Sample Paper

Time : 90 Minutes

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.



Observe the number of electrons in each shell and guess the element.

(a) Metal (b) Non-metal (c) Metalloid

- 2. A substance X is used to prepare white wash. On reaction with water it forms Y. X and Y are (a) CaO, CaCO₃ (b) Ca(OH)₂, CaCO₃ (c) CaO, Ca(OH)₂ (d)
- 3. Which of the following compounds sodium bicarbonate does not react with (a) Hydrochloric acid (b) Sulphuric acid (c) Phenol
- (d) Noble gas
- (d) Acetic acid

CaSO₄, Ca(OH)₂

4.

	Х	Y
(i)	2, 7	2, 1
(ii)	2, 8, 8, 1	2, 8, 7
(iii)	2, 8, 7	2, 8, 1
(iv)	2, 8, 2	2, 6, 0

XY will be ionic in case of

- (a) (ii) and (iii)
- (c) (iii), (iii) and (iv)
- 5. Which of the following is not possible
 - (a) $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$
 - (b) $\operatorname{CuCl}_2 + \operatorname{Pb} \rightarrow \operatorname{PbCl}_2 + \operatorname{Cu}$
 - (c) $BaSO_4^{-} + 2NaCl \rightarrow Na_2SO_4^{-} + BaCl_2^{-}$
 - (d) None of these.

- (b) (ii) and (iv)
- (d) All of the these will be ionic.



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- (c) (iii) and (iv)
- (d) none of the statement is incorrect
- 11. Carefully observe the given figure. Identify the labelling A, B, C and D respectively.



- (a) A-Lungs, B-Body, C-Pulmonary circuit, D-Systemic circuit
- (b) A-Body, B-Pulmonary circuit, C-Lungs, D-Systemic circuit
- (c) A-Lungs, B-Pulmonary circuit, C-Systemic circuit, D-Body
- (d) A Pulmonary circuit, B Lungs, C Body, D Systemic circuit

Sample Paper-6

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12. Observe the given diagram and choose the correction sequence.



Fig. Human Respiratory System

- (a) Pharynx Common passage for food and air, Larynx Sound production
- (b) Pharynx Sound production, Larynx Common passage for food and air
- (c) Pharynx Carries air between larynx and the bronchi, Larynx Provide large surface for gaseous exchange
- (d) None of them
- **13.** Select the correct statement?
 - (a) Heterotrophs do not synthesise their own food.
 - (b) Heterotrophs utilise solar energy for photosynthesis.
 - (c) Heterotrophs synthesise their own food.
 - (d) Heterotrophs are capable of converting carbon dioxide and water into carbohydrates.
- 14. The given diagram shows the different organs of the urinary system. Identify the correct function of the organs.



- (a) Kidney Store the urine, Ureters Carries urine from urinary bladder to the outside of the body
- (b) Kidney Nitrogenous waste eleminate, Urethra Carries urine from kidneys to the bladder
- (c) Kidney Nitrogenous waste eliminate, Ureters Carry urine from kidney to the bladder
- (d) None of the above

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- 15. What does liver do to help digestion?
 - (a) Makes important enzyme
 - (b) Produce bile
 - (c) Neutralise stomach acid
 - (d) Regulates insulin
- 16. The following diagrams shows the measuring of blood pressure. Identify the correct sequence from Box I & II?



Box I	Box II
Α	(i) Toppin sound first heard
В	(ii) No sound heard in stethoscope
С	(iii) Toppin sound just disappear

(a) A-(i); B-(ii); C-(iii)

(c) A-(ii); B-(i); C-(iii)

(b)A - (ii); B - (iii); C - (i)A - (iii); B - (i); C - (ii)(d)

- 17. A man used a convex lens of focal length of 20 cm in his spects, the power of this lens is: (d)
 - (a) +2D -2D (b) (c) +5D
- **18.** In case of a convex lens, what is the minimum distance between an object and its real image? (a) 2.5 times of focal length 2 times of focal length (b)
 - (c) 4 times of focal length
- equal to focal length (d)
- 19. In figure, a ray of light undergoes refraction from medium A to medium B. If the speed of light in medium A is v then the speed of light in medium B will be



2v(c)

(d) $\frac{1}{2}$

-5D

- 20. Stars twinkle but planets do *not* twinkle because :
 - (a) Stars emit their own light but planets receive light from the stars.

