii) and (iv)
- (iv) (ii), (iii) and (iv)

ANS: (c)

- 90 Two chemical species X and Y combine together to form a product P which contains both X and Y



X and Y cannot be broken down into simpler substances by simple chemical reactions. Which of the following concerning the species X, Y and P are correct?

- (i) P is a compound
- (ii) X and Y are compounds
- (iii) X and Y are elements
- (iv) P has a fixed composition

1

- (i) (i), (ii) and (iii)
- (ii) (i), (ii) and (iv)

(iii) (ii), (iii) and (iv)

(iv) (i), (iii) and (iv)

ANS: (d)

91 Match the Column I with Column II

Column I	
1. Common salt from sea water	(A) Gel
2. Suspension	(B) Evaporation
3. Brass	(C) Centrifugation
4. Cream from milk	(D) Solid in solid mixture
5. Liquid in solid	(E) Heterogeneous

1

ANS: 1. (B), 2. (E), 3. (D), 4. (C), 5. (A)

92 _____ is a non-metal with lustrous appearance.

1

ANS: Iodine

93 Brass is an alloy composed of _____ and _____.

1

ANS: copper, zinc

94 Pure substances have fixed melting point.

1

ANS: True

95 The properties of compound are similar to that of its components.

1

ANS: False

96 4.48 L of CH_4 at STP is equal to

1

(i) 1.2×10^{22} molecules of CH_4

(ii) 0.5 mol of CH_4

(iii) 3.2 g of CH_4

(iv) 0.1 mol of CH_4 .

ANS: (c)

97 Which of the following illustrates the law of conservation of mass ?

1

- (i) 12 g of CO reacts with 32 g of O₂ to form 44 g of CO₂
- (ii) 1.70 g of AgNO₃ reacts with 0.01 mol of HCl to form 1.435 g of AgCl and 0.63 g of HNO₃
- (iii) 12 g of C is heated in vacuum and cooling there is no change in mass
- (iv) 100 g of ice forms 100 g of water liquid on melting.

ANS: (b)

98 If isotopic distribution of C-12 and C-14 are 98% and 2% respectively, then number of C-14 atoms in 12 g of carbon is

1

- (i) 1.032×10^{22}
- (ii) 1.032×10^{23}
- (iii) 3.88×10^{22}
- (iv) 1.302×10^{22}

ANS: (a)

99 An element has 8% of sulphur. What will be the minimum molecular weight of the compound ?

1

- (i) 100
- (ii) 200
- (iii) 300
- (iv) 400

ANS: (d)

100 Identify the correct symbol of Gold.

1

- (i) Go
- (ii) Gd
- (iii) Ge
- (iv) Au

ANS: (d)

101 Identify the correct one from the following statements.

1

- (i) Elements can be changed into simpler substances.
- (ii) Compound has variable composition
- (iii) The mixture has properties similar to its components.
- (iv) Brass is a compound of Copper and Zinc.

ANS: (c)

102 The combining capacity of an element is called

1

- (i) Valency
- (ii) Atomicity
- (iii) Atomic number
- (iv) Valence electron

ANS: (a)

103 18 g of water is electrolysed. The weight of oxygen formed will be

1

- (i) 16 g
- (ii) 8 g
- (iii) 4 g
- (iv) 2 g

ANS: (a)

104 Which is not represented by 1 mole of nitrogen gas ?

1

- (i) 6.023×10^{23} N_2 molecules
- (ii) 22.4 L of N_2 at STP
- (iii) 6.023×10^{23} nitrogen atoms
- (iv) 28 g of nitrogen.

ANS: (c)

105 The balancing of chemical equation is based on

1

- (i) Law of combining volume
- (ii) Law of conservation of mass

(iii) Law of constant proportion

(iv) Avogadro's Law

ANS: (b)

106 1.5 g of hydrocarbon on combustion in excess of oxygen produces 4.4 g of CO_2 and 2.7 g of H_2O , the data illustrates

1

(i) Law of conservation of mass

(ii) Law of constant proportion

(iii) Law of multiple proportion

(iv) Both (a) and (b)

ANS: (a)

107 Which of the following is correct statement ?

1

(i) Na_2S is Sodium sulphide, Na_2SO_3 is Sodium sulphite and Na_2SO_4 is Sodium sulphate.

(ii) Na_2S is Sodium sulphite, Na_2SO_3 is Sodium sulphide and Na_2SO_4 is Sodium sulphate.

(iii) Na_2S is Sodium sulphite, Na_2SO_3 is Sodium sulphate and Na_2SO_4 is Sodium sulphide

(iv) Na_2S is Sodium sulphide, Na_2SO_3 is Sodium sulphate and Na_2SO_4 is Sodium thiosulphate.

ANS: (a)

108 The formula of Ammonium phosphate is

1

(i) $(\text{NH}_4)_3\text{PO}_4$

(ii) $(\text{NH}_4)_3\text{PO}_3$

(iii) $(\text{NH}_4)_3\text{P}$

(iv) $(\text{NH}_4)\text{PO}_4$

ANS: (a)

109 Molecular weight of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is equal to [$\text{Cu} = 63.5 \text{ u}$, $\text{S} = 32 \text{ u}$, $\text{O} = 16 \text{ u}$, $\text{H} = 1 \text{ u}$]

1

(i) 249.5 u

(ii) 159.5 u

(iii) $159.5 \times 90 \text{ u}$

(iv) $159.5 + 10 + 16 \text{ u}$

ANS: (a)

110 2 moles of H atoms at STP occupy volume of

1

(i) 22.4 L

(ii) 11.2 L

(iii) 44.8 L

(iv) 2 L

ANS: (a)

111 How many moles of electrons weigh equal to one kilogram? [Mass of $1 \text{ e} = 9.1 \times 10^{-31} \text{ kg}$]

1

(i) 6.022×10^{23}

(ii) $\frac{1}{9.108} \times 10^{31}$

(iii) $\frac{6.022}{9.108} \times 10^{22}$

(iv) $\frac{1 \times 10^8}{9.1 \times 6.022}$

ANS: (d)

112 Arrange the following in decreasing order of mass I. 10^{23} molecules of H_2 II. 0.1 mol of H_2O III. 0.01 mole of atoms of Nitrogen IV. 2.24 L of O_2 at STP

1

(i) IV, II, I, III

(ii) IV, I, II, III

(iii) IV, III, I, II

(iv) IV, I, III, II

ANS: (a)

113 Arrange the following in increasing order of number of molecules. I. 0.5 mol of H_2

II. 4.0 g of H_2

III. 18 g of H_2O

IV. 2.2 g of CO_2

1

- (i) $II > III > I > IV$
(ii) $IV < I < III < II$
(iii) $I < II < III < IV$
(iv) $IV < III < I < II$

ANS: (b)

114 How many atoms are present in 52 u of He ?

1

- (i) 13 atoms
(ii) $13 \times 6.022 \times 10^{23}$ atoms
(iii) $52 \times 6.023 \times 10^{23}$ atoms
(iv) $4 \times 6.022 \times 10^{23}$ atoms

ANS: (a)

115 The mass of sodium in 5.85 g of NaCl is

1

- (i) 2.3 g
(ii) 3.5 g
(iii) 5.8 g
(iv) 0.23 g

ANS: (a)

116 The mass of magnesium oxide formed by burning 1.2 g of Mg in excess of oxygen is

1

- (i) 0.2 g
(ii) 2.0 g
(iii) 4.0 g
(iv) 1.0 g

ANS: (b)

117 Which of the following contains maximum number of atoms ?

1

- (i) 2.0 moles of S_8
(ii) 6.0 moles of S

(iii) 2.0 moles of SO_2

(iv) 44.8 L of SO_2 at STP

ANS: (a)

118 A sample of AlF_3 contains 3.0×10^{24} F^- ions. The number of formula units of this sample is

1

(i) 3.0×10^{24}

(ii) 1.0×10^{24}

(iii) 9.0×10^{24}

(iv) 3.0×10^{23}

ANS: (b)

119 Out of 1.0 g oxygen gas, 1.0 g of oxygen atoms and 1.0 g of ozone, the maximum number of atoms are contained in

1

(i) 1.0 g of atomic oxygen

(ii) 1.0 g of oxygen gas

(iii) 1.0 g of ozone

(iv) All contain same number of atoms

ANS: (d)

120 Which pair of species contains same percentage of carbon?

1

(i) CH_3COOH and $\text{C}_6\text{H}_{12}\text{O}_6$

(ii) $\text{C}_6\text{H}_{12}\text{O}_6$ and $\text{C}_{12}\text{H}_{22}\text{O}_{11}$

(iii) CO_2 and CH_4

(iv) CH_4 and C_2H_6

ANS: (a)

121 The mass of 18 ml of water (H_2O) at 4°C is equal to

1

(i) 18 g

(ii) $< 18 \text{ g}$

(iii) $> 18 \text{ g}$

(iv) 4 g

ANS: (a)

122 If the density of water is 1 g cm^{-3} , then the volume occupied by one molecule of water is approximately

1

(i) 18 cm^3

(ii) 22400 cm^3

(iii) $6.023 \times 10^{-23} \text{ cm}^3$

(iv) $2.9 \times 10^{-23} \text{ cm}^3$

ANS: (d)

123 The number of atoms present in 0.5 mol of nitrogen atoms is same as in

1

(i) 12 g of C

(ii) 24 g of Mg

(iii) 8 g of O

(iv) 32 g of S

ANS: (c)

124 $\text{NaOH (aq)} + \text{HNO}_3 \text{ (aq)} \rightarrow \text{NaNO}_3 \text{ (aq)} + \text{H}_2\text{O (l)}$ In this reaction Nitric acid acts as

1

(i) acid

(ii) base

(iii) oxidising agent

(iv) dehydrating agent

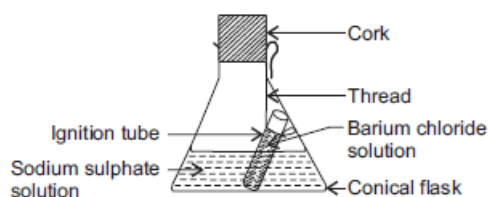
ANS: (a)

125 Activity :

- Prepare solution of barium chloride in water and take it in an ignition tube.
- Prepare solution of sodium sulphate in water and take it in a conical flask.
- Hang the ignition tube in the flask carefully so that the solutions do not get mixed. Put the cork on the conical flask as shown in figure.
- Weigh the flask with the contents carefully.

1

- Now tilt and shake the flask so that both the solutions get mixed.
- Weigh again.



Which law is verified by this activity?

- (i) Law of conservation of mass
- (ii) Law of constant composition
- (iii) Law of multiple proportion
- (iv) Both (a) and (b)

ANS: (a)

126 Which of the following correctly represents 360 g of water? (i) 2 moles of H_2O (ii) 20 moles of water (iii) 6.022×10^{23} molecules of water (iv) 1.2044×10^{25} molecules of water

1

- (i) (i)
- (ii) (i) and (iv)
- (iii) (ii) and (iii)
- (iv) (ii) and (iv)

ANS: (d)

127 Which of the following statements is not true about an atom?

1

- (i) Atoms are not able to exist independently
- (ii) Atoms are the basic units from which molecules and ions are formed
- (iii) Atoms are always neutral in nature
- (iv) Atoms aggregate in large numbers to form the matter that we can see, feel or touch

ANS: (a)

128 The chemical symbol for nitrogen gas is

1

- (i) Ni

- (ii) N_2
- (iii) N^+
- (iv) N

ANS: (b)

129 The chemical symbol for sodium is

1

- (i) So
- (ii) Sd
- (iii) NA
- (iv) Na

ANS: (d)

130 Which of the following would weigh the highest?

1

- (i) 0.2 mole of sucrose ($C_{12}H_{22}O_{11}$)
- (ii) 2 moles of CO_2
- (iii) 2 moles of $CaCO_3$
- (iv) 10 moles of H_2O

ANS: (c)

131 Which of the following has maximum number of atoms?

1

- (i) 18 g of H_2O
- (ii) 18 g of O_2
- (iii) 18 g of CO_2
- (iv) 18 g of CH_4

ANS: (d)

132 Which of the following contains maximum number of molecules?

1

- (i) 1 g CO_2
- (ii) 1 g N_2
- (iii) 1 g H_2

(iv) 1 g CH₄

ANS: (a)

133 Match the Column I with Column II

Column I	Column II
(i) Quick lime	(A) NaOH
(ii) Baking soda	(B) CaO
(iii) Washing soda	(C) Ca(OH) ₂
(iv) Lime water	(D) NaHCO ₃
(v) Caustic soda	(E) Na ₂ CO ₃ . 10H ₂ O

1

ANS: (i) B (ii) D (iii) E (iv) C (v) A

134 Match the following:

Elements	Symbols
(i) Sodium	(A) Ag
(ii) Mercury	(B) Hg
(iii) Lead	(C) Na
(iv) Silver	(D) Pb

1

ANS: (a) (i) C, (ii) B, (iii) D, (iv) A

135 An _____ is a positively or negatively charged atoms.

1

ANS: ion

136 The _____ of an ion is equal to the charge on the ion.

1

ANS: valency

137 32 g of O₂ has volume equal to 22.4 L at STP.

1

ANS: True

138 0.2 mol of oxygen atom weighs equal to 3.2 g.

1

ANS: True

139 52 u of He contains 13 atoms.

1

ANS: True

140 The charge/mass ratio of electron

1

- (i) depends upon nature of gas
- (ii) depends upon nature of electrodes
- (iii) remains constant
- (iv) depends upon both nature of gas and nature of electrodes.

ANS: (c)

141 Which of the following statement(s) is/are incorrect for anode rays?

1

- (i) They are deflected by electric and magnetic fields.
- (ii) Their charge/mass ratio depends upon the gas in the discharge tube used to produce anode rays.
- (iii) The charge/mass ratio of particles in anode rays is constant.
- (iv) They are produced by ionisation of gas in the discharge tube.

ANS: (c)

142 Rutherford's scattering experiment fails for very small scattering angles because

1

- (i) whole nuclear charge of the target atom is not screened by its electrons at all.
- (ii) the impact parameter between the α -particle source and the nucleus of target is very large as compared to the size of nucleus.
- (iii) the velocity of α -particles is large.
- (iv) the gold foil is thin.

ANS: (b)

143 1 mole of diatomic element X_2 contains 34 and 40 moles of electrons and neutrons respectively. The isotopic formula of the element is

1

- (i) ${}^{74}_{34}X$
- (ii) ${}^{37}_{17}X$
- (iii) ${}^{40}_{34}X$

(iv) ${}_{40}^{74}\text{X}$

ANS: (b)

144 The conclusion of Rutherford's scattering experiment does not include

1

- (i) α -particles can come within the distance of order of 10^{-14} m of the nucleus.
- (ii) The radius of nucleus is less than 10^{-14} m.
- (iii) Scattering follows coulomb's law, i.e., same charges repel each other.
- (iv) The positively charged particles of atom move with very high velocity.

