Sample Paper

2

Time : 90 Minutes **Max. Marks : 40**

General Instructions

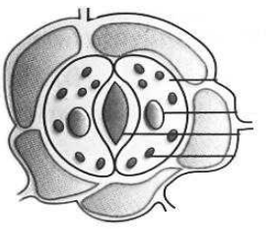
1. *The Question Paper contains three sections.*
2. *Section A has **24** questions. Attempt any **20** questions.*
3. *Section B has **24** questions. Attempt any **20** questions.*
4. *Section C has **12** questions. Attempt any **10** questions.*
5. *All questions carry equal marks.*
6. *There is no negative marking.*

SECTION-A

*Section – A consists of 24 questions. Attempt **any 20** questions from this section. The first attempted 20 questions would be evaluated.*

1. A is an aqueous solution of acid and B is an aqueous solution of base. These are diluted separately. Then
(a) pH of A increases while that of B decreases till neutral
(b) pH of B decreases while that of A increases till neutral
(c) pH of A and B decreases
(d) pH of A and B increases

2. Which of the following statement is not true for stomatal apparatus?



(a) Inner walls of guard cells are thick
(b) Guard walls invariably possess chloroplast and mitochondria
(c) Guard cells are always surrounded of subsidiary cells
(d) Stomata are involved in gaseous exchange

3. Which of the following is an example of neutral oxide?
(a) Fe_2O_3 (b) Al_2O_3 (c) CO (d) NO_2

4. A student added dilute HCl to a test tube containing zinc granules and made following observations :
(i) The zinc surface became dull and black. (ii) A gas evolved which burnt with a pop sound.
(iii) The solution remained colourless.
Correct observations are -
(a) (i) and (ii) (b) (i) and (iii) (c) (ii) and (iii) (d) (i), (ii) and (iii)

5. Complete the glucose break down pathway in case of aerobic respiration by filling the blanks

Glucose $\xrightarrow{\text{In cytoplasm}}$ [1] $\xrightarrow{(2)}$ [3] + [4] + [5]

Column -I	Column -II	
1	(i)	Pyruvate
2	(ii)	CO_2
3	(iii)	Presence of oxygen
4	(iv)	Energy
5	(v)	Water

(a) $1 \rightarrow (ii)\,;\, 2 \rightarrow (i)\,;\, 3 \rightarrow (iii)\,;\, 4 \rightarrow (v);\, 5 \rightarrow (iv)$ (b) $1 \rightarrow (i)\,;\, 2 \rightarrow (iii)\,;\, 3 \rightarrow (ii)\,;\, 4 \rightarrow (v);\, 5 \rightarrow (iv)$

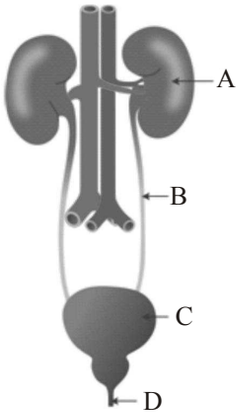
(c) $1 \rightarrow (iv)\,;\, 2 \rightarrow (i)\,;\, 3 \rightarrow (ii)\,;\, 4 \rightarrow (v);\, 5 \rightarrow (i)$ (d) None of these

6. The function of the glomerulus and Bowman's capsule of the nephron is to

(a) reabsorb water into the blood. (b) eliminate ammonia from the body.

(c) reabsorb salts and amino acids. (d) filter the blood and collect the filtrate.