15 cm

- (b) Stars do not form a part of solar system.
- (c) Stars form a point source of light while planets are considered as a collection of a large number of point sources of light.
- (d) During refraction of star light from the atmosphere, star light bends more towards the normal as compared to the planets.
- **21.** The minimum distance between an object and its real image in a convex lens is (f = focal length of the lens) (a) 2.5 f (b) 2f(c) 4f(d) f
- 22. A concaved lens has focal length of 15 cm. At what distance should the object from the lens be placed so that it forms an erect and virtual image at 10 cm from the lens? (a) 30 cm 60 cm (d) 10 cm (c)

(b)

(b) 23. A ray passing through which part of a lens emerges undeviated-

(b)

- (a) Focus
- (c) Optical centre

between Focus and centre of curvature (d)

Centre of curvature



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24. When the object is at distances u_1 and u_2 from a lens, a real and virtual images are formed respectively having the same magnification. The focal length of lens is:

(a)	$u_1 + \frac{u_2}{2}$	(b) $\frac{u_1 - u_2}{2}$	(c) $\frac{u_1 + u_2}{2}$	(d) $u_1 + u_2$
			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.	$X \xrightarrow{O_2}$	\rightarrow oxide of X <u>dil.</u>	$\xrightarrow{\text{ICl}}$ Salt + Water					
		D H ₂						
		↓ X						
	(a) Na			(b)	Ca			
	(c) Cu			(d)	Pt			
26.	S.No.	Indicator	Obs	ervation				
	(i)	Methylorange	When added to a base	e it truns	colour into yellow			
	(ii)	Phenolphtalein	When added to an aci	d it turns	s pink			
	(iii)	Red Cabbage	When added to a base	e it truns	into green colour			
	Correct	observation is						
	(a) only	y (i)		(b)	(i) and (ii)			
	(c) (ii)	and (iii)		(d)	(i) and (iii)			
27.	X and Y	$+ H_2O(g) \longrightarrow X$	$_2$ O ₃ and Y ₃ O ₄ + H ₂ (g)					
	X and Y	could be respectivel	y					
	(a) Cu	and Ag	-	(b)	Pb and Al			
	(c) Ala	and Fe		(d)	Al and Pb			
28.	Gas evol	lved in which of the	following reactions burn	s with a	pop sound.			
	(i) Fe-	$+ H_2SO_4 \longrightarrow$		(ii)	$Zn + NaOH \longrightarrow$			
	(iii) Zn-	$+$ HCl \longrightarrow		(iv)	$FeS + H_2SO_4$	``		
	(a) (ii)	and (iii)		(b)	(ii) (iii) and (iv)			
20	(c) (1)(11) and (111)		(d)	All of these			
29.	A studen	it was given an oxide	of a metal. This metal ger	ing observed	o not react with Hydro	bgen. He added solution of Dil. HCl in that		
	(i) A b	lue green sollution i	s obtained	ing obse				
	(i) The	e oxide is copper oxid	le					
	(iii) Copper oxide in insoluble in Dil. HCl							
	(iv) Cop	oper (ii) chloride is fo	ormed due to reaction bet	ween co	pper oxide and aicd			
	(a) (i),	(ii) and (iii)		(b)	(i), (ii) and (iv)			
	(c) (ii),	(iii) and (iv)		(d)	(i), (ii) and (iv)			
30.	'X' Nonmetal	+ insufficient — oxygen	$ \rightarrow \ \ oxide (Y) \longrightarrow \\ of metals \qquad blu $	Turn m le litmus	oist s to red			
	(a) C, C	CO_2		(b)	S, SO ₂			
	(c) C,C	20		(d)	both (a) and (b)			

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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.
- A is true but R is false. (c)
- A is false but R is true. (d)

31. Assertion : In a reaction

 $Zn(s) + CuSO_4(aq) \longrightarrow ZnSO_4(aq) + Cu(s)$

Zn is a reductant but itself gets oxidized.