ANS: (d)

145 The electronic configuration of Rb(37) will be

1

- (i) 2, 8, 18, 9
- (ii) 2, 8, 18, 8, 1
- (iii) 2, 8, 8, 18, 1
- (iv) 2, 8, 18, 1, 8

ANS: (b)

146 A student weighs 30 kg. Suppose his body is entirely made up of electrons. How many electrons are there in his body?

1

- (i) 3.29×10^{31}
- (ii) 3.29×10^{23}
- (iii) 3.29×10^{30}
- (iv) 3.29×10^{32}

ANS: (a)

147 Which of the following is correct?

Column I	Column II
A. Electron	(i) Positive charge
B. Proton	(ii) No charge
C. Neutron	(iii) Negative charge

1

- (i) A (iii), B (i) C (ii)
- (ii) A (i), B (ii) C (iii)
- (iii) A (iii), B (ii) C (i)
- (iv) A (ii), B (i) C (iii)

ANS: (a)

148 Which of the following is correct?

Column I	Column II
A. Electron	(i) 1.00867 u
B. Proton	(ii) 9.1×10^{-31} kg
C. Neutron	(iii) 1.00728 u

1

- (i) A (ii), B (iii) C (i)
- (ii) A (i), B (ii) C (iii)
- (iii) A (iii), B (ii) C (i)
- (iv) A (ii), B (i) C (iii)

ANS: (a)

149 Which of the following are isobars?

1

- (i) $^{35}_{17}\text{Cl}$, $^{37}_{17}\text{Cl}$
- (ii) ^3_1H , ^2_1H
- (iii) $^{40}_{18}\text{Ar}$, $^{40}_{20}\text{Ca}$
- (iv) $^{16}_8\text{O}$, $^{15}_8\text{O}$

ANS: (c)

150 Which of the following statement(s) is/are correct?

1

- (i) Isotopes differ in number of neutrons but have same number of protons and electrons.
- (ii) Isobars differ in number of neutrons but have same number of protons and electrons.
- (iii) Isotopes differ in number of electrons, protons and neutrons and differ in chemical

properties.

(iv) Isobars differ in number of electrons, protons and neutrons and have same chemical properties.

ANS: (a)

151 Rutherford's α -scattering experiment led to the conclusion that

1

- (i) mass and energy are inter-related
- (ii) the mass and the positive charge of an atom are concentrated in the nucleus
- (iii) neutrons are present in the nucleus
- (iv) atoms are electrically neutral.

ANS: (b)

152 Which of the following reactions led to the discovery of the neutron?

1

- (i) ${}^{14}_6\text{C} + {}^1_1\text{H} \rightarrow {}^{14}_7\text{N} + {}^1_0\text{n}$
- (ii) ${}^{11}_5\text{B} + {}^2_1\text{H} \rightarrow {}^{12}_6\text{C} + {}^1_0\text{n}$
- (iii) ${}^9_4\text{Be} + {}^4_2\text{He} \rightarrow {}^{12}_6\text{C} + {}^1_0\text{n}$
- (iv) ${}^8_4\text{Be} + {}^4_2\text{He} \rightarrow {}^{11}_6\text{C} + {}^1_0\text{n}$

ANS: (c)

153 Which of the following pairs have identical values of charge/mass?

1

- (i) A proton and a deuterium
- (ii) A proton and a neutron
- (iii) A deuterium and an α -particle
- (iv) An electron and γ -rays

ANS: (c)

154 Which of the following is true for Thomson's model of atom?

1

- (i) Atom consists of neutrons.
- (ii) The attraction between clouds of positive charge and the electron balances their mutual repulsion.

(iii) It can explain the existence of protons.

(iv) It leads to discovery of nucleus.

ANS: (b)

155 If K, L, M N, shells of an atom are full. The total number of electrons in that atom are :

1

(i) 60

(ii) 26

(iii) 42

(iv) 36

ANS: (d)

156

Atoms	Protons	Neutrons	Electrons
A	17	18	17
B	11	12	10
C	17	20	17
D	1	0	0
E	18	22	18
F	9	10	10

1

Which of the above are positively charged ions?

(i) A and B

(ii) C and D

(iii) B and D

(iv) D and F

ANS: (c)

157 The electronic configuration of Ca(20) is

1

(i) 2, 8, 10

(ii) 2, 8, 8, 2

(iii) 2, 8, 2, 8

(iv) 2, 2, 8, 8

ANS: (b)

158 Composition of nuclei of two atomic species X and Y are given:

	X	Y
P	6	7
N	8	7

1

The mass number of X and Y and their relation is

- (i) 14, 14; Isobars
- (ii) 13, 15; Isotopes
- (iii) 14, 14; Isotopes
- (iv) 13, 15; Isobars

ANS: (a)

159 Na^+ has 12 neutrons and 10 electrons. Which of the following statement is correct?

1

- (i) Na^+ has atomic number equal to 10 and mass number 22
- (ii) Na^+ has atomic number equal to 11 and mass number 23
- (iii) Na^+ has atomic number equal to 10 and mass number 23
- (iv) Na^+ has atomic number equal to 11 and mass number 22

ANS: (b)

160 Which of the following statement is correct about proton?

1

- (i) It is a nucleus of deuterium
- (ii) It is an ionised hydrogen atom
- (iii) It is an ionised hydrogen molecule
- (iv) α -Particles consist of He^+ ions

ANS: (b)

161 The highest value of e/m of anode rays has been observed when the discharge tube is filled with

1

- (i) N_2

(ii) O_2

(iii) He

(iv) H_2

ANS: (d)

162 When a gold sheet is bombarded by a beam of α -particles, only a few of them got deflected whereas most go straight, undeflected. This is because 1

(i) the force of attraction exerted on α -particles by electrons is insufficient

(ii) the volume of nucleus is smaller than that of atom

(iii) the force of repulsion acting on fast moving α -particles is very small

(iv) the neutrons have no effect on α -particles.

ANS: (b)

163 Which of the following statements does not belong to Bohr's model? 1

(i) Energy of the electrons in the orbit is quantised, i.e., they have fixed energies.

(ii) The electron in the orbit nearest to the nucleus is in lowest energy state and farthest away from nucleus is in highest energy state.

(iii) Electrons revolve around the nucleus in different orbits having fixed energies.

(iv) The electrons radiate energy during revolution due to force of attraction between nucleus and electrons.

ANS: (d)

164 Which of the following statements is incorrect? 1

(i) Co-60 is used in treatment of cancer.

(ii) I-132 is used in thyroid scan and treatment of goiter.

(iii) C-14 is used to determine the age of old samples of living organisms.

(iv)

2_1H is used to determine the age of old samples of water and wine.

ANS: (d)

165 How many electrons, protons and neutrons will be present in X^- , if atomic number of X is 9 and mass number is 19 ?

1

- (i) $E = 9, P = 9, N = 10$
- (ii) $E = 10, P = 9, N = 10$
- (iii) $E = 10, P = 10, N = 10$
- (iv) $E = 9, P = 10, N = 10$

ANS: (b)

166

1

Elements	A	B	C	D	E
Mass Number	1	7	14	40	40
Atomic Number	1	3	7	18	20

The element which can lose two electrons easily is

- (i) B
- (ii) C
- (iii) D
- (iv) E

ANS: (d)

167 Which of the following do not have same number of valence electrons?

1

H, He, Li, Be, B, C, N, O, F, Ne, Na, Mg, Al, Si, P, S, Cl, Ar, K, Ca

- (i) H, Li, Na, K
- (ii) He, Mg, Be, Ca
- (iii) B, Al, N, P
- (iv) O, S

ANS: (c)

168 An element has 3 valence electrons in its outermost 3rd shell, the name of element is

1

- (i) B
- (ii) Al
- (iii) Ga
- (iv) In

ANS: (b)

169 Which of the following does not have 8 valence electrons?

1

- (i) Ar
- (ii) Ne
- (iii) Kr
- (iv) He

ANS: (d)

170 Which of the following correctly represent the electronic distribution in the Mg atom?

1

- (i) 3, 8, 1
- (ii) 2, 8, 2
- (iii) 1, 8, 3
- (iv) 8, 2, 2

ANS: (b)

171 Rutherford's alpha (α) particles scattering experiment resulted into discovery of

1

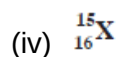
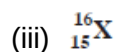
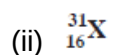
- (i) Electron
- (ii) Proton
- (iii) Nucleus in the atom
- (iv) Atomic mass

ANS: (c)

172 The number of electrons in an element X is 15 and the number of neutrons is 16. Which of the following is the correct representation of the element?

1

- (i) ${}_{15}^{31}\text{X}$



ANS: (a)

173 Dalton's atomic theory successfully explained

(i) Law of conservation of mass

(ii) Law of constant composition

(iii) Law of radioactivity

(iv) Law of multiple proportion

(i) (i), (ii) and (iii)

(ii) (i), (iii) and (iv)

(iii) (ii), (iii) and (iv)

(iv) (i), (ii) and (iv)

ANS: (d)

174 Which of the following statements about Rutherford's model of atom are correct?

(i) Considered the nucleus as positively charged

(ii) Established that the α -particles are four times as heavy as a hydrogen atom

(iii) Can be compared to solar system

(iv) Was in agreement with Thomson's model.

(i) (i) and (iii)

(ii) (ii) and (iii)

(iii) (i) and (iv)

(iv) only (i)

ANS: (a)

175 Which of the following are true for an element?

(i) Atomic number = number of protons + number of electrons

- (ii) Mass number = number of protons + number of neutrons
(iii) Atomic mass = number of protons = number of neutrons
(iv) Atomic number = number of protons = number of electrons

- (i) (i) and (ii)
(ii) (i) and (iii)
(iii) (ii) and (iii)
(iv) (ii) and (iv)

ANS: (d)

176 In the Thomson's model of atom, which of the following statements are correct?

- (i) the mass of the atom is assumed to be uniformly distributed over the atom
(ii) the positive charge is assumed to be uniformly distributed over the atom
(iii) the electrons are uniformly distributed in the positively charged sphere
(iv) the electrons attract each other to stabilise the atom

- (i) (i), (ii) and (iii)
(ii) (i) and (iii)
(iii) (i) and (iv)
(iv) (i), (iii) and (iv)

ANS: (a)

177 Rutherford's α -particle scattering experiment showed that

- (i) electrons have negative charge
(ii) the mass and positive charge of the atom is concentrated in the nucleus
(iii) neutron exists in the nucleus
(iv) most of the space in atom is empty

Which of the above statements are correct?

- (i) (i) and (iii)
(ii) (ii) and (iv)
(iii) (i) and (iv)
(iv) (iii) and (iv)

ANS: (b)

178 The ion of an element has 3 positive charges. Mass number of the atom is 27 and the number of neutrons is 14. What is the number of electrons in the ion?

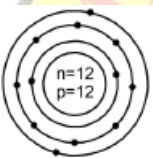
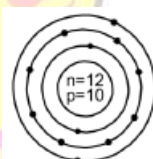
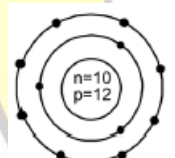
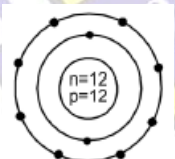
1

- (i) 13
- (ii) 10
- (iii) 14
- (iv) 16

ANS: (b)

179 Identify the Mg^{2+} ion from the figure where, n and p represent the number of neutrons and protons respectively

1

- (i) 
- (ii) 
- (iii) 
- (iv) 

ANS: (d)

180 Match the Column I with Column II

Column I	Column II
1. Co – 60	(A) To detect blood clots
2. C – 14	(B) Thyroid scan
3. I – 132	(C) Radiocarbon dating for dead organisms
4. Na –	

1

24	(D) Treatment of cancer
----	-------------------------

ANS: 1. (D), 2. (C), 3. (B), 4. (A)

181 The total number of protons and neutrons present in one atom of an element is known as its _____.

1

ANS: mass number

182 The maximum no. of electrons which can be accommodated in the L shell of an atom is _____.

1

ANS: 8

183 The density of nucleus is low.

1

ANS: False

184 The size of atom is smaller than that of nucleus.

1

ANS: False

185 The structure/organelle of a cell that functions as a passage for intracellular transport as well as a manufacturing surface, is

1

- (i) ribosome
- (ii) endoplasmic reticulum
- (iii) plastids
- (iv) plasma membrane

ANS: (b)

186 If a plant cell is kept in a hypotonic solution, it will

1

- (i) increase in its volume
- (ii) maintain the same volume
- (iii) decrease in its volume
- (iv) burst

ANS: (a)

187 Analyse the statements and pick up the right one regarding mitochondrial membranes from the following :

1

- (i) The inner membrane is longer than the outer membrane
- (ii) The outer membrane is longer than the inner membrane
- (iii) Both the inner and the outer membranes are almost equal in length.
- (iv) Mostly mitochondria have a single membrane.