7. In the given diagram some organs are labelled as A,B,C and D respectively. Choose the correct sequence.



(a) A: Kidney, B: Urinary bladder, C: Urethra, D: Ureter (b) A: Kidney, B: Ureter, C: Urinary bladder, D: Urethra

(c) A: Kidney, B: Urethra, C: Collecting duet, D: Anus (d) A: Kidney, B: Seminiferous tubules, C: Uterus, D: Ureter

8. Match Column-I with Column-II and select the correct answer using the codes given below the columns.

Compound (B)		Uses
(A)	Caustic soda	Manufacture of antacid
(B)	Sulphuric acid	Preservation of food
(C)	Calcium hydroxide	Manufacturing of soap
(D)	Acetic acid	Automobile batteries

which of the following are incorrect match

(a) A, B (b) B, D (c) A, C (d) A, B, C

9. (A) Hardest Non-metal (B) Non-metal conducts electricity

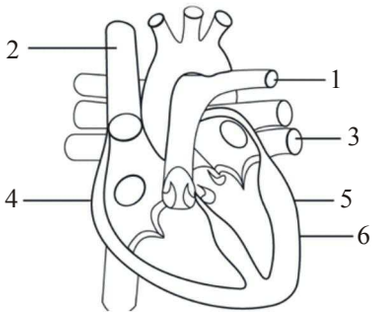
(C) Non-metal with lustre (D) Non-metal used as fungicide

A, B, C and D are

(a) Diamond, Iodine, Graphite, Phosphorous (b) Diamond, Graphite, Iodine, Sulphur

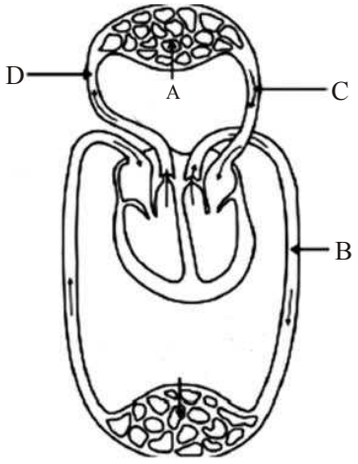
(c) Diamond, Graphite, Iodine, Nitrogen (d) Diamond, Graphite, Graphite, Nitrogen

10. Given alongside is a diagram of the human heart showng its internal structures. Which types of blood is carried by the blood vessel marked 2?



(a) Deoxygenated blood (b) Oxygenated blood (c) Water (d) None of these

11. The given diagram is marked as A, B, C and D. Label A and C represents



(a) Lung capillaries and Vena cava from body (b) Pulmonary veins from lungs and Aorta to body

(c) Pulmonary artery to lungs and vena cava from body (d) lung capillaries and pulmonary vein from lungs.

12. Which one of the following statements is correct ?

In the reaction $2FeCl_2 + Cl_2 \longrightarrow 2FeCl_3$

(a) $FeCl_2$ is an oxidizing agent (b) Cl_2 is an oxidizing agent

(c) $FeCl_3$ is an oxidising agent (d) Cl_2 is a reducing agent

13. The correct chemical formula of the given compounds:

Aluminium Phosphate, Ammonium Carbonate and Sodium Sulphite are

(a) $Al_2(PO_4)_3$, $(NH_4)_2CO_3$, Na_2SO_4 (b) $AlPO_4$, $(NH_4)_2CO_3$, Na_2SO_3

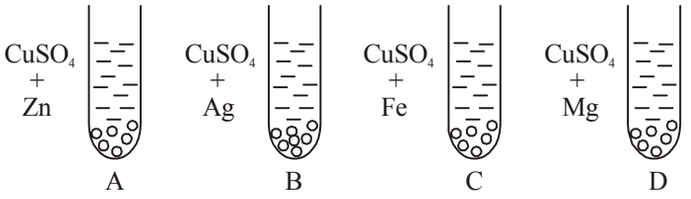
(c) $Al(PO_4)_3$, $(NH_4)_2CO_3$, Na_2SO_4 (d) $AlPO_4$, $(NH_4)_2CO_3$, Na_2SO_3

14. Which of the following is incorrect combination?

(i)	NO	Neutral oxide
(ii)	Cl_2O_7	Acidic oxide
(iii)	MgO	Basic oxide
(iv)	P_4O_{10}	Basic oxide
(v)	ZnO	Amphoteric oxide
(vi)	CO	Acidic oxide

(a) (i), (ii) (b) (i), (iv), (vi) (c) (iv), (v) (d) (iv), (vi)

15.



which of the following observation are incorrect

(i) Reaction will take place in testube A and colorless solution appears.