Reason : In a redox reaction, oxidant is reduced by accepting electrons and reductant is oxidized by losing electrons.

32. Assertion: Sodium hydrogencarbonate is also an ingredient in antacides

- Reason: It is mild non corrosine basic salt and can neutralise acid present in stomach
- 33. Assertion: Chloroplast help in photosynthesis. Reason: Mitochondria have enzymes for dark reaction.
- **34.** Assertion : When a ray of light passes through a prism, it bends towards the thicker part of the prism. **Reason :** An incident ray strikes a prism, undergoes refraction and comes out as an emergent ray.
- 35. Assertion: MgO has very high electrical conductivity. Reason: It is an ionic compound.
- **36.** The Excretory units of Annelids are:
 - (b) Flame cells (a) Uniferous tubule Nephridia Malpighian tubule (c) (d)

37. An advantage of excreting nitrogenous wastes in the form of uric acid is that -

- (a) It is less toxic and reduces water loss and the subsequent need for water.
- (b) The formation of uric acid requires a great deal of energy.
- (c) Uric acid is the first metabolic breakdown products of acids.
- (d) Uric acid may be excreted through the lungs.

38. A column of water within xylem vessels of tall trees does not break under its weight because of:

- (a) Tensile strength of water (b) Lignification of xylem vessels
- (c) Positive root pressure (d) Dissolved sugars in water

39. An object of height 2.0 cm is placed on the principal axis of a concave mirror at a distance of 12 cm from the pole. If the image is inverted, real and 5 cm in height then location of the image and focal length of the mirror respectively are

- (a) (-30 cm, +8.6 cm)(b) (-30 cm, -8.6 cm)
- (c) (+30 cm, +8.6 cm)(d) (+30 cm, -8.6 cm)

40. A convex lens of focal length 20 cm is cut into two halves. Each of which is placed 0.5 mm and a point object placed at a distance of 30 cm from the lens as shown. Then the image is at

(a) $60 \, \text{cm}$ (b) 30 cm 70 cm 50 cm (c) (d)

41. Which of the following process occur only in animals?

Hormonal control (a) Respiration (b) Nutrition (c) Nervous control (d)

42. Adult human RBCs are enucleated. Which of the following statement(s) is / are most appropriate explanation for this feature?

- (2) They are somatic cells (1) They do not need to reproduce (3) They do not metabolise (4) All their internal space is available for oxygen transport (a) Only(1)(b) (1), (3) and (4)(c) (2) and (3)
 - (d) Only(4)

Sample Paper-6

43. A beam of light is incident at 60° to a plane separating two medium. The reflected and refracted rays are found to be perpendicular to each other. What is the refractive index of the second medium with respect to the first medium ?

(a)
$$\frac{1}{\sqrt{3}}$$
 (b) $\frac{1}{3}$ (c) $\sqrt{3}$ (d) 3

- Which of the following statements are true regarding scattering of light? 44.
 - I. Amount of scattering depends upon the wavelength of light.
 - II. Tyndal effect is observed due to scattering of light
 - (a) Only I is true Only II is true (b)
- Both I and II is true None is true (c) (d) 45. "Metal dishes" (Dish Antennas) are used for receiving TV signals from distant communication satellites. These 'Metal
 - Dishes' are (a) Convex Reflectors

- both convex and concave reflectors (b)
- (c) Concave reflector
- (d) Convex refractors 46. If a symmetrical convex lens of focal length 'f' is cut into two parts along the principal axis as shown in the figure, the focal length of each part will be



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

pH is quite useful to us in a number of ways in daily life. Some of its applications are:

pH in our digestive system : our stomach produces HCl which is an acid and helps in digestion. Sometimes during indigestion stomach produces too much of acid then people used antacids to treat this problem.

pH of the soil: Plants need a specific pH range for proper growth. The soil may be acidic, basic or neutral depending upon the relative concentration of H⁺ and OH-. The pH of any soil can be determined by using pH paper. If the soil is too acidic, it can be corrected by adding lime to it. If the soil is too basic, it can be corrected by adding organic manure which contains acidic materials. Regaining shine of a tarnished copper vessel by use of acids : A copper vessel gets tarnished due to formation of an oxide layer on its surface. On rubbing lemon on the vessel, the surface is cleaned and the vessel begins to shine again. This is due to the fact that copper oxide is basic in nature, which reacts with the acid (citric acid) present in lemon to form a salt (copper citrate) which is washed away with water. As a result, the layer of copper oxide is removed from the surface of the vessel and the shining surface is exposed.