ANS: (a)

188 The cell organelles (other than the nucleus) which contain DNA are

1

- (i) plastids and lysosomes
- (ii) mitochondria and Golgi apparatus
- (iii) Golgi apparatus and lysosomes
- (iv) plastids and mitochondria

ANS: (d)

189 The primary function of smooth endoplasmic reticulum in liver cells is

1

- (i) protein synthesis
- (ii) catabolism of proteins
- (iii) detoxification
- (iv) carbohydrate metabolism

ANS: (c)

190 Engulfing of food materials or foreign bodies by cells like Amoeba is called

1

- (i) diffusion
- (ii) endocytosis
- (iii) osmosis
- (iv) plasmolysis

ANS: (b)

191 In plant cells, many substances important for life are stored in

1

- (i) plastids
- (ii) mitochondria
- (iii) vacuoles
- (iv) lysosomes

ANS: (c)

192 A prokaryotic cell does not possess

1

- (i) cell membrane
- (ii) cell wall
- (iii) nuclear membrane
- (iv) both (a) and (c)

ANS: (c)

193 The most abundant material in plant cell wall is

1

- (i) cellulose
- (ii) lipids
- (iii) proteins
- (iv) wax

ANS: (a)

194 The membrane of Golgi apparatus has connections with those of

1

- (i) nuclear membrane
- (ii) endoplasmic reticulum
- (iii) cell membrane
- (iv) mitochondria

ANS: (b)

195 The major function of Golgi apparatus is

1

- (i) detoxification
- (ii) fermentation

(iii) translocation

(iv) secretion

ANS: (d)

196 The site of detoxification in liver cells is

1

(i) lysosome

(ii) RER

(iii) ribosome

(iv) SER

ANS: (d)

197 The cell organelles with digestive enzymes are

1

(i) ribosomes

(ii) food vacuoles

(iii) lysosomes

(iv) Golgi apparatus

ANS: (c)

198 The statement 'cells arise only from pre-existing cells' was given by

1

(i) Schleiden

(ii) Rudolf Virchow

(iii) Schwann

(iv) Louis Pasteur

ANS: (b)

199 The term 'protoplasm' was coined by

1

(i) Schleiden

(ii) Purkinje

(iii) Schwann

(iv) Robert Brown

ANS: (b)

200 70-80 % of volume of a mature plant cell is occupied by

1

- (i) endoplasmic reticulum
- (ii) nucleus
- (iii) cytoplasm
- (iv) vacuole

ANS: (d)

201 Rough endoplasmic reticulum helps in the synthesis of

1

- (i) glycogen
- (ii) starch
- (iii) steroids
- (iv) proteins

ANS: (d)

202 The fluid in the vacuole of a plant cell, is called

1

- (i) cell sap
- (ii) tonoplasm
- (iii) cytoplasm
- (iv) protoplasm

ANS: (a)

203 Lysosomes are formed by

1

- (i) RER
- (ii) plasma membrane
- (iii) SER
- (iv) Golgi apparatus

ANS: (d)

- 204 Most of the substances in the living world are transported across the cell membrane by the process of 1
- (i) osmosis
 - (ii) endocytosis
 - (iii) diffusion
 - (iv) plasmolysis
- ANS: (a)
- 205 The proteins and lipids, essential for building the cell membrane, are manufactured by 1
- (i) rough endoplasmic reticulum
 - (ii) Golgi apparatus
 - (iii) plasma membrane
 - (iv) mitochondria
- ANS: (a)
- 206 The undefined nuclear region of prokaryotes are also known as 1
- (i) nucleus
 - (ii) nucleolus
 - (iii) nucleic acid
 - (iv) nucleoid
- ANS: (d)
- 207 The cell organelle involved in forming complex sugars from simple sugars are 1
- (i) endoplasmic reticulum
 - (ii) ribosomes
 - (iii) plastids
 - (iv) Golgi apparatus
- ANS: (d)
- 208 Amoeba acquires its food through a process, termed 1

- (i) exocytosis
- (ii) endocytosis
- (iii) plasmolysis
- (iv) exocytosis and endocytosis both

ANS: (b)

209 Cell wall of which one of these is not made up of cellulose?

1

- (i) Bacteria
- (ii) Hydrilla
- (iii) Mango tree
- (iv) Cactus

ANS: (a)

210 Silver nitrate solution is used to study

1

- (i) endoplasmic reticulum
- (ii) Golgi apparatus
- (iii) nucleus
- (iv) mitochondria

ANS: (b)

211 Organelle other than nucleus, containing DNA is

1

- (i) endoplasmic reticulum
- (ii) Golgi apparatus
- (iii) mitochondria
- (iv) lysosome

ANS: (c)

212 Kitchen of the cells

1

- (i) mitochondria
- (ii) endoplasmic reticulum

(iii) chloroplast

(iv) Golgi apparatus

ANS: (c)

213 Lipid molecules in the cell are synthesized by

1

(i) smooth endoplasmic reticulum

(ii) rough endoplasmic reticulum

(iii) Golgi apparatus

(iv) plastids

ANS: (a)

214 Lysosome arises from

1

(i) endoplasmic reticulum

(ii) Golgi apparatus

(iii) nucleus

(iv) mitochondria

ANS: (b)

215 Match the items of column A with those of column B.

1

Column A	Column B
(i) Hypertonic solution	1. Nucleoid
(ii) Selectively	2. Little room permeable
(iii) Cell	3. Cork
(iv) Robert Brown	4. Plasmolysis
(v) Suberin	5. Plasma membrane
(vi) Prokaryotic cell	6. Nucleus
	7. Lysosome

ANS: (i) – 4 (ii) – 5 (iii) – 2 (iv) – 6 (v) – 3 (vi) – 1

216 There is no net movement of water when a cell is placed in a/an _____ medium.

1

ANS: isotonic

217 The basic building units of an onion bulb, are called _____ .

1

ANS: cells

218 Membrane-bound cell organelles are not found in _____ cells. 1

ANS: prokaryotic

219 _____ are sites of protein synthesis. 1

ANS: Ribosomes

220 Centrosome helps in _____ division. 1

ANS: cell

221 Lysosomes are called as 'suicide bags' of a cell. [True/False] 1

ANS: True

222 The folds of inner membrane of mitochondria increase the area for ATP generating chemical reactions. [True/False] 1

ANS: True

223 Lysosomes are produced by endoplasmic reticulum. [True/False] 1

ANS: False

224 Chlamydomonas is a multicellular organism. [True/False] 1

ANS: False

225 Chloroplasts may occur in 1

- (i) collenchyma and sclerenchyma
- (ii) parenchyma and collenchyma
- (iii) chlorenchyma and sieve tubes
- (iv) xylem parenchyma and sclerenchyma

ANS: (b)

226 The plant tissue which provides mechanical strength and consists of living cells, is 1

- (i) parenchyma
- (ii) aerenchyma

- (iii) collenchyma
- (iv) sclerenchyma

ANS: (c)

227 Lignified or thickened cell wall is a characteristic feature of

1

- (i) collenchyma
- (ii) xylem
- (iii) parenchyma
- (iv) phloem.

ANS: (b)

228 The conducting cells of xylem are

1

- (i) tracheids and xylem fibres
- (ii) vessels and xylem fibres.
- (iii) tracheids and vessels
- (iv) vessels and sieve tubes

ANS: (c)

229 Bones are connected to muscles at the joints by

1

- (i) tendon
- (ii) areolar tissue
- (iii) ligament
- (iv) adipose tissue

ANS: (a)

230 _____ smoothens the bone surfaces at the joints.

1

- (i) Cartilage
- (ii) Adipose tissue
- (iii) Ligament
- (iv) Areolar tissue

ANS: (a)

231 The columnar epithelial cells possess cilia in

1

- (i) stomach
- (ii) respiratory tract
- (iii) ureters
- (iv) digestive tract

ANS: (b)

232 Branched involuntary muscle fibres are found in

1

- (i) limbs
- (ii) ureters
- (iii) heart
- (iv) tongue

ANS: (c)

233 Both collenchyma and sclerenchyma give mechanical strength to plants; but the former differs from the latter, in

1

- (i) retaining the protoplasm at maturity
- (ii) having uniformly thickened wall
- (iii) having dead cells
- (iv) both (a) and (d).

ANS: (d)

234 Chlorenchyma and aerenchyma are modified/specialised

1

- (i) phloem
- (ii) parenchyma
- (iii) collenchyma
- (iv) sclerenchyma.

ANS: (b)

235 Cambium is an example of

1

- (i) apical meristem
- (ii) intercalary meristem
- (iii) lateral meristem
- (iv) simple permanent tissue

ANS: (c)

236 The substance found in the cell wall of cork or bark that makes it impervious to water is

1

- (i) lignin
- (ii) cutin
- (iii) suberin
- (iv) pectin

ANS: (c)

237 The extremely thin and flat cells forming a delicate lining in the lung alveoli constitute

1

- (i) simple squamous epithelium
- (ii) simple cuboidal epithelium
- (iii) stratified squamous epithelium
- (iv) ciliated epithelium.

ANS: (a)

238 The mineral elements found in our bone making it hard, are

1

- (i) sodium and calcium
- (ii) calcium and phosphorus
- (iii) phosphorus and sodium
- (iv) sodium and potassium

ANS: (b)

239 Areolar tissue is a type of (i)_____ tissue and is found in (ii)_____

1

- (i) connective (ii) bone marrow

- (ii) (i) muscular (ii) heart
- (iii) (i) connective (ii) around nerves
- (iv) both (a) and (c).

ANS: (d)

240 Glands in our body are formed by

- (a) connective tissue
- (b) smooth muscles
- (c) epithelial tissue
- (d) adipose tissue
- (e) areolar tissue

ANS: (c)

241 The epithelium is separated from the underlying connective tissue by

- (i) basement membrane
- (ii) thick deposition of fat
- (iii) mucosa
- (iv) none of the above

ANS: (a)

242 Tendons help to connect

- (i) bone to bone
- (ii) muscle to bone
- (iii) muscle to muscle
- (iv) all the above

ANS: (b)

243 Most of the metabolic functions of plants are carried out by

- (i) parenchyma
- (ii) collenchyma
- (iii) sclerenchyma

1

1

1

1

(iv) meristems

ANS: (a)

244 The mechanical strength and rigidity of cell wall is due to

- (a) cellulose
- (b) lignin
- (c) suberin
- (d) cutin
- (e) pectin.

1

ANS: (b)

245 Find out incorrect sentence

1

- (i) Parenchymatous tissues have intercellular spaces
- (ii) Collenchymatous tissues are irregularly thickened at corners
- (iii) Apical and intercalary meristems are permanent tissues
- (iv) Meristematic tissues, in its early stage, lack vacuoles

ANS: (c)

246 Girth of stem increases due to

1

- (i) apical meristem
- (ii) lateral meristem
- (iii) intercalary meristem
- (iv) vertical meristem

ANS: (b)

247 Intestine absorb the digested food materials. What type of epithelial cells are responsible for that?

1

- (i) Stratified squamous epithelium
- (ii) Columnar epithelium
- (iii) Spindle fibres
- (iv) Cuboidal epithelium

ANS: (b)

248 A person met with an accident in which two long bones of hand were dislocated. Which among the following may be the possible reason?

1

- (i) Tendon break
- (ii) Break of skeletal muscle
- (iii) Ligament break
- (iv) Areolar tissue break

ANS: (c)

249 While doing work and running, you move your organs like hands, legs, etc. Which among the following is correct?

1

- (i) Smooth muscles contract and pull the ligament to move the bones
- (ii) Smooth muscles contract and pull the tendons to move the bones
- (iii) Skeletal muscles contract and pull the ligament to move the bones
- (iv) Skeletal muscles contract and pull the tendon to move the bones

ANS: (d)

250 Which muscles act involuntarily?

1

- (i) Striated muscles
 - (ii) Smooth muscles
 - (iii) Cardiac muscles
 - (iv) Skeletal muscles
- (i) (i) and (ii)
 - (ii) (ii) and (iii)
 - (iii) (iii) and (iv)
 - (iv) (i) and (iv)

ANS: (b)

251 Meristematic tissues in plants are

1

- (i) localised and permanent
- (ii) not limited to certain regions
- (iii) localised and dividing cells

(iv) growing in volume

ANS: (c)

252 Cartilage is not found in

1

(i) nose

(ii) ear

(iii) kidney

(iv) larynx

ANS: (c)

253 Fats are stored in human body as

1

(i) cuboidal epithelium

(ii) adipose tissue

(iii) bones

(iv) cartilage

ANS: (b)

254 Bone matrix is rich in

1

(i) fluoride and calcium

(ii) calcium and phosphorus

(iii) calcium and potassium

(iv) phosphorus and potassium

ANS: (b)

255 Match the Column I with Column II

1

Column I		Column II	
(i)	Tendon	1.	Ducts of salivary glands
(ii)	Cuboidal epithelium	2.	Lung alveoli
(iii)	Thin, flat cells	3.	Repair of damaged tissues
(iv)	Areolar tissue	4.	Connects muscles to

ANS: (i) 4, (ii) 1, (iii) 2, (iv) 3

256 Contractile proteins are present in _____ tissue.

1

ANS: muscular

257 _____ connects two bones at a joint.

1

ANS: Ligament

258 _____ in the cell wall of cork/bark makes it impervious to water.

1

ANS: Suberin

259 The cells enclosing the stoma are called _____ cells.

1

ANS: guard

260 The simple permanent tissue that consists of thick-walled, narrow, elongated, dead cells is _____.

1

ANS: sclerenchyma

261 Areolar tissue is found in bone marrow. [True/False]

1

ANS: True

262 Tendon is a fibrous tissue which is elastic. [True/False]

1

ANS: False

263 Heart muscles are voluntary. [True/False]

1

ANS: False

264 Cuboidal epithelium lines the kidney tubules. [True/False]

1

ANS: True

265 A nerve is a bundle of axons of the neurons. [True/False]

1

ANS: True

266 Collenchyma cells are dead and have irregular thickenings at the corners. [True/False]

1

ANS: False

267 A group of freely interbreeding organisms constitute a

1

- (i) family
- (ii) genus
- (iii) species
- (iv) class.

ANS: (c)

268 Binomial system of nomenclature means that every organism has :

1

- (i) a name given by two scientists
- (ii) one scientific name consisting of a generic name and a specific name
- (iii) one scientific name and one popular name
- (iv) a number in an international catalogue by which an organism is identified.

ANS: (b)

269 All the plants, animals and protists living in a forest make up a

1

- (i) phylum
- (ii) population
- (iii) species
- (iv) community.

ANS: (d)

270 In Whittaker's classification, unicellular eukaryotic organisms are grouped under

1

- (i) Protozoa
- (ii) Porifera
- (iii) Fungi
- (iv) Protista

ANS: (d)

271 In a taxonomic hierarchy, as one goes from Species to Kingdom the number of common characteristics

1

- (i) will increase
- (ii) will decrease
- (iii) may increase or decrease
- (iv) remains same

ANS: (b)

272 The correct order of the biological hierarchy from Kingdom to Species is

1

- (i) Kingdom, Phylum, Order, Family, Class, Genus, Species
- (ii) Kingdom, Phylum, Class, Order, Family, Genus, Species
- (iii) Kingdom, Class, Family, Order, Phylum, Genus, Species
- (iv) Kingdom, Class, Order, Phylum, Family, Genus, Species.

ANS: (b)

273 The scientific name of an organism

1

- (i) may refer to more than one species
- (ii) may have more than one genus
- (iii) varies according to the native language of scientists
- (iv) is the same for scientists all over the world.

ANS: (d)

274 The taxonomic unit 'Phylum' in the classification of animals is equivalent to which hierarchial level in classification of plants

1

- (i) Class
- (ii) Family
- (iii) Order
- (iv) Division.

ANS: (d)

275 Members of which of the following kingdoms are single cells with considerable internal complexity? 1

- (i) Monera
- (ii) Animalia
- (iii) Plantae
- (iv) Protista

ANS: (a)

276 The broadest category of organism in biological taxonomy is 1

- (i) Class
- (ii) Phylum
- (iii) Kingdom
- (iv) Family.

ANS: (c)

277 Which is the biggest plant group in the Plant Kingdom? 1

- (i) Angiosperms
- (ii) Gymnosperms
- (iii) Ferns
- (iv) Moss

ANS: (a)

278 A plant is diploid and well adapted to extreme conditions. They grow bearing sporophylls in compact structures called cones. Identify the group to which it belongs : 1

- (i) Pteridophyta
- (ii) Angiosperms
- (iii) Gymnosperms
- (iv) Bryophyta.

ANS: (c)

279 Amoeba, Paramecium are examples of organisms from which kingdom? 1

- (i) Fungi
- (ii) Monera
- (iii) Protista
- (iv) Plantae

ANS: (c)

280 Kingdom Fungi are

1

- (i) Prokaryotic, unicellular
- (ii) Prokaryotic, multicellular
- (iii) Eukaryotic, unicellular
- (iv) Eukaryotic, multicellular.

ANS: (d)

281 Monocots and Dicots are the features of

1

- (i) Angiosperms
- (ii) Gymnosperms
- (iii) Pteridophytes
- (iv) Bryophytes.