(ii) No reaction will take place in test tube B.

(iii) Iron displaces copper from its salt solution and dark brwon colour solution appears in beaker C.

(iv) Reaction will take place in test tube D and a white precipitate will appear.

(a) (i), (iii) (b) (i), (iv) (c) (iii) and (iv) (d) None of then

16. Which of the following is not a property shown by plaster of paris ($CaSO_4 \cdot \frac{1}{2} H_2O$)?

(a) It solidifies after mixing with water (b) It is used for setting of broken bones

(c) When kept open in air it easily loses its water (d) A large amount of energy is released on mixing it with water

17. Which one of the following statements is not correct?

(a) A convex mirror is often used as driving rear-view mirror.

(b) A convex mirror is often used as a shaving mirror.

(c) A concave mirror is often used in a search light or a torch.

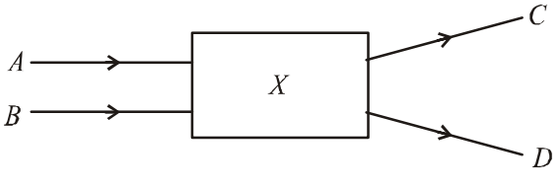
(d) A concave mirror is often used as the reflector behind lamp in a projector

18. A spherical mirror and a thin spherical lens have each a focal length of –15 cm. The mirror and the lens are likely to be

(a) both concave. (b) both convex.

(c) the mirror is concave and the lens is convex. (d) the mirror is convex, but the lens is concave.

19. Light rays *A* and *B* fall on optical component *X* and come out as *C* and *D*.



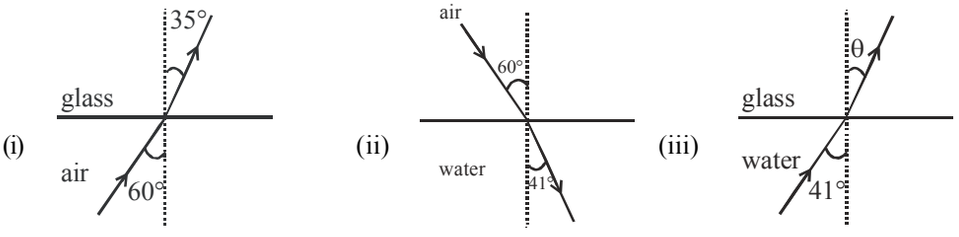
The optical component is a

(a) concave lens (b) convex lens (c) convex mirror (d) prism

20. An object is placed 20.0 cm in front of a concave mirror whose focal length is 25.0 cm. What is the magnification of the object?

(a) +5.0 (b) –5.0 (c) +0.20 (d) –0.20

21. Refraction of light from air to glass and from air to water are shown in figure (i) and (ii) below. The value of the angle in the case of refraction as shown in figure (iii) will be :



(a) 30° (b) 35° (c) 60° (d) none of the above

22. The sky appears dark to passengers flying at very high altitudes mainly because :

(a) Scatterings of light is not enough at such heights.

(b) There is no atmosphere at great heights.

(c) The size of molecules is smaller than the wavelength of visible light.

(d) The light gets scattered towards the earth.

23. Which of the following statements is true?
(a) A convex lens has 4 dioptre power having a focal length 0.25 m
(b) A convex lens has –4 dioptre power having a focal length 0.25 m
(c) A concave lens has 4 dipotre power having a focal length 0.25 m
(d) A concave lens has – 4 dioptre power having a focal length 0.25 m

24. Two lenses of focal length f_1 and f_2 are kept in contact coaxially. The power of the combination will be

(a) $\frac{f_1 f_2}{f_1 + f_2}$ (b) $\frac{f_1 + f_2}{f_1 f_2}$ (c) $\frac{f_1 f_2}{f_1 - f_2}$ (d) $f_1 + f_2$