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SP-46

Self-defence by animals through chemical warfare : Stings of bees and ants contain methanoic acid. When stung, it causes lot of pain and irritation. This can be cured by rubbing the affected area with mild base like baking soda.

49. Which of the following is not anta acid?

	(i)	NaHCO ₃	(ii)	Mg(OH) ₂	(iii)	Cs(OH) ₂	(iv)	Al(OH) ₃		
	(a)	only(iii)	(b)	(iii) and (iv)	(c)	(ii) and (iii)	(d)	only (iv)		
50.	Stin	g of ant can be cured	by ru	bbing the affected area	with s	soap because				
	(a)	(a) it contains oxalic acid which neutralises the effect of formic acid								
	(b)	(b) it contains sodium hydroxide which neutralises the effect of formic acid								
	(c)	(c) it contains aluminium hydroxide which neutralises the effect of formic acid								
	(d)	none of these								
51.	If sc	If soil is acidic, which of the following can be used to treat the problem?								
	(a)	Quick lime	(b)	Lime	(c)	chalk	(d)	all of these		
52.	To prevent tooth decay which of the following type of paste should be used?									
	(a)	It should have pH les	ss tha	n 7	(b)	It should have pH less that	ın 5			
	(c)	It should have pH mo	ore that	an 7	(d)	It should have pH 7				
					a i					

Case-II

There is a pair of bean-shaped organs P in the human body towards the back, just above the waist. A waste product Q formed by the decomposition of unused proteins in the liver is brought into organ P through blood by an artery R. The numerous tiny filters S present in organ P clean the dirty blood by removing the waste product Q. The clean blood goes into circulation through a vein T. The waste substance Q, other waste salts, and excess water form a yellowish liquid U which goes from organ P into a bag-like structure V through two tubes W. This liquid is then thrown out of the body through a tube X.

53.	3. Which of the following Labelling shows renal artery and renal vein?							
	(a)	P and W	(b)	V and T	(c)	X and W	(d)	R and T
54.	Wha	at is bag-like structure	that	is shown by V?				
	(a)	Ureter	(b)	Urethra	(c)	Bladder	(d)	None of them
55.	Lab	elling V, W and X rep	resent	ts respectively				
	(a)	V-Bladder, W-Kid	lney, 2	X – Urethra	(b)	V-Bladder, W-Ureter, X-Urethra		
	(c)	V – Ureter, W – Blade	der, X	– Renalartery	(d)	None of the above		
56.	What	at is the function of ox	gan I	? ?				
	(a) Deomposition of unused proteins				(b)	Remove the waste product from blood		
	(c)	Add waste product i	n blo	od	(d)	None of these		
					Case-I	П		
If fo	cal le	ength of a lens is measured	ured i	n metre then its recipi	rocal giv	ves the power of the lens.		
		1						
Pow	er of	a lens, $P = \frac{f(in m)}{f(in m)}$						
57.	The	focal length of conver	x lens	is 50 cm. The power	of lens i	s		
	(a)	1D	(b)	2D	(c)	3D	(d)	4D
58.	Find the focal length of a lens if power of the lens is $+0.4D$.							
	(a)	5m	(b)	2.5 m	(c)	10m	(d)	20 m
59.	The focal length of the lens is –25 cm. Which of the following statements about the lens is true?							
	(I)	The lens is concave	(II)	The lens is convex	(III)	Power of the lens is –4D.		
	(a)	only I is correct			(b)	only II is correct		
	(c)	only II and III is corr	ect		(d)	only I and III is correct		
60.	Nat	ure of the lens whose p	oower	is + 4D, is				
	(a)	Convex lens			(b)	Concave lens		
	(c)	Neither of two			(d)	May be convex lens or co	oncav	e lens