ANS: (a)

282 Identify a member of Porifera

1

- (i) Spongilla
- (ii) Euglena
- (iii) Penicillium
- (iv) Hydra

ANS: (a)

283 Amphibians do not have the following:

1

- (i) Three chambered heart
- (ii) Gills or lungs

(iii) Scales

(iv) Mucus glands

ANS: (c)

284 Organisms without nucleus and cell organelles belong to

(i) Fungi

(ii) Protista

1

(iii) Cyanobacteria

(iv) Archaeobacteria

(i) (i) and (ii)

(ii) (iii) and (iv)

(iii) (i) and (iv)

(iv) (ii) and (iii)

ANS: (d)

285 The feature that is not a characteristic of protochordata.

1

(i) Presence of notochord

(ii) Bilateral symmetry and coelom

(iii) Jointed legs

(iv) Presence of circulatory system

ANS: (c)

286 The locomotory organs of Echinodermata are

1

(i) tube feet

(ii) muscular feet

(iii) jointed legs

(iv) parapodia

ANS: (a)

287 Corals are

1

(i) Poriferans attached to some solid support

- (ii) Cnidarians, that are solitary living
- (iii) Poriferans present at the sea bed
- (iv) Cnidarians that live in colonies

ANS: (d)

288 Who introduced the system of scientific nomenclature of organisms?

1

- (i) Robert Whittaker
- (ii) Carolus Linnaeus
- (iii) Robert Hooke
- (iv) Ernst Haeckel

ANS: (b)

289 Two chambered heart occurs in

1

- (i) crocodiles
- (ii) fish
- (iii) aves
- (iv) amphibians

ANS: (b)

290 Skeleton is made entirely of cartilage in

1

- (i) Sharks
- (ii) Tuna
- (iii) Rohu
- (iv) None of these

ANS: (a)

291 Real organs are absent in

1

- (i) Mollusca
- (ii) Coelenterata
- (iii) Arthropoda

(iv) Echinodermata

ANS: (b)

292 Hard calcium carbonate structures are used as skeleton by

1

(i) Echinodermata

(ii) Protochordata

(iii) Arthropoda

(iv) Nematoda

ANS: (a)

293 Five kingdom classification was given by

1

(i) Morgan

(ii) R. Whittaker

(iii) Linnaeus

(iv) Haeckel

ANS: (b)

294 Match the Column I with Column II

Column I	Column II
1. Family	(A) Tuberosum
2. Kingdom	(B) Solanum
3. Species	(C) Plantae
4. Genus	(D) Solanaceae

1

ANS: 1. (D), 2. (C), 3. (A), 4. (B)

295 Birds and mammals are _____ blooded.

1

ANS: warm

296 _____ is a part of embryo within the seed of a plant.

1

ANS: Cotyledon

297 Gymnospermic plants bear _____ seeds. 1

ANS: naked

298 The largest phylum of animal kingdom is _____ system for water to flow through them. 1

ANS: Arthropoda

299 Sponges have characteristic _____ system for water to flow through them. 1

ANS: canal

300 Sexes are separate in Echinoderms. [True/False] 1

ANS: True

301 Nematodes are diploblastic. [True/False] 1

ANS: False

302 Body cavity is absent in annelids. [True/False] 1

ANS: False

303 Tentacles are present in Hydra. [True/False] 1

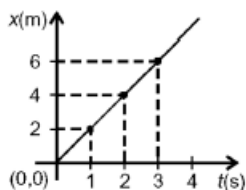
ANS: True

304 Equations of motion can be used for a body having 1

- (i) uniform motion
- (ii) non-uniform motion
- (iii) uniform acceleration
- (iv) non-uniform acceleration

ANS: (c)

305 The slope of the $x - t$ graph is a measure of



- (i) velocity = 2 ms^{-1}

1

(ii) acceleration = $\frac{1}{2} \text{ ms}^{-2}$

(iii) velocity = $\frac{1}{2} \text{ ms}^{-2}$

(iv) acceleration = 2 ms^{-2}

ANS: $v = \frac{(6-0) \text{ m}}{(3-0) \text{ s}} = 2 \text{ m/s}$ i.e. option (a) is correct.

306 For a body starting from rest, the displacement in 10 seconds, when it acquires 4 ms^{-1} in 2 seconds is 1

(i) 25 m

(ii) 50 m

(iii) 500 m

(iv) 100 m

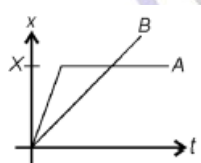
ANS: $v = u + at$

or $a = \frac{v-u}{t} = \frac{4-0}{2} = 2 \text{ m/s}^2$

$s = ut + \frac{1}{2} at^2 = 0 + \frac{1}{2} \times 2 \times (10)^2$
 $= 100 \text{ m}$

i.e. option (d) is correct.

307 Motion of bodies A and B is depicted by the x-t graph. Then which of the following is/are incorrect ?



A : A has uniform motion.

B : B has less velocity than A initially

C : B crosses A at X

D : A comes to rest at X

(i) Only A

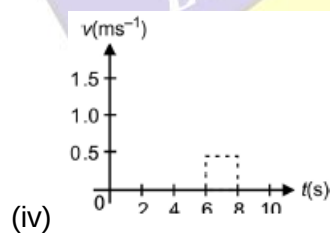
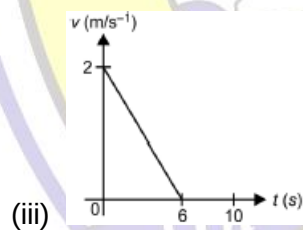
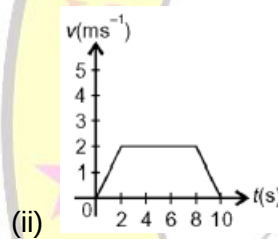
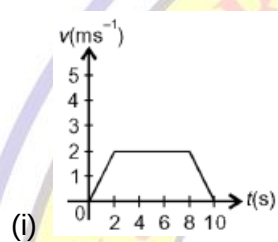
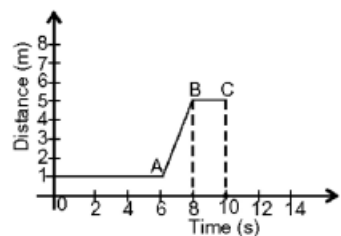
(ii) Only B and C

(iii) Only B, C and D

(iv) All of them

ANS: (d)

308 The v–t graph for the x–t graph given here is best drawn as



ANS: (d)

From the $x - t$ graph, one can draw the following conclusions :

A : $v_{OA} < v_{AB}$

1

B : v_{BC} is negative

C : v_{CD} is the least by magnitude

D : acceleration is uniform

(i) Only A is correct

(ii) Only B and C are correct

(iii) Only A, B and C are correct

(iv) Only D is correct

ANS: (c)

310 For a uniformly accelerated body with initial and final velocities as u and $v \text{ ms}^{-1}$, the average velocity is

1

(i) $\frac{a}{2}$

(ii) $\frac{v}{2}$

(iii) $\frac{u+v}{2}$

(iv) $\frac{v-u}{2}$

ANS: (c)

311 In a uniformly accelerated motion,

A : $v - t$ graph is a straight line not parallel to t or v axis.

B : $x - t$ graph is not a straight line.

C : Slope of $v - t$ graph varies.

D : Slope of $x - t$ graph is constant.

1

(i) Only A is correct

- (ii) Only A and B are correct
- (iii) Only A, B and C are correct
- (iv) Only B, C and D are correct

ANS: (b)

312 Area below $v - t$ graph is a measure of

1

- (i) Acceleration
- (ii) Displacement
- (iii) Angular speed
- (iv) Angular acceleration

ANS: (b)

313 If the velocity of a body is reducing, it is said to have

1

- (i) Negative acceleration
- (ii) Retardation
- (iii) Positive acceleration
- (iv) Both (a) and (b)

ANS: (d)

314 For a body moving in a straight line, there can be situations with

1

A : $v = 0, a \neq 0$

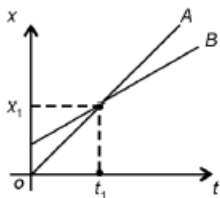
B : $a = 0, v \neq 0$

- (i) Only A is correct
- (ii) Only B is correct
- (iii) Both A and B are correct
- (iv) Both are incorrect

ANS: (b)

315 One can conclude from the given $x-t$ graph that

1



- (i) $V_A > V_B$
- (ii) $V_A < V_B$
- (iii) $V_A = V_B$ at x_1
- (iv) $a_A = a_B \neq 0$

ANS: (a)

316 If the $v - t$ graph is a straight line inclined to the time axis, then

1

- (i) $a = 0$
- (ii) $a \neq 0$
- (iii) $a = \text{constant} \neq 0$
- (iv) $a \neq \text{constant} \neq 0$

ANS: (c)

317 A body starting at a point, say A, reaches, say B, ahead in a straight line and returns back to A. Then there is

1

- (i) positive displacement
- (ii) negative displacement
- (iii) zero displacement
- (iv) cannot be said

ANS: (c)

318 A car accelerates uniformly from 18 km/h to 36 km/h in 5 minutes. The acceleration is

1

- (i) 5 ms^{-2}
- (ii) 1 km/s^2
- (iii) 216 ms^{-2}
- (iv) 216 km/h^2

ANS: $u = 15 \text{ km/h}$, $v = 36 \text{ km/h}$, $t = 5 \text{ min} = \frac{1}{12} \text{ h}$ $a = \frac{v-u}{t} = \frac{36-18}{\left(\frac{1}{12}\right)} = 216 \text{ km/s}^2$
 i.e. option (d) is correct.

319 A body moves in a circle of radius 5 m with a speed of 5 ms^{-1} . Then it has

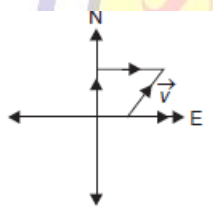
A : an acceleration of 5 ms^{-2}

B : an acceleration varying with direction alone

- (i) Only A is correct
- (ii) Only B is correct
- (iii) Both A and B are correct
- (iv) Neither A nor B is correct.

ANS: (b)

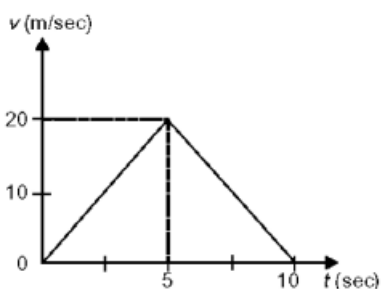
320 A man walks with a speed of 5 ms^{-1} northwards and then turns to his right to move with the same speed. The change in velocity is



- (i) $5\sqrt{2} \text{ NE}$
- (ii) $5\sqrt{2} \text{ SE}$
- (iii) $5\sqrt{2} \text{ SW}$
- (iv) $25\sqrt{2} \text{ SE}$

ANS: (a) is correct

321 The displacement of the body in 5 seconds from the beginning of the motion is



- (i) 12.5 m
- (ii) 100 m
- (iii) 87.5 m
- (iv) 50 m

Displacement = Area of ΔABC

$$a = \frac{1}{2} \times 5 \times 20 = 50 \text{ m}$$

ANS:

i.e. option (d) is correct.

322 Pranesh is in seat number 48 of a train moving with a speed of 18 km/h and Srinidhi is standing on the platform. Then

A : Pranesh is at rest according to another passenger in the train.

B : Srinidhi is moving according to Pranesh

C : Pranesh is moving according to Srinidhi

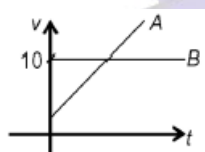
D : Pranesh is moving according to the train

Then the incorrect options are

- (i) A, D
- (ii) B, C
- (iii) B, D
- (iv) Only D

ANS: (a)

323 The v-t graph shown here depicts the motion of A and B such that



(i) they collide when their velocity is 10 ms^{-1} .

(ii) velocity of A exceeds beyond 10 ms^{-1} .

(iii) both A and B have non-zero acceleration

(iv) both A and B have zero acceleration.

ANS: (b)

324 Suppose a boy is enjoying a ride on a merry-goround which is moving with a constant speed of 10 ms^{-1} . It implies that the boy is

1

- (i) at rest
- (ii) moving with no acceleration
- (iii) in accelerated motion
- (iv) moving with uniform velocity.

ANS: (c)

325 Area under a v - t graph represents a physical quantity which has the unit

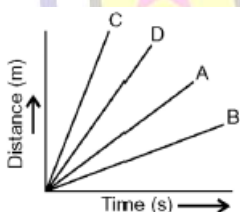
1

- (i) m^2
- (ii) m
- (iii) m^3
- (iv) ms^{-1}

ANS: (b)

326 Four cars A, B, C and D are moving on a levelled road. Their distance versus time graphs are shown in figure. Choose the correct statement

1

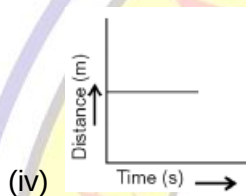
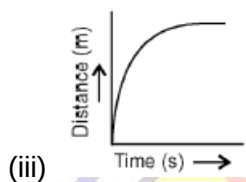
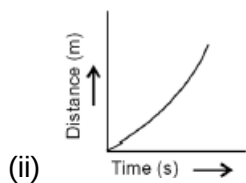
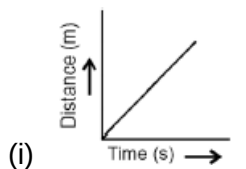


- (i) Car A is faster than car D.
- (ii) Car B is the slowest.
- (iii) Car D is faster than car C.
- (iv) Car C is the slowest.

ANS: (b)

327 Which of the following figures represent uniform motion of a moving object correctly?

1



ANS: (a)

328 Slope of a velocity–time graph gives

- (i) the distance
- (ii) the displacement
- (iii) the acceleration
- (iv) the speed.