SECTION-B

*Section – B consists of 24 questions (Sl. No.25 to 48). Attempt **any 20** questions from this section. The first attempted 20 questions would be evaluated.*

25. $CaSO_4 \cdot xH_2O + yH_2O \longrightarrow CaSO_4 z\ H_2O$

$\xrightarrow{373\ K,\ D}$ X

which of the following is correct

(i) x is 2 (ii) y is 1.5 (iii) z is 2 (iv) x is gypsum

(a) (ii), (iv) (b) (ii) and (iii) (c) (iii) and (iv) (d) (ii), (iii) and (iv)

26. Two elements A and B on burning in air give corresponding oxides. Oxides of both A and B are soluble in water. The aqueous solution of oxide of A is alkaline and reacts with aqueous solution of oxide of B to give another compound. Identify A and B
(a) A and B both are metals (b) A and B are non-metals
(c) A is metal and B is non-metal (d) A is non-metal and B is metal

27. In the equation, $NaOH + HNO_3 \longrightarrow NaNO_3 + H_2O$ nitric acid is acting as -
(a) an oxidising agent (b) an acid
(c) a nitrating agent (d) a dehydrating agent

28. Choose the correct statement(s)
(i) Most of the acids are water soluble.
(ii) Acids react with metallic oxides and hydroxides to form metallic salt and water only.
(iii) Acids react with metallic carbonates to form metallic salt and hydrogen gas and water
(iv) Acetic acid is used as a food preservative

(a) (i) & (ii) only (b) (iii) & (iv) (c) (i), (ii) & (iv) (d) all the above

29. Match the items of Column I with the items of the Column II
(A) $NH_4OH + CH_3COOH \rightarrow CH_3COONH_4 + H_2O$
(B) $2AgBr \rightarrow 2Ag + Br_2$
Most suitable option for Reaction A and B are

	A	B
(a)	Endothermic, Neutralization reaction	Endothermic, neutralization reaction
(b)	Exothermic, metal displacment reaction	Exothermic, Redox
(c)	Exothermic, Neutralization reaction	Endothermic, Redox reaction
(d)	Endothermic, displacment	Exothermic, Redox

30. In a mixture iron filling and sulphur powder, the components of mixture can be separated by
(a) Using a magnet
(b) Dissolving the mixture in CS_2 and then filtering
(c) Heating the mixture and then adding CS_2 to black mass
(d) Using both technique (a) and (b)

Question No. 31 to 35 consist of two statements-Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

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

31. **Assertion :** Zinc becomes dull in moist air.
Reason : Zinc is coated by a thin film of its basic carbonate in moist air.

32. **Assertion :** In a reaction $Zn(s) + CuSO_4(aq) \longrightarrow ZnSO_4(aq) + Cu(s)$,
Zn is a reductant but itself get oxidized.
Reason : In a redox reaction, oxidant is reduced by accepting electrons and reductant is oxidized by losing electrons.

33. **Assertion:** During physiology of excretion, deamination does not take place in liver.
Reason: Deamination is a process to make use of excess of amino acids which can not be incorporated into protoplasm.

34. **Assertion:** The twinkling of stars is due to the fact that refractive index of the earth's atmosphere fluctuates.
Reason: In cold countries, the phenomenon of looming (*i.e.*, ship appears in the sky) takes place, because refractive index of air decreases with height.

35. **Assertion :** Aqueous solution of ammonium nitrate turns blue litmus red.
Reason : Ammonium nitrate is salt of strong acid and strong base.

36. The process of diffusion of solvent particles from the regian of less solute concentration to a region of high solute concentration through semi permeable membrane is known as
(a) Diffusion (b) Osmosis (c) Translocation (d) Transpiration

37. Root cap has no role in water absorption because:
(a) It has no direct connection with the vascular system
(b) It has no cells containing chloroplasts
(c) It has no root hairs
(d) It has loosely arranged cells.

38. The produre used for cleaning the blood of a person by separating urea from it is called
(a) Osmous (b) filteration (c) dialysis (d) double circulation

39. In a glass prism
(a) Blue light is dispersed more than red light (b) Red light is dispersed more than blue light
(c) Both red light and blue light are equally dispersed (d) None of these

40. A ray from air enters water, then through a thick layer of glass placed below water. After passing through glass, it again comes out in air medium. Then final emergent ray will
(a) Bend towards the normal
(b) Suffer lateral displacement
(c) Have the same path as if it had not passed through glass and water.
(d) None of these

41. Veins can be differentiated from arteries because the veins
(a) have valves. (b) have hard walls. (c) have pure blood in them. (d) have thick walls.

42. If salivary amylase is lacking in the saliva, which of the following events in the mouth cavity will be affected ?
(a) Proteins breaking down into amino acids. (b) Starch breaking down into sugars.
(c) Fats breaking down into fatty acids and glycerol. (d) Absorption of vitamins.

43. A bright × (cross) mark is made on a sheet of white paper. Over the white paper a rectangular glass-slab of thickness 3 cm is placed. On looking through, the image of the mark appears above the mark. It is below the upper surface of the slab by ($\mu_{glass} = 1.5$)
(a) 2.5 cm (b) 1.5 cm (c) 2 cm (d) 1.75 cm

44. A concave mirror for face viewing has focal length of 0.4 m. The distance at which you hold the mirror from your face in order to see your image upright with a magnification of 5 is:
(a) 0.24m (b) 1.60m (c) 0.32m (d) 0.16m

45. A diverging lens with magnitude of focal length 25 cm is placed at a distance of 15 cm from a converging lens of magnitude of focal length 20 cm. A beam of parallel light falls on the diverging lens. The final image formed is :

(a) real and at a distance of 40 cm from the divergent lens

(b) real and at a distance of 6 cm from the convergent lens

(c) real and at a distance of 40 cm from convergent lens

(d) virtual and at a distance of 40 cm from convergent lens.

46. In order to get a diminished virtual image, the object can be placed anywhere in front of a

I. concave mirror II. concave lens III. convex mirror

(a) only (I) is correct (b) only (II) is correct

(c) only (II) and (III) is correct (d) only (I) and (III) is correct

47. If the speed of light in medium –1 and medium –2 are 2.5×10^8 ms^{-1} and 2×10^8 ms^{-1}, respectively, then the refractive index of medium – 1 with respect to medium – 2 is

(a) $\frac{3}{2.5}$ (b) $\frac{2}{2.5}$ (c) $\frac{2.5}{3}$ (d) $\frac{2.5}{2}$

48. Which of the following is incorect match

Column I		**Column II**
(A) Iron	(iv)	Liquid at room temperature
(B) Copper	(ii)	Deposition of reddish- brown layer on exposure to moist air
(C) Potassium	(iii)	Can be cut easily with a knife and reacts with cold water
(D) Mercury	(i)	Formation of a greenish layer on exposure to moist air
(E) Mg	(v)	Reacts with Hot water to produce H_2 sink in the water because heavier than H_2O

Select the correct alternative.

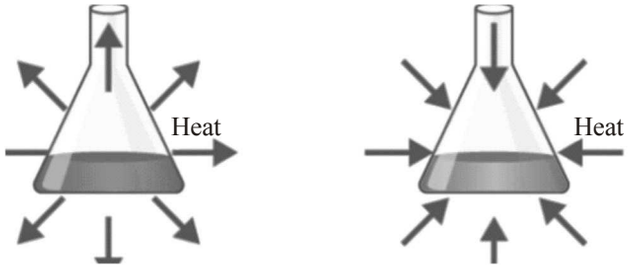
(a) (i) and (ii) (b) (ii) and (iii) (c) (ii), (iii) and (iv) (d) (ii), (iii) and (iv)

SECTION-C

Section – C consists of three Cases followed by questions. There are a total of 12 questions in this section. Attempt any 10 questions from this section. The first attempted 10 questions would be evaluated.