ANS: (c)

329 In which of the following cases of motion, the distance moved and the magnitude of displacement are equal?

- (i) A car is moving on a straight road
- (ii) A car is moving in a circular path
- (iii) The pendulum is moving to and fro
- (iv) The earth is revolving around the Sun

ANS: (a)

330 Match the Column I with Column II

Column I	Column II
1. Displacement per second	(A) Displacement
2. Distance per second	(B) Uniform circular motion
3. Negative acceleration	(C) Velocity
4. Constant acceleration	(D) Retardation
5. Area under v-t graph	(E) Speed

ANS: 1. (C), 2. (E), 3. (D), 4. (B), 5. (A)

331 Equations of motion are applicable for _____ accelerated motion. 1

ANS: uniformly

332 The maximum displacement between two points in a circular path of radius r can be _____. 1

ANS: $2r$

333 Acceleration of a body whose v-t graph is parallel to time axis is _____. 1

ANS: zero

334 Usha swims in a 90 m long pool from one end to another and back. Her average velocity is _____. 1

ANS: zero

335 Displacement of a body which moves $(3/4)^{\text{th}}$ round of a circular path of radius r is 1

ANS: $r\sqrt{2}$

336 Acceleration and displacement are _____ quantities. 1

ANS: vector

337 Motion of earth around the sun is nonuniformly accelerated. [True/False] 1

ANS: False

338 The acceleration of a body in uniform circular motion is directed towards the centre of the circular path. [True/False] 1

ANS: True

339 Acceleration of a body is expressed in ms^{-2} in SI system. [True/False] 1

ANS: False

340 The negative slope of s-t graph indicates retarded motion. [True/False] 1

ANS: False

341 Motion is relative in nature. [True/False] 1

ANS: True

342 Impulse is the other name of 1

- (i) inertia
- (ii) momentum
- (iii) force
- (iv) change in momentum

ANS: (d)

343 Bags at the top of a school van are tied using a string to avoid the effect of 1

- (i) inertia
- (ii) momentum
- (iii) force
- (iv) acceleration

ANS: (a)

344 While catching a stone thrown by your friend you pull the hands back to 1

- (i) avoid getting hurt
- (ii) increase the time to slow down
- (iii) decrease the time to slow down
- (iv) avoid the breaking of the stone

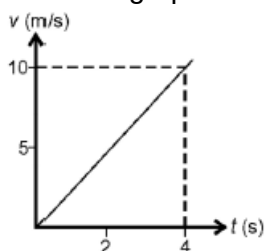
ANS: (b)

345 A plate, a ball and a child all have the same mass. The one having more inertia is the 1

- (i) plate
- (ii) ball
- (iii) child
- (iv) All have equal inertia.

ANS: (d)

346 The $v - t$ graph of a body of 5 kg moving with the help of a force is shown. Then the force involved is



- (i) 20 N
- (ii) 125 N
- (iii) 12.5 N
- (iv) 2.0 N

ANS: $a = \text{slope of graph} = \frac{10-0}{4-0} = 2.5 \text{ m/s}^2$

$$F = ma = 5 \times 2.5 = 12.5 \text{ N}$$

(c) is correct.

347 Two equal masses m each moving in the opposite direction with the same speed v collide and stick to each other. The velocity of the combined mass is

- (i) v
- (ii) $2v$
- (iii) $\frac{v}{2}$
- (iv) zero

ANS: Total initial momentum = Total final momentum = zero

(d) is correct.

348 When no external force acts on an object, the physical quantity that remains conserved is

- (i) velocity
- (ii) momentum
- (iii) acceleration
- (iv) force

ANS: (b)

349 The incorrect option regarding action-reaction pair is

1

- (i) they are equal and opposite
- (ii) they act on two different bodies
- (iii) they act only between bodies in contact
- (iv) their sum on/by a body is zero

ANS: (d)

350 According to second law of Newton, force is the cause and the outcome is

1

- (i) acceleration
- (ii) velocity
- (iii) momentum
- (iv) time

ANS: (a)

351 If force, change in momentum and time are given by F , p and t respectively, then they are related by

1

- (i) $F = pt$
- (ii) $F = \frac{p}{t}$
- (iii) $Ft^2 = p$
- (iv) $p = F^2t$

ANS: (b)

352 The one which has the least inertia among the following

1

- (i) 1 kg stone

- (ii) 2 kg ball
- (iii) a train compartment
- (iv) a cup of tea

ANS: (d)

353 The minimum number of unequal forces that can make zero resultant is

1

- (i) two
- (ii) three
- (iii) four
- (iv) ten

ANS: (a)

354 One can move a body with constant speed on a rough surface with frictional force F by applying a force of

1

- (i) F
- (ii) $2F$
- (iii) $\frac{F}{2}$
- (iv) $4F$

ANS: (a)

355 A mass M breaks into two pieces in the ratio 1 : 3 while at rest. If the heavier has a speed of v , the speed of the lighter is

1

- (i) v
- (ii) $2v$
- (iii) $3v$
- (iv) $4v$

ANS: (c)

356 On a 3 kg mass, 5 newton of force acts for 0.1 second. The impulse imparted to the mass is (in kg m/s)

1

- (i) 1.5
- (ii) 1.0
- (iii) 0.5
- (iv) 0.16

ANS: $F \times t = 5 \times 0.1 = 0.5 \text{ kg m/s}$

(c)

357 The two states of motion treated alike by the Newton's first law, among A, B, C and D are

A : Rest

B : Uniform motion

C : Uniformly accelerated

D : Non-uniformly accelerated

- (i) A, D
- (ii) A, B
- (iii) A, C
- (iv) B, C

ANS: (b)

358 Water drops sticking to the wheel come out along the tangential line due to

- (i) inertia
- (ii) momentum
- (iii) force
- (iv) acceleration

ANS: (a)

359 When a 12 N force acts on 3 kg mass for a second, the change in velocity is (in m/s)

- (i) 36
- (ii) 4
- (iii) 2

(iv) 18

$$F = \frac{\Delta p}{\Delta t} = \frac{m\Delta v}{t}$$

ANS: $\Delta v = \frac{12 \times 1}{3} = 4 \text{ m/s}$

(b) is correct.

360 A ball of mass m hitting the ground with a velocity u , bounces back with a velocity v in a small time interval ' t ', the force exerted on the ground is

1

(i) $m\left(\frac{v-u}{t}\right)$

(ii) $\frac{mv}{t}$

(iii) $\frac{mu}{t}$

(iv) $m\left(\frac{v+u}{t}\right)$

$$F = \frac{\text{Momentum change}}{\text{Time}} \\ = \frac{m[v - (-u)]}{t} = m\left(\frac{v+u}{t}\right)$$

ANS: (d) is correct.

361 Which of the following does not happen? As an automobile accelerates suddenly,

1

(i) a toy monkey hung from the roof moves back.

(ii) a standing person gets pushed back.

(iii) a bag at the roof gets displaced backward.

(iv) a person in the seat is pushed in front.

ANS: (d)

362 A passenger in a moving train tosses a coin which falls behind him. It means that motion of the train is

1

(i) accelerated

(ii) uniform

(iii) retarded

(iv) along circular tracks.

ANS: (a)

363 An object of mass 2 kg 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 1

(i) 32 N

(ii) 0 N

(iii) 2 N

(iv) 8 N

ANS: (b)

364 Rocket works on the principle of conservation of 1

(i) mass

(ii) energy

(iii) momentum

(iv) velocity.

ANS: (c)

365 A water tanker filled up to $\frac{2}{3}$ rd of its height is moving with a uniform speed. On sudden application of the brake, the water in the tank would 1

(i) move backwards

(ii) move forwards

(iii) be unaffected

(iv) rise upwards

ANS: (b)

366 Match the Column I with Column II

Column I	Column II
1. Passengers fall forward as bus stops.	(A) Inertia of direction.
2. Passengers fall backward as bus starts.	(B) Inertia of rest.
3. Passengers fall sideways as bus turns.	(C) Balanced force.
	(D) Unbalanced force.

1

4. Applied force equals frictional force. 5. Applied force is greater than force.	(E) Inertia of motion.
--	------------------------

ANS: 1. (E), 2. (B), 3. (A), 4. (C), 5. (D)

367 Newton's _____ law is called the real law of motion. 1

ANS: second

368 The S.I. unit of momentum is _____ or _____. 1

ANS: kg m/s, N-s

369 Forces acting on a body are _____ if there is no acceleration produced in the body. 1

ANS: balanced

370 Action and reaction forces act on _____ bodies. 1

ANS: different

371 When a body moves with uniform velocity the net force acting on it is _____. 1

ANS: zero

372 Friction acts in _____ direction to that of motion of the body _____ is a measure of inertia. 1

ANS: opposite, mass

373 For a given amount of applied force, when mass of the body is doubled, its acceleration becomes half. [True/False] 1

ANS: True

374 Action and reaction forces act on the same body. [True/False] 1

ANS: False

375 Impulse of a body is equal to rate of momentum change. [True/False] 1

ANS: False

376 When a body moves in uniform motion, unbalanced force acts on it. [True/False]

1

ANS: False

377 Recoil velocity of lighter gun is more than that of heavier gun. [True/False]

1

ANS: True

378 Variation of g with distance r from the centre of earth with ($r > R_e$) is best given as

1

(i) $g \propto \frac{1}{r}$

(ii) $g \propto \frac{1}{r^2}$

(iii) $g \propto r$

(iv) $g \propto r^2$

ANS: (b)

379 There is no atmosphere on moon as

1

(i) it is closer to the earth.

(ii) it revolves round the earth.

(iii) it gets light from the SUN.

(iv) the gases have less requirement of velocity or energy to escape from its surface.

ANS: (d)

380 Four planets A, B, C and D made up of same material have radius of $\frac{r}{2}$, r , $2r$ and $4r$ respectively. The order of the planets in increasing order of the acceleration due to gravity (on their surface) is

1

(i) A, B, C, D

(ii) B, C, D, A

(iii) A, C, B, D

(iv) D, C, B, A

ANS: (d) as $g \propto \frac{1}{R^2}$

381 Acceleration due to gravity is

1

- (i) dependent on mass of the planet for points outside the planet.
- (ii) dependent directly on the radius of the planets under comparison are made of same material.
- (iii) inversely proportional to square of radius for all points on the surface of the planet.
- (iv) All of these.

ANS: (a)

382 The wrong option among the following is

1

- (i) gravitational force acts on the line joining the masses.
- (ii) independent of the other masses.
- (iii) always attractive by nature.
- (iv) does not form action-reaction pair.

ANS: (d)

383 An apple and a stone dropped from certain height accelerates

1

- (i) equally
- (ii) differently
- (iii) depending on density
- (iv) depends on the position of the SUN

ANS: (a)

384 A 60 kg man weighs W kg on the moon. W is

1

- (i) 60 kg
- (ii) 10 kg
- (iii) 5 kg
- (iv) 70 kg

ANS: (a)

385 Weight of 1 kg is

1

- (i) 9.8 newton

- (ii) 1 kg-wt
- (iii) both (a) and (b)
- (iv) either (a) or (b)

ANS: (a)

386 Acceleration due to gravity on the surface of the moon is $\frac{1}{6}$ th of its value on the surface of the earth as they have different 1

- (i) mass
- (ii) density
- (iii) radius
- (iv) All of these

ANS: (d)

387 A body at rest having uniform acceleration is 1

- (i) non-existing
- (ii) can be realised only on the moon
- (iii) any body thrown vertically up against gravity
- (iv) possible only near the SUN

ANS: (c)

388 Acceleration due to gravity on the surface of the earth is the greatest 1

- (i) at poles
- (ii) at equator
- (iii) at 23.6° latitude
- (iv) uniform at all places

ANS: (a)

389 Acceleration due to gravity varies with 1

- (i) height
- (ii) depth

(iii) shape of the planet

(iv) All of these

ANS: (d)

390 The value of quantity G in the law of gravitation

1

(i) depends on mass of the earth only

(ii) depends on radius of the earth only

(iii) depends on both mass and radius of the earth

(iv) is independent of mass and radius of the earth.

ANS: (d)

391 Two particles are placed at some distance. If the mass of each of the two particles is doubled, keeping the distance between them unchanged, the value of gravitational force between them will be

1

(i) $\frac{1}{4}$ times

(ii) 4 times

(iii) $\frac{1}{2}$ times

(iv) unchanged.

ANS: (b)

392 The atmosphere is held to the earth by

1

(i) gravity

(ii) wind

(iii) clouds

(iv)

earth's magnetic field.

ANS: (a)

393 The force of attraction between two unit point masses separated by a unit distance is called

1

- (i) gravitational potential
- (ii) acceleration due to gravity
- (iii) gravitational field
- (iv) universal gravitational constant.

ANS: (d)

394 The weight of an object at the centre of the earth of radius R is

1

- (i) zero
- (ii) infinite
- (iii) R times the weight at the surface of the earth
- (iv) $1/R^2$ times the weight at surface of the earth.

ANS: (a)

395 An apple falls from a tree because of gravitational attraction between the earth and apple. If F_1 is the magnitude of force exerted by the earth on the apple and F_2 is the magnitude of force exerted by apple on earth, then

1

- (i) F_1 is very much greater than F_2
- (ii) F_2 is very much greater than F_1
- (iii) F_1 is only a little greater than F_2
- (iv) F_1 and F_2 are equal.

ANS: (d)

396 Match the Column I with Column II

Column I	Column II
1. Weight of 1 kg	(A) $6.6 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$
2. Wobbling	(B) 9.8 Newton
3. Value of G	(C) 9.8 m/s^2
4. Value of 'g' on earth	(D) Tides in ocean
5. Law of Gravitation	(E) Pressure of numerous invisible celestial objects

1

ANS: 1. (B), 2. (E), 3. (A), 4. (C), 5. (D)

397 Freely falling objects weight _____.

1

ANS: zero

398 The ratio of weight to mass of body on earth is _____.

1

ANS: 9.8 m/s^2

399 Centripetal force due to earth on moon is _____ to square of distance between them.

1

ANS: inversely proportional

400 Gravitational force can be attractive or repulsive. [True/False]

1

ANS: False

401 When both masses and separation between them is tripled, the force of attraction remains the same. [True/False]

1

ANS: True

402 Two equal masses separated by a distance experience a force F . On placing equal mass at the midpoint, the force becomes half. [True/False]

1

ANS: False

403 Weight of a falling body of mass m is mg . [True/False]

1

ANS: False

404 Upthrust on a body depends on

1

- (i) density of the liquid
- (ii) volume of the body
- (iii) density of the body
- (iv) both (b) and (c)

ANS: (a)

405 School bags have a broader base to reduce

1

- (i) pressure

- (ii) weight
- (iii) air resistance
- (iv) normal reaction

ANS: (a)

406 If upthrust U is equal to $\frac{1}{4}$ th the weight of the object in air, then the weight felt in the liquid is

1

(i) $\frac{1}{4} W$

(ii) $\frac{3}{4} W$

(iii) $\frac{1}{2} W$

(iv) $2 W$

$$\begin{aligned}\text{Apparent weight} &= \text{Weight} - \text{Upthrust} \\ &= \left(1 - \frac{1}{4}\right) W = \left(\frac{3}{4}\right) W\end{aligned}$$

ANS:

(b) is correct.

407 A mass weighing W can float if the upthrust U is related as

1

(i) $U > W$

(ii) $U = W$

(iii) $U < W$

(iv) $U \geq W$

ANS: (a)

408 In a tank having 'h' height of liquid, two points at a depth $\frac{3h}{4}$ from free surface have pressures P_A and P_B . When the point A is more closer to the wall than B. Then

1

(i) $P_A > P_B$

(ii) $P_A < P_B$

(iii) $P_A = P_B$

(iv) Depends on density

ANS: (c)

409 The least value of apparent weight of a body in a fluid is

1

- (i) > 0
- (ii) $= 0$
- (iii) < 0
- (iv) depends on the density of solid and fluid

ANS: (b)

410 A heavy cylinder of length l is slowly taken out of a dense liquid. The weight felt as it is taken out of the liquid

1

- (i) will remain the same
- (ii) increases as it comes out
- (iii) decreases as it comes out
- (iv) increases till it attains the weight in air

ANS: (d)

411 An empty closed drum and a filled drum of same dimension will bring

1

- (i) same upthrust
- (ii) same volume
- (iii) both (a) and (b)
- (iv) neither (a) nor (b)

ANS: (c)

412 An object weighs 10 N in air. When immersed fully in water, it weighs only 8 N. The weight of the liquid displaced by the object will be

1

- (i) 2 N
- (ii) 8 N
- (iii) 10 N
- (iv) 12 N

ANS: (a)

413 A girl stands on a box having 60 cm length, 40 cm breadth and 20 cm width in three ways. In which of the following cases, pressure exerted by the brick will be 1

(i) maximum when length and breadth form the base

(ii) maximum when breadth and width form the base

(iii) maximum when width and length form the base

(iv) the same in all the above three cases.

ANS: (b)

414 Match the Column I with Column II

Column I	Column II
1. Relative density	(A) Mass per unit volume
2. S.I. unit of upthrust	(B) Newton
3. Density	(C) Density of object/density of water
4. Pressure	(D) Inversely proportional to area
5. Archimedes' Principle	(E) Lactometer

1

ANS: 1. (C), 2. (B), 3. (A), 4. (D), 5. (E)

415 As contact area between surfaces increases, pressure _____ 1

ANS: decreases

416 Thrust is the _____ force on a surface. 1

ANS: perpendicular

417 If a heavy and light object have same momentum than heavier one will have _____ kinetic energy than lighter one. 1

ANS: lesser

418 Upthrust decreases when a body comes out of liquid. [True/False] 1

ANS: True

419 When upthrust is greater than weight, the body floats inside the liquid. [True/False] 1

ANS: False

420 Upthrust depends on density of liquid, volume of body immersed and acceleration due to gravity. [True/False] 1

ANS: True

421 If 1 newton of force displaces a body by 1 m, the work done is 1

- (i) 10 joule
- (ii) 5 joule
- (iii) 1 joule
- (iv) Depends on time

ANS: (c)

422 On tripling the speed of motion of a body, the change in K.E. is 1

- (i) 9 times
- (ii) 8 times
- (iii) 4 times
- (iv) 2 times

ANS: $K.E. \propto v^2$, when $v \rightarrow 3v$, $K.E. \rightarrow 9 K.E.$

(a) is correct.

423 A mass is moving 5 m/s with speed of along the x-direction on a smooth surface, when a force of 5 N acts on it along the y-axis. The work done by against the force is 1

- (i) 25 joule
- (ii) 10 joule
- (iii) Depends on the time
- (iv) zero

ANS: (d) as force is perpendicular to displacement.

424 An electric bulb of 60 W burns for 5 hours a day. The cost of electricity involved in a month of 30 days at ₹ 3.00 per unit is (in ₹) 1

- (i) 270
- (ii) 27
- (iii) 2.70
- (iv) 2700

ANS: Cost of electricity = $P \times t \times \text{cost per kW}$

$$= 0.06 \text{ kW} \times (5 \times 30) \times 3 = ₹ 27$$

(b) is correct.

425 A bullet entering a metal block of 30 cm length stops on reaching 25 cm. The energy with the bullet will be lost 1

- (i) in imparting momentum to the block
- (ii) in the form of heat
- (iii) Both (a) and (b)
- (iv) Neither (a) nor (b)

ANS: (c)

426 A : 50 kg man climbing a 'slant length of 5 m along a 30° incline.

B : 25 kg man running with 2 m/s speed.

C : A force of 5 N acting on an object moving with 5 m/s speed for 5 min. If the energies in A, B and C are E_A , E_B and E_C respectively, then 1

- (i) $E_A < E_B < E_C$
- (ii) $E_A > E_B > E_C$
- (iii) $E_A < E_B > E_C$
- (iv) $E_B < E_A < E_C$

ANS: (d)

427 A tank contains water of mass 'm' to a height 'h'. The potential energy associated is 1

- (i) mgh
- (ii) $mg \frac{h}{2}$
- (iii) Depends on the radius of the tank.

(iv) Zero.

ANS: Height will be upto the centre of gravity of tank, so P.E. = $mg \frac{h}{2}$

(b) is correct.

428 If a force of F newton moves a body with constant speed v, the power delivered by it is

1

(i) $\frac{F}{v}$

(ii) Fv

(iii) F^2v

(iv) $\frac{v}{F}$

ANS: (b)

429 One kWh is

1

(i) 3.6×10^6 joule

(ii) 3.6×10^3 joule

(iii) 3×10^8 joule

(iv) 300 joule

ANS: (a)

430 A mass 'm' falls from a height 'h'. At any point on its path the total energy is

1

(i) $\frac{1}{2} mgh$

(ii) $\frac{mgh}{4}$

(iii) mgh

(iv) Depends on the height

ANS: (c) according to law of conservation of energy.

431 If a 60 W bulb and a 40 W bulb are connected to a source of 220 V potential, the bulb glowing brighter is

1

(i) 60 W

- (ii) 40 W
- (iii) Both glow equally bright
- (iv) Cannot be found

ANS: (a)

432 If the bulbs of 60 W and 40 W are connected in series to a 220 V source the bulb which glows brighter is

1

- (i) 60 W
- (ii) 40 W
- (iii) Both glow equally bright
- (iv) Depends on the make of the bulb.

ANS: (b)

433 A mass m is moving in a circle of radius 1 m with a uniform speed of 5 m/s.

1

The work done when its radius turns by 60° is

- (i) zero
- (ii) 2.5 joule
- (iii) 5 joule
- (iv) 10 joule

ANS: (a) zero as angle between force and displacement is always 90° .

434 A boy holds a mass on his stretched hand. Then

1

- (i) Work done against gravity is zero.
- (ii) Muscular energy is used
- (iii) Both (a) and (b)
- (iv) Neither (a) nor (b).

ANS: (c)

435 A man holds and displaces a 20 kg mass horizontally in his stretched hand.

1

- (i) He does zero work against force of gravity

- (ii) He does 200 joules of work per metre
- (iii) The work done against gravity cannot be estimated but non-zero
- (iv) The work done against gravity is equal to the muscular energy.

ANS: (a)

436 Two masses m and $2m$ are dropped from certain height 'h'. Then on reaching the ground,

1

- (i) K.E. of them will be equal
- (ii) K.E. of the heavier is 4 times the K.E. of the lighter
- (iii) K.E. of the lighter is 4 times the K.E. of the heavier
- (iv) K.E. of the heavier is more than that of the lighter.

ANS: (d)

437 Two cars A and B approaching each other with momentum of 50 kg m/s and 25 kg m/s respectively, stick to each other after collision. The momentum after the collision is

1

- (i) 50 kg m/s
- (ii) 75 kg m/s
- (iii) In the direction of A
- (iv) In the direction of B.

ANS: (c)

438 In a collision,

1

- (i) energy is lost always
- (ii) momentum of the system is constant
- (iii) momentum is always transferred
- (iv) momentum is always lost

ANS: (b)

439 In the explosion of a cracker/bomb

1

- (i) energy is produced
- (ii) momentum is conserved

- (iii) internal energy is absorbed
- (iv) momentum remains unconserved.

ANS: (b)

440 One unit of electricity is consumed by

A : P = 40 W bulb used for t = 25 hours

B : P = 20 W bulb used for t = 50 hours

Both A and B are true as, energy E in kWh is best related as

(i) $E = Pt$

(ii) $E = \frac{Pt}{1000}$

(iii) $E = \frac{P}{1000}$

(iv) $E = \frac{t}{1000}$

ANS: (b)

441 Which of the following energy cannot be completely converted into other forms due to the transmission system ?

- (i) Solar energy
- (ii) Mechanical energy
- (iii) Heat energy
- (iv) Nuclear energy

ANS: (c)

442 In an oscillating simple pendulum,

- (i) Work is done by the string
- (ii) Work is done by the mass
- (iii) Work is done by the force of gravity
- (iv) Only energy transformation takes place

ANS: (d)

1

1

1

443 A microphone converts sound energy to

1

- (i) A pulse
- (ii) A wave
- (iii) Electrical signal/energy
- (iv) Sound energy

ANS: (c)

444 Two equal forces acting at angles 30° and 60° with the horizontal displace a body equally on a horizontal surface. Work done in the two cases are W_1 and W_2 respectively. Then

1

- (i) $W_1 = W_2$
- (ii) $W_1 > W_2$
- (iii) $W_1 < W_2$
- (iv) $W_1 = 2W_2$

ANS: (b) as $\cos 30^\circ > \cos 60^\circ$

445 A battery lights a bulb. The sequence of energy transfer in the process is

1

- (i) electrical energy to heat and light
- (ii) chemical energy to electrical energy and then to heat and light
- (iii) chemical energy to heat and light
- (iv) chemical energy to light.

ANS: (b)

446 When a body falls freely towards the earth, then its total energy

1

- (i) increases
- (ii) decreases
- (iii) remains constant
- (iv) first increases and then decreases.

ANS: (c)

447 A car is accelerated on a levelled road and attains a velocity 4 times of its initial velocity. In this

1

process the potential energy of the car

- (i) does not change
- (ii) becomes twice to that of initial
- (iii) becomes 4 times that of initial
- (iv) becomes 16 times that of initial.

ANS: (a)

448 In case of negative work the angle between the force and displacement is

1

- (i) 0°
- (ii) 45°
- (iii) 90°
- (iv) 180°

ANS: (d)

449 An iron sphere of mass 10 kg has the same diameter as an aluminium sphere of mass is 3.5 kg. Both spheres are dropped simultaneously from a tower. When they are 10 m above the ground, they have the same

1

- (i) acceleration
- (ii) momentum
- (iii) potential energy
- (iv) kinetic energy.

ANS: (a)

450 A girl is carrying a school bag of 3 kg mass on her back and moves 200 m on a levelled road. The work done against the gravitational force will be ($g = 10 \text{ ms}^{-2}$)

1

- (i) $6 \times 10^3 \text{ J}$
- (ii) 6 J
- (iii) 0.6 J
- (iv) zero

ANS: (d)

451 Match the Column I with Column II

Column I	Column II
1. 1 unit	(A) Force
2. Mean Position	against displacement
3. Negative work done	(B) Heat energy
4. Hammering a nail	(C) Newton-metre
5. Joule	(D) 3.6×10^6 J
	(E) Maximum K.E.

1

ANS: 1. (D), 2. (E), 3. (A), 4. (B), 5. (C)

452 When non-zero force and displacement are observed with zero work done, the angle between force and displacement is _____.

1

ANS: 90°

453 60 W power means the device uses 60 joule of energy is _____ hour.

1

ANS: $1/3600$

454 _____ work is done by a satellite revolving around the earth.

1

ANS: Zero

455 Work done can be _____, _____ or _____.

1

ANS: negative, positive, zero

456 An athlete takes a round of a field and comes back to starting point, work done by athlete is _____.

1

ANS: zero

457 A student studying hard for exam does more work than a baby crawling randomly from one corner of a room to another. [True/False]

1

ANS: False

458 Energy can be converted from one form into another in few cases only. [True/False]

1

ANS: False

459 Work done is a vector quantity. [True/False]

1

ANS: False

460 Momentum is a vector quantity while energy is a scalar quantity. [True/False]

1

ANS: True

461 A moving truck has more kinetic energy than a bicycle moving with same speed. [True/False]

1

ANS: True

462 To measure power of heavy machines, unit horse power (hp) is generally used. [True/False]

1

ANS: True

463 Wave motion transfers

1

- (i) momentum
- (ii) velocity
- (iii) energy
- (iv) mass

ANS: (c)

464 Speed of light or electromagnetic wave is higher than that of the speed of sound in air by

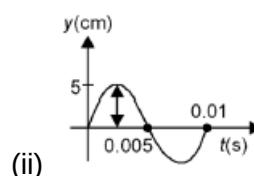
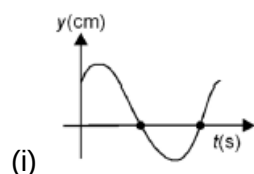
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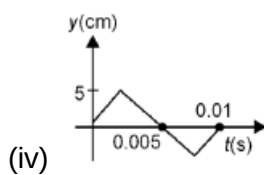
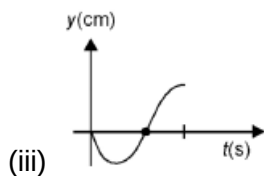
- (i) 10^6 times
- (ii) 10^8 times
- (iii) 10^7 times
- (iv) 10^5 times

ANS: (a)

465 The wave having an amplitude of 5 cm and frequency $f = 100$ Hz can be best represented by

1





ANS: (b)

466 Sonic booms are caused by the combination of

1

- (i) supersonic speed and pressure variation.
- (ii) infrasonic speed and pressure variation.
- (iii) ultrasonic sound and pressure variation.
- (iv) pressure variation only.