Case-I

Two different salts are given to the students in the chemistry laboratory. Salim and javed dissolved these salts in water separately. When salim dissolved the salt into water in a beaker , the beaker turn hot from the outside. When Javed dissolved the another salt into the water , the beaker turn cold from the outside. both Salim and javed rushed to the teacher and asked about the phenomenon. The teacher replies to them that when we classify the reaction in exothermic and endothermic reaction we should check the temperature of the beaker.Exothermic reactions are the reactions in which heat is released during the process while endothermic reactions are the reactions in which heat is absorbed during the reaction.



49. The salt given to the salim should be

(a) Sodium chloride (b) Ammonium nitrate (c) Calcium chloride (d) Zinc chloride

50. The salt given to Javed should be

(a) Sodium chloride (b) Ammonium nitrate (c) Calcium chloride (d) Zinc chloride

51. Reaction of 'magnesium' with air is

(a) Exothermic reaction (b) Endothermic reaction (c) Reversible reaction (d) Substitution reaction

52. Which of the following is an exothermic reaction ?

(a) Electrolysis of water (b) Dissolution of NH,, Cl in water

(c) Burning of L.P.G. (d) Decomposition of AgBr in the presence of sunlight

Case-II

The heart is a tough operating mechanism which moves blood around the body through a very advanced system called arteries and capillaries, the blood is then carried back to the heard by means of veins. Blood pressure is the thrust of this blood in the body pushing up against the inside wall of the arteries as the heart is pumping.

53. What is the normal Blood pressure range?

(a) 120/80 mm Hg (b) 110/70 mm Hg (c) 130/70 mm Hg (d) 150/100 mmHg

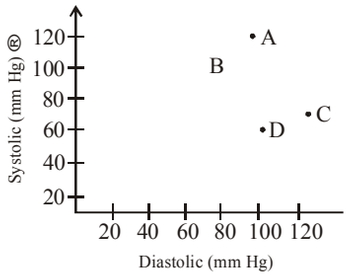
54. What happens when the decrease in blood volume in greater that 10%?

I. Bp decreases II. Bp increases

III. Bp remain constant IV. Bp increases on decrease at higher %

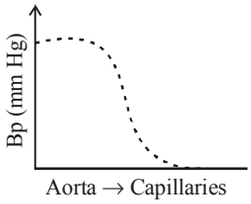
(a) I (b) I and IV (c) III (d) II

55. Identify the person having normal blood pressure from the graph.



(a) A (b) B (c) C (d) D

56. Which one of the following graphs best describe the blood pressure (Bp) change when blood moves from aorta to capillaries?

(a)


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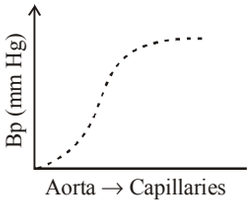

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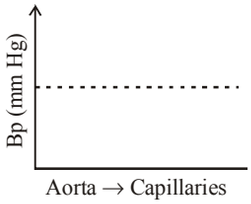
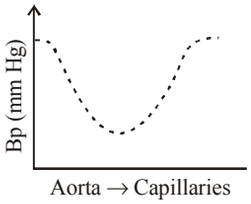


(d)


Case-III

A 5.0 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 30 cm.

57. What is the distance of image from the pole of lens?

(a) $v = 60$ cm (b) $v = -60$ cm (c) $v = 30$ cm (d) $v = -30$ cm

58. What is the power of the used lens?

(a) +5 D (b) −5 D (c) +0.5 D (d) −0.5 D

59. Magnification of a lens is given by

(i) $\frac{\text{image height}}{\text{object height}}$ (ii) $\frac{1}{\text{Radius}}$ (iii) $\frac{\text{image distance}}{\text{object distance}}$

(a) only (i) is correct (b) only (ii) is correct (c) both (i) and (ii) is correct (d) only (i) and (iii) is correct.

60. Reciprocal of focal length of a lens gives the

(a) power (b) radius (c) magnification (d) none of these