ANS: (a)

467 Absorbent materials are to be used while making interior design in an auditorium as

1

- (i) echo is to be increased
- (ii) reverberation time has to be decreased
- (iii) it has to look good
- (iv) sound travels with a lesser velocity

ANS: (b)

468 Infrasonic f_i , Audible f_a and Ultrasonic f_u sounds are related as

1

- (i) $f_i < f_a < f_u$
- (ii) $f_a < f_i < f_u$
- (iii) $f_i > f_a > f_u$
- (iv) $f_a < f_u < f_i$

ANS: (a)

469 Speed of sound in air and water are given as v_a and v_w respectively. Then

1

- (i) $v_a = v_w$
- (ii) $v_a > v_w$
- (iii) $v_w > v_a$
- (iv) $v_a = 2v_w$

ANS: (c)

470 Which of the following is not the character of mechanical waves ?

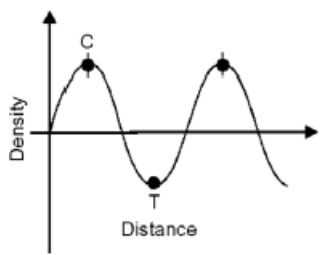
1

- (i) Propagation depends on the elasticity of medium
- (ii) Can be both transverse or longitudinal
- (iii) Requires a material medium
- (iv) Speed is comparatively higher

ANS: (d)

471 The separation between T and C in the figure given is

1



- (i) λ
- (ii) 2λ
- (iii) $\frac{\lambda}{2}$
- (iv) 4λ

ANS: (c)

472 In the bell jar experiment, as air is removed

1

- (i) intensity falls
- (ii) speed of sound falls
- (iii) both (a) and (b)

(iv) elasticity falls

ANS: (a)

473 Two sounds of same pitch and loudness differ in their

1

(i) tone

(ii) note

(iii) quality

(iv) frequency

ANS: (c)

474 Echo is not heard in a room of $10\text{ m} \times 10\text{ m} \times 10\text{ m}$ dimension due to (speed of sound in air = 300 m/s)

1

(i) reflection

(ii) absorption

(iii) persistence

(iv) humidity

ANS: (c)

475 Sound of crackers is heard during festival days, but the sound of supernova explosion in space is not heard on the surface of earth because of

1

(i) large distance

(ii) absence of a medium

(iii) lesser gravity

(iv) the influence of the other planets

ANS: (b)

476 The instruments Megaphone, Stethoscope, Hearing aids and Sound boards work based on the principle of

1

(i) reverberation

(ii) reflection

(iii) persistence

(iv) absorption

ANS: (b)

477 The penetrating powers of ultrasonic waves and other audible sounds are given as f_1 and f_2 respectively. Then

1

(i) $f_1 = f_2$

(ii) $f_1 > f_2$

(iii) $f_1 < f_2$

(iv) $f_1 = 2f_2$

ANS: (b)

478 A wave is moving with a speed of 3000 cm/s with reversal after every 0.01 second. The wavelength of the wave is

1

(i) 0.06 m

(ii) 0.6 m

(iii) 6 m

(iv) 60 m

ANS: (b)

479 The pitch of the two signals A and B shown below are p_A and p_B respectively. Then

1



(i) $p_A = p_B$

(ii) $p_A > p_B$

(iii) $p_A < p_B$

(iv) $p_A = 2p_B$

ANS: (b)

480 Sonic booms are caused due to the variation of

1

(i) pressure

(ii) speed

(iii) loudness

(iv) humidity

ANS: (a)

481 The frequency of a visible light of wavelength 600 nm is (speed of light = 3×10^8 m/s), ($1 \text{ nm} = 10^{-9} \text{ m}$) 1

(i) $5 \times 10^{14} \text{ Hz}$

(ii) $0.5 \times 10^{16} \text{ Hz}$

(iii) 50 Hz

(iv) 500 Hz

ANS: (a) as $v = \frac{v}{\lambda}$

482 The minimum size of a room required to hear an echo of sound with a speed of 300 m/s is 1

(i) 16 m

(ii) 15 m

(iii) 14 m

(iv) 17 m

ANS: (d)

483 A bat can hear frequencies upto 120 kHz. Considering the speed of the sound to be 300 m/s, the wavelength of the signal is 1

(i) 1.25 m

(ii) 2.5 m

(iii) 5 m

(iv) 2.05 cm

ANS: (b) as $\lambda = \frac{v}{\nu} = \frac{300}{120 \times 10^3} = 2.5 \text{ m}$

484 A boat is rocked by waves such that a crest and a trough reach at an interval of 0.1 second with a speed of 50 m/s. The distance between two consecutive crests is 1

(i) 5 m

- (ii) 10 m
- (iii) 15 m
- (iv) 20 m

ANS: (b) $\lambda = vt = 50 \times 0.1 \times 2 = 10 \text{ m}$

485 The terms ultrasonic, supersonic and infrasonic mean

1

- (i) decreasing frequency.
- (ii) increasing frequency
- (iii) increasing loudness.
- (iv) varying speed.

ANS: (a)

486 Two audio devices of the same brand differ in their

1

- (i) quality of sound
- (ii) reverberation time
- (iii) the speed of sound created
- (iv) loudness

ANS: (a)

487 A pulse

1

- (i) is a short duration disturbance
- (ii) does not travel
- (iii) can travel
- (iv) remains at rest

ANS: (a)

488 When we change feeble sound to loud sound we increase its

1

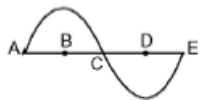
- (i) frequency
- (ii) amplitude

(iii) velocity

(iv) wavelength.

ANS: (b)

489 In the curve half the wavelength is



(i) AB

(ii) B

(iii) DE

(iv) AE

ANS: (b)

490 Earthquake produces which kind of sound before the main shock wave begins

(i) ultrasound

(ii) infrasound

(iii) audible sound

(iv) as a supersonic wave

ANS: (b)

491 Infrasound can be heard by

(i) dog

(ii) bat

(iii) rhinoceros

(iv) human beings.

ANS: (c)

492 Before playing the orchestra in a musical concert, a sitarist tries to adjust the tension and pluck the string suitably. By doing so, he is adjusting

(i) intensity of sound only

(ii) amplitude of sound only

(iii) frequency of the sitar string with the frequency of other musical instruments

(iv) loudness of sound

ANS: (c)

493 Match the Column I with Column II

Column I	Column II
1. Pitch	(A) Amplitude
2. Loudness	(B) Mechanical wave
3. Pulse	(C) Sound
4. Transverse wave	(D) Short duration
5. Longitudinal wave	(E) Light
6. Sound	(F) Frequency
7. Reverberation	(G) Frequency less than 20 Hz
8. Ultrasound	(H) Distance between two crests
9. Infrasound	(I) Resistance of sound
10. Wavelength	(J) Frequency more than 20 kHz

1

ANS: 1. (F), 2. (A), 3. (D), 4. (E), 5. (C), 6. (B), 7. (I), 8. (J), 9. (G), 10. (H)

494 Dogs are capable of hearing _____ sound.

1

ANS: ultrasonic

495 Reflected sound is called _____.

1

ANS: echo

496 Stethoscope is based on principle of _____ reflections of sound.

1

ANS: multiple

497 Cushions, draperies and carpets reduce the effect of _____ in an auditorium.

1

ANS: reverberation

498 Speed of sound _____ with increase in temperature of medium.

1

ANS: increases

- 499 SONAR stands for _____. 1
- ANS: Sound Navigation and Ranging
- 500 Due to higher humidity, speed of sound in Chennai is more than that of Delhi. [True/False] 1
- ANS: True
- 501 SONAR works on the principle of echo ranging. [True/False] 1
- ANS: True
- 502 Tone is a mixture of several frequencies. [True/False] 1
- ANS: False
- 503 When sound travels from one medium to another, its frequency remains unchanged. [True/False] 1
- ANS: True
- 504 Sound travels as longitudinal wave in air and transverse wave in water. [True/False] 1
- ANS: False
- 505 Light wave is a mechanical wave. [True/False] 1
- ANS: False
- 506 Reflection of sound obeys same laws as those of reflection of light. [True/False] 1
- ANS: True
- 507 Identify the group among the following, which contains all bacterial diseases : 1
- (i) Typhoid, tuberculosis, cholera
 - (ii) Malaria, anthrax, typhoid
 - (iii) Kala-azar, influenza, tuberculosis
 - (iv) Tuberculosis, anthrax, dengue
- ANS: (a)
- 508 Antibiotics do not work against viral infections because 1
- (i) viruses live only inside host cells.

- (ii) viruses do not have metabolic pathways of their own.
- (iii) viruses are resistant to antibiotics.
- (iv) the protein coat of viruses acts as a barrier to the antibiotics.

ANS: (b)

509 Diseases affect the organs depending on the point of entry into the body. Identify the disease from the following, which enters our body through mosquito bite and reaches the brain :

1

- (i) Polio
- (ii) Malaria
- (iii) Dengue
- (iv) Encephalitis

ANS: (d)

510 The set of diseases which spread through sexual contact as well as through placenta to the foetus are

1

- (i) Malaria and AIDS
- (ii) AIDS and Syphilis
- (iii) Syphilis and Malaria
- (iv) AIDS and Cancer

ANS: (b)

511 The diseases where microbes are the immediate causes, are called

1

- (i) infectious diseases
- (ii) non-infectious diseases
- (iii) chronic diseases
- (iv) acute diseases.

ANS: (a)

512 Immunisation/Vaccination started with

1

- (i) L. Pasteur

(ii) A. Fleming

(iii) E. Jenner

(iv) J.E. Salk

ANS: (c)

513 Malarial parasite after entering the human body reaches the

1

(i) liver and then RBCs

(ii) stomach and then RBCs

(iii) liver and then WBCs

(iv) stomach and then salivary glands.

ANS: (a)

514 Cells of our body involved in fighting against infections, are

1

(i) red blood cells

(ii) platelets

(iii) white blood cells

(iv) liver cells

ANS: (c)

515 Sleeping sickness is caused by (i) _____, which is a (ii) _____.

1

(i) (i) Leishmania, (ii) protozoan

(ii) (i) Trypanosoma, (ii) protozoan

(iii) (i) Staphylococcus, (ii) bacterium

(iv) (i) Trypanosoma, (ii) bacterium

ANS: (b)

516 Ascaris lumbricoides causes damage to our

1

(i) brain

(ii) intestine

(iii) liver

(iv) lower limbs

ANS: (b)

517 Sexually transmitted disease, Syphilis is a _____ disease.

1

(i) viral

(ii) fungal

(iii) bacterial

(iv) protozoan

ANS: (c)

518 Most of the skin infections are caused by _____

1

(i) viruses

(ii) insect bites

(iii) bacteria

(iv) fungi

ANS: (d)

519 When a disease lasts for a long time and damages some part of the body, it is called a/an

1

(i) acute disease.

(ii) chronic disease.

(iii) communicable disease.

(iv) non-communicable disease.

ANS: (b)

520 The process in which the active immune system employs many cells to the affected tissue, is called

1

(i) infection

(ii) infestation

(iii) invasion

(iv) inflammation.

ANS: (d)

521 Repeated exposure to a pathogen leads to the development of

1

- (i) disease
- (ii) immunity
- (iii) cancer
- (iv) weakness

ANS: (b)

522 Antibiotics used in treatment of bacterial and fungal diseases are

1

- (i) the names of useful bacteria
- (ii) toxins produced by bacteria
- (iii) drugs manufactured to kill viruses
- (iv) products of metabolism in some bacteria.

ANS: (d)

523 After vaccination, the body builds up

1

- (i) antibodies
- (ii) pathogens
- (iii) weakness
- (iv) toxins

ANS: (a)

524 Providing living conditions that are not crowded, can help to prevent

1

- (i) air-borne diseases
- (ii) water-borne diseases
- (iii) vector-borne diseases
- (iv) sexually transmitted diseases

ANS: (a)

525 The antibiotic penicillin kills the bacteria by blocking the synthesis of

1

- (i) proteins
- (ii) cell wall
- (iii) ribosomes
- (iv) cell membrane.

ANS: (b)

526 The severity of the disease manifestation depends on

1

- (i) the number of microbes causing the disease.
- (ii) the nutrition we have.
- (iii) the organ infected/affected.
- (iv) the strength of the infectious agent.

ANS: (a)

527 Which one of the following is not a viral disease?

1

- (i) Dengue
- (ii) AIDS
- (iii) Typhoid
- (iv) Influenza

ANS: (c)

528 Which one of the following is not a bacterial disease?

1

- (i) Cholera
- (ii) Tuberculosis
- (iii) Anthrax
- (iv) Influenza

ANS: (d)

529 Which one of the following disease is not transmitted by mosquito?

1

- (i) Brain fever

- (ii) Malaria
- (iii) Typhoid
- (iv) Dengue

ANS: (c)

530 Which one of the following disease is not caused by bacteria?

1

- (i) Typhoid
- (ii) Anthrax
- (iii) Tuberculosis
- (iv) Malaria

ANS: (d)

531 Which one of the following diseases is caused by protozoans?

1

- (i) Malaria
- (ii) Influenza
- (iii) AIDS
- (iv) Cholera

ANS: (a)

532 Which one of the following has a long term effect on the health of an individual?

1

- (i) Common cold
- (ii) Chicken pox
- (iii) Chewing tobacco
- (iv) Stress

ANS: (c)

533 Which of the following can make you ill if you come in contact with an infected person?

1

- (i) High blood pressure
- (ii) Genetic abnormalities
- (iii) Sneezing

(iv) Blood cancer

ANS: (c)

534 AIDS cannot be transmitted by

1

(i) sexual contact

(ii) hugs

(iii) breast feeding

(iv) blood transfusion

ANS: (b)

535 Making anti-viral drugs is more difficult than making anti-bacterial medicines because

1

(i) viruses make use of host machinery

(ii) viruses are on the border line of living and non-living

(iii) viruses have very few biochemical mechanisms of their own

(iv) viruses have a protein coat

ANS: (c)

536 Which one of the following causes kala-azar?

1

(i) Ascaris

(ii) Trypanosoma

(iii) Leishmania

(iv) Bacteria

ANS: (c)

537 If you live in a overcrowded and poorly ventilated house, it is possible that you may suffer from which of the following diseases

1

(i) Cancer

(ii) AIDS

(iii) Air borne diseases

(iv) Cholera

ANS: (c)

538 Which disease is not transmitted by mosquitoes?

1

- (i) Dengue
- (ii) Malaria
- (iii) Brain fever or encephalitis
- (iv) Pneumonia

ANS: (d)

539 Match the Column I with Column II

Column I	Column II
1. Jaundice	(A) Infectious diseases
2. Encephalitis	(B) Malaria
3. Immune system	(C) Water borne disease
4. Liver	(D) Penicillin
5. Immunisation	(E) Mosquito bite
	(F) HIV

1

ANS: 1. (C), 2. (E), 3. (F), 4. (B), 5. (A)

540 Sleeping sickness is caused by _____.

1

ANS: Trypanosoma

541 Pneumonia is spread by the air-borne _____.

1

ANS: droplets

542 Liver is damaged by the virus in the disease _____.

1

ANS: jaundice

543 Chronic diseases may or may not be caused by infectious agents. [True or False]

1

ANS: True

544 Acne is caused by a fungus. [True or False]

1

ANS: False

545 Leishmania is spread by a vector. [True or False] 1

ANS: True

546 HIV affects our respiratory system. [True or False] 1

ANS: False

547 Penicillin is an antiviral drug [True or False] 1

ANS: False

548 Malaria is caused by virus. [True or False] 1

ANS: False

549 The major component of the atmosphere on Mars and Venus is 1

- (i) Oxygen
- (ii) Water vapour
- (iii) Carbon dioxide
- (iv) Nitrogen

ANS: (c)

550 The main source of water in India is 1

- (i) sea water
- (ii) surface water
- (iii) groundwater
- (iv) rainwater

ANS: (d)

551 The life supporting gases such as O₂, CO₂ and N₂ are chiefly concentrated in the 1

- (i) troposphere
- (ii) stratosphere
- (iii) exosphere
- (iv) ionosphere

ANS: (a)

552 All of earth's water, land and atmosphere, within which life exists is known as

1

- (i) biosphere
- (ii) population
- (iii) biome
- (iv) community

ANS: (a)

553 Air is a mixture of gases with the following gas in maximum percentage

1

- (i) Nitrogen
- (ii) Oxygen
- (iii) Hydrogen
- (iv) Carbon dioxide

ANS: (a)

554 The average amount of CO_2 in the atmosphere is

1

- (i) 3.0%
- (ii) 0.3%
- (iii) 0.03 %
- (iv) 0.003 %

ANS: (c)

555 The average amount of N_2 in the atmosphere is

1

- (i) 0.3%
- (ii) 0.03%
- (iii) 7.8%
- (iv) 78%

ANS: (d)

556 The amount of carbon dioxide in the atmosphere has increased in recent years. Environmentalists suggest this change is a direct result of the

1

- (i) Dumping of inorganic material into lakes and rivers.
- (ii) Improper storage of solid and nuclear waste.
- (iii) Use of herbicides and toxic substances such as asbestos and DDT.
- (iv) Overcutting of forests and the increased use of fossil fuels.

ANS: (d)

557 When water mixes with carbon dioxide in the air, it forms

1

- (i) carbonic acid
- (ii) sulphuric acid
- (iii) hydrochloric acid
- (iv) ozone.

ANS: (a)

558 Smog is the mixture of

1

- (i) smoke + CO₂
- (ii) smoke + nitrogen
- (iii) smoke + fog
- (iv) smoke + ozone.

ANS: (c)

559 Which of the following processes provide most of the oxygen found in the earth's atmosphere?

1

- (i) Aerobic respiration
- (ii) Anaerobic respiration
- (iii) Photosynthesis
- (iv) Fermentation

ANS: (c)

560 In nutrient cycle, minerals tend to be dispersed through

1

- (i) evaporation
- (ii) assimilation
- (iii) surface and sub-surface run off
- (iv) convection

ANS: (c)

561 Why is soil erosion more common in areas that lack adequate vegetation?

1

- (i) Because the lack of adequate vegetation affects the soil pressure and erosion rate.
- (ii) Because plant roots help keep the soil in place.
- (iii) Because soil erosion is stopped by reduced vegetation.
- (iv) Because gravity pulls the plants and increases erosion.

ANS: (b)

562 Soil composition is dependent on weathering because

1

- (i) it contributes sediment to the soil.
- (ii) it moves the topsoil to other areas where it is more needed.
- (iii) it makes the soil more fertile.
- (iv) it keeps the soil moist.

ANS: (a)

563 Soil erosion is more common in

1

- (i) valleys
- (ii) sloping hills
- (iii) steep slopes
- (iv) ground level

ANS: (c)

564 Which of the following processes is involved in the water cycle?

1

- (i) Bathing, drinking and swimming
- (ii) Paddling, swimming and drinking

- (iii) Evaporation, dehydration and hibernation
- (iv) Evaporation, condensation and precipitation.

ANS: (d)

565 The process in which water vapour changes into liquid is called

1

- (i) condensation
- (ii) precipitation
- (iii) evaporation
- (iv) transpiration.

ANS: (a)

566 In nitrogen cycle, which bacteria are responsible for nitrification?

1

- (i) Rhizobium
- (ii) Nitrosomonas
- (iii) Nitrosomonas and Nitrobacter
- (iv) Clostridium

ANS: (c)

567 The conversion of NO_3 to N_2 is known as

1

- (i) Nitrification
- (ii) Nitrogen
- (iii) Ammonification
- (iv) Denitrification.

ANS: (d)

568 Why is it difficult to integrate nitrogen gas from the atmosphere in the nitrogen cycle of the biosphere?

1

- (i) Most plants do not require organic nitrogen compounds for survival.
- (ii) Nitrogen is not very abundant in the atmosphere.
- (iii) Few organisms can directly utilise atmospheric nitrogen gas.

(iv) Living organisms quickly absorb nitrogen gas.

ANS: (c)

569 The atmosphere of the earth is heated by radiations which are mainly

1

- (i) radiated by the sun
- (ii) re-radiated by land
- (iii) re-radiated by water
- (iv) re-radiated by land and water

ANS: (d)

570 If there were no atmosphere around the earth, the temperature of the earth will

1

- (i) increase
- (ii) go on decreasing
- (iii) increase during day and decrease during night
- (iv) be unaffected

ANS: (c)

571 What would happen, if all the oxygen present in the environment is converted to ozone?

1

- (i) We will be protected more
- (ii) It will become poisonous and kill living forms
- (iii) Ozone is not stable, hence it will be toxic
- (iv) It will help harmful sun radiations to reach earth and damage many life forms.

ANS: (b)

572 One of the following factors does not lead to soil formation in nature

1

- (i) the sun
- (ii) water
- (iii) wind
- (iv) polythene bags

ANS: (d)

573 The two forms of oxygen found in the atmosphere are

1

- (i) water and ozone
- (ii) water and oxygen
- (iii) ozone and oxygen
- (iv) water and carbondioxide

ANS: (c)

574 The process of nitrogen-fixation by bacteria does not take place in the presence of

1

- (i) molecular form of hydrogen
- (ii) elemental form of oxygen
- (iii) water
- (iv) elemental form of nitrogen

ANS: (b)

575 Rainfall patterns depend on

1

- (i) the underground water table
- (ii) the number of water bodies in an area
- (iii) the density pattern of human population in an area
- (iv) the prevailing season in an area

ANS: (b)

576 Among the given options, which one is not correct for the use of large amount of fertilisers and pesticides?

1

- (i) They are eco-friendly
- (ii) They turn the fields barren after some time
- (iii) They adversely affect the useful component from the soil
- (iv) They destroy the soil fertility

ANS: (a)

577 The nitrogen molecules present in air can be converted into nitrates and nitrites by 1

- (i) a biological process of nitrogen fixing bacteria present in soil
- (ii) a biological process of carbon fixing factor present in soil
- (iii) any of the industries manufacturing nitrogenous compounds
- (iv) the plants used as cereal crops in field

ANS: (a)

578 The term “waterpollution” can be defined in several ways. Which of the following statements does not give the correct definition? 1

- (i) The addition of undesirable substances to water-bodies
- (ii) The removal of desirable substances from water-bodies
- (iii) A change in pressure of the water bodies
- (iv) A change in temperature of the water bodies

ANS: (c)

579 Match the Column I with Column II

Column I	Column II
1. Air pollution	(A) CFC
2. Water pollution	(B) Oxides of nitrogen and sulphur
3. Global warming	(C) CO ₂
4. Ozone layer depletion	(D) Fertilisers, Pesticides, Sewage.

1

ANS: 1. (B), 2. (D), 3. (C), 4. (A)

580 _____ and water are the main factors for causing soil erosion. 1

ANS: Wind

581 _____ covers whole of the earth like a blanket. 1

ANS: Atmosphere

582 The process in which liquid water changes into gas is called _____. 1

ANS: evaporation

583 Vegetation is an example of _____ component of the environment. 1

ANS: biotic

584 Bacteria drives the _____ cycle. 1

ANS: nitrogen

585 Water gets heated faster than land [True/False] 1

ANS: False

586 The combustion of fossil fuels increases the amount of suspended particles in air. [True/False] 1

ANS: True

587 Methane is a greenhouse gas. [True/False] 1

ANS: True

588 Sulphur dioxide plays a major role in global warming. [True/False] 1

ANS: False

589 Green manure refers to 1

- (i) the organic manure prepared by green worms.
- (ii) the manure used by small green plants.
- (iii) the plants grown and mulched by ploughing before sowing the crop.
- (iv) the organic manure added to soil before ploughing and sowing.

ANS: (c)

590 Mixed cropping and intercropping involve growing of two or more crops simultaneously on the same field; but the latter differs from the former in that 1

- (i) it reduces risk and gives insurance against failure of crops.
- (ii) the different crops are grown in different rows alternating with each other.
- (iii) cropping is practiced along with rearing of animals.
- (iv) crops are provided with only organic manures and biofertilisers.

ANS: (b)

591 Plants can be made disease-resistant by

1

- (i) hybridisation.
- (ii) genetic modification.
- (iii) both (a) and (b).
- (iv) use of antibiotics.

ANS: (c)

592 Developing crop varieties with wider adaptability will help in stabilising crop production, because

1

- (i) a single variety can be grown under different climatic conditions in different regions.
- (ii) that variety will have resistance to a wide variety of pests.
- (iii) that variety will be higher yielding than many other varieties.
- (iv) that variety can be grown under same climatic conditions.

ANS: (a)

593 Induced breeding is used to increase the production of

1

- (i) cows
- (ii) draught animals
- (iii) fish
- (iv) poultry birds

ANS: (c)

594 Determine the mineral nutrient/element whose loss is compensated by growing a pulse crop between two cereal crops.

1

- (i) Calcium
- (ii) Sulphur
- (iii) Nitrogen
- (iv) Magnesium

ANS: (c)

595 Arrange the following animal food products which contain more fats, more proteins and least fat (among them) and choose the set that contains the right option in the above said order.

1

(i) Fish, egg, meat

(ii) Meat, milk, egg

(iii) Milk, meat, fish

(iv) Egg, meat, fish

ANS: (d)

596 Application of nitrogenous fertilisers causes

1

(i) vigorous vegetative growth.

(ii) early flowering.

(iii) retarded vegetative growth, but increased flowering.

(iv) retarded flowering and resistance to worms.

ANS: (a)

597 Inland fishery refers to

1

(i) deep sea fisheries.

(ii) capturing fish from sea coast.

(iii) culturing fish in freshwater bodies.

(iv) extraction of oil from fish.

ANS: (c)

598 Identify the group containing only pulse crops

1

(i) Pea, lentil, soya bean, green gram.

(ii) Pigeon pea, sunflower, mustard, black gram

(iii) Green gram, pigeon pea, wheat, sorghum.

(iv) Pea, lentil, sorghum, mustard.

ANS: (a)

599 Kharif season extends from

1

- (i) January to March.
- (ii) April to June
- (iii) June to October.
- (iv) October to January.

ANS: (c)

600 The scientific name of the honeybee employed in the commercial production of honey, is

1

- (i) *Apis florae*
- (ii) *Apis mellifera*
- (iii) *Apis dorsata*
- (iv) *Apis indica*

ANS: (b)

601 Obtaining fish from natural water resources is known as

1

- (i) culture fishery
- (ii) fish farming
- (iii) capture fishing
- (iv) fresh water fishery

ANS: (c)

602 Catlas feed on the _____ of the water body.

1

- (i) surface
- (ii) grasses/weeds
- (iii) bottom zone
- (iv) middle zone

ANS: (a)

603 Intervarietal cross means the cross between two different

1

- (i) species of the same genus.
- (ii) varieties of the same species.

(iii) species with similar traits.

(iv) varieties with similar traits.

ANS: (b)

604 The process of crossing genetically dissimilar plants of a species, is called

1

(i) intervarietal cross

(ii) interspecific cross

(iii) intergeneric cross

(iv) all of these.

ANS: (a)

605 Bee pasturage refers to

1

(i) the trees where bees make the hives

(ii) the flowers available for nectar collection by the bees.

(iii) the hives where honeybees live and deposit honey.

(iv) the worker bees in a hive, who collect honey.

ANS: (b)

606 The system of culturing five or six species of fish with different food habits, in a fishpond, is called

1

(i) mariculture

(ii) composite fish culture

(iii) capture fishing

(iv) pisciculture

ANS: (b)

607 Manures are used in sandy soils mainly to

1

(i) provide all essential nutrients to crops

(ii) increase the water holding capacity.

(iii) avoid waterlogging.

(iv) reduce soil pollution.

ANS: (b)

608 Continuous use of fertilisers can destroy soil fertility because

1

- (i) organic matter is not replenished.
- (ii) microbes in the soil are harmed.
- (iii) soil becomes hard.
- (iv) both (a) and (b).

ANS: (d)

609 Which one is an oil yielding plant among the following?

1

- (i) Lentil
- (ii) Sunflower
- (iii) Cauliflower
- (iv) Hibiscus

ANS: (b)

610 Which one is not a source of carbohydrate?

1

- (i) Rice
- (ii) Millets
- (iii) Sorghum
- (iv) Gram

ANS: (d)

611 Find out the wrong statement from the following

1

- (i) White revolution is meant for increase in milk production
- (ii) Blue revolution is meant for increase in fish production
- (iii) Increasing food production without compromising with environmental quality is called as sustainable agriculture
- (iv) None of the above

ANS: (d)

612 To solve the food problem of the country, which among the following is necessary?

1

- (i) Increased production and storage of food grains
- (ii) Easy access of people to the food grain
- (iii) People should have money to purchase the grains
- (iv) All of the above

ANS: (d)

613 Find out the correct sentence

1

- (i) Hybridisation means crossing between genetically dissimilar plants
 - (ii) Cross between two varieties is called as inter specific hybridisation
 - (iii) Introducing genes of desired character into a plant gives genetically modified crop
 - (iv) Cross between plants of two species is called as inter varietal hybridisation
- (i) (i) and (iii)
 - (ii) (ii) and (iv)
 - (iii) (ii) and (iii)
 - (iv) (iii) and (iv)

ANS: (a)

614 Weeds affect the crop plants by

1

- (i) killing of plants in field before they grow
- (ii) dominating the plants to grow
- (iii) competing for various resources of crops (plants) causing low availability of nutrients
- (iv) all of the above

ANS: (c)

615 Which one of the following species of honeybee is an Italian species?

1

- (i) *Apis dorsata*
- (ii) *Apis florea*
- (iii) *Apis cerana indica*

(iv) *Apis mellifera*

ANS: (d)

616 Find out the correct sentence about manure

- (i) Manure contains large quantities of organic matter and small quantities of nutrients.
- (ii) It increases the water holding capacity of sandy soil
- (iii) It helps in draining out of excess of water from clayey soil.
- (iv) Its excessive use pollutes environment because it is made of animal excretory waste.

1

- (i) (i) and (iii)
- (ii) (i) and (ii)
- (iii) (ii) and (iii)
- (iv) (iii) and (iv)

ANS: (b)

617 Cattle husbandry is done for the following purposes

- (i) Milk Production
- (ii) Agricultural work
- (iii) Meat production
- (iv) Egg production

1

- (i) (i), (ii) and (iii)
- (ii) (ii), (iii) and (iv)
- (iii) (iii) and (iv)
- (iv) (i) and (iv)

ANS: (a)

618 Which of the following are Indian cattle?

- (i) *Bos indicus*
- (ii) *Bos domestica*
- (iii) *Bos bubalis*
- (iv) *Bos vulgaris*

1

- (i) (i) and (iii)

(ii) (i) and (ii)

(iii) (ii) and (iii)

(iv) (iii) and (iv)

ANS: (a)

619 Match the Column I with Column II

Column I	Column II
1. Mrigal	(A) Micronutrient
2. Rabi crop	(B) Biopesticide
3. Broiler	(C) Macronutrient
4. Magnesium	(D) Biofertiliser
5. Manganese	(E) Chicks for meat
6. Neem	(F) Bottom feeder
	(G) Winter season

1

ANS: 1. (F), 2. (G), 3. (E), 4. (C), 5. (A), 6. (B)

620 _____ are related to the duration of sunlight.

1

ANS: Photoperiods

621 The compost prepared with the help of earthworm is called _____.

1

ANS: vermicompost

622 _____ system of irrigation is practised in areas closer to rivers.

1

ANS: River lift

623 _____ of cattle feed contains high level of protein.

1

ANS: Concentrate

624 Intergeneric hybridisation involves crossing of plants belonging to two different species of one genus. [True/False]

1

ANS: False

625 Tallness and profuse branching are the desired agronomic traits in fodder crops. [True/False]

1

ANS: True

626 Paddy is an example of Rabi crop. [True/False]

1

ANS: False

627 Aspergillus is a fungus which affects stored food grains. [True/False]

1

ANS:

True

628 Covered smut is a fungal disease of wheat crop. [True/False]

1

ANS: False

629 Explain about SONAR.

1

