NEW HORIZON GURUKUL

Class: X **Max. Marks: 80**

Subject: Science **Time: 3 hour**

Instruction:

I. Write your answer neatly

II. **General instructions-**

(i) The question paper comprises four sections A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.

(ii) Section–A - question no. 1 to 20 - all questions and parts thereof are of one mark each. These questions contain multiple choice questions (MCQs), very short answer questions and assertion - reason type questions. Answers to these should be given in one word or one sentence.

(iii) Section–B - question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should in the range of 30 to 50 words.

(iv) Section–C - question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should in the range of 50 to 80 words.

(v) Section–D – question no. - 34 to 36 are long answer type questions carrying 5 marks each. Answer to these questions should be in the range of 80 to 120 words.

(vi) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

(vii) Wherever necessary, neat and properly labeled diagrams should be drawn.

SECTION - A

1. Identify acid and base that is involved in the formation of following salts: $ZnSO_4$, $NaNO_3$.

OR

Identify the products when Hydrochloric acid reacts with Calcium carbonate. 1

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2. Write the chemical name and chemical formula of the salt used in the preparation of idols and false ceilings. 1

3. Which of the following is not observed during the formation of covalent bond? Give reason for your choice.

(a) Covalent bond gets formed between non-metals.

(b) Covalent bond can show polarity.

(c) Covalent bond gets formed between metal and a non-metal.

(d) Overlapping between the bonded atoms takes place. 1

4. The sky appears dark to passengers flying in space. Why? 1

5. State the factors on which refractive index of a medium depends. 1

6. Which mirror is used as rearview mirror in vehicles and why? 1

OR

Draw ray diagram for a ray of light passing through 'F' of a concave mirror.

7. Why does a compass needle get deflected when brought near a bar magnet? 1

8. Is mass density same as optical density? Explain. 1

9. Draw a ray diagram to show formation of a rainbow. 1

OR

Draw a ray diagram to show dispersion of white light.

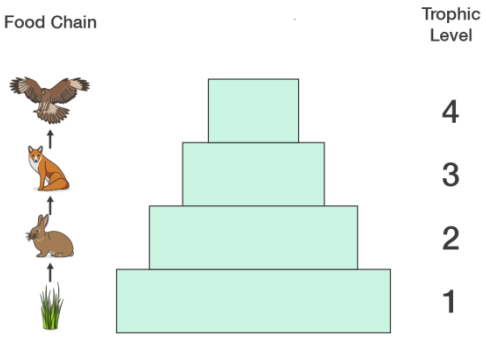
10. Rate of breathing in fish is much faster than in a lizard. Why? 1

11. Without emulsification of fats, its digestion becomes difficult. Give a reason. 1

OR

Non-vegetarian meal consisting of chicken curry cannot be digested if gastric juice lacks HCl in it. Why?

12. In the given diagram given below, various trophic levels of a food chain are depicted.To which level , minimum energy level transfer would take place? Give a reason 1



OR

Why is the damage of ozone layer a cause of concern to us?

13. State the role of pyloric sphincter in human digestive system. 1

For question numbers 14, 15 and 16, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

a) Both A and R are true, and R is correct explanation of the assertion.

b) Both A and R are true, but R is not the correct explanation of the assertion.

c) A is true, but R is false.

d) A is false, but R is true.

14. Assertion(A) : n-butane and iso-butane are examples of isomers.

Reason(R) : Isomerism is possible only with hydrocarbons having 4 or more carbon atoms 1

15.Assertion (A)- Garden is an artificial ecosystem

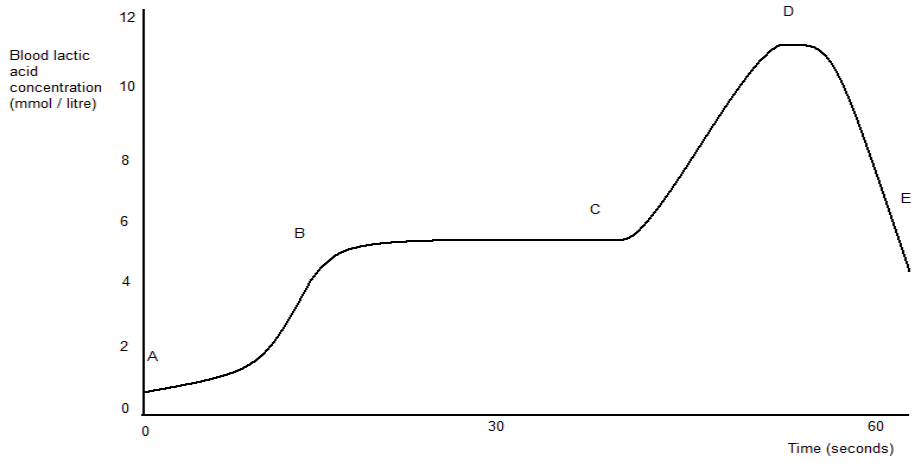
Reason (R) – Biotic and abiotic components are manipulated by humans. 1

16. Assertion (A)- The uterus prepares itself every month to receive a fertilized egg.

Reason (R) – The ovary releases one egg every month 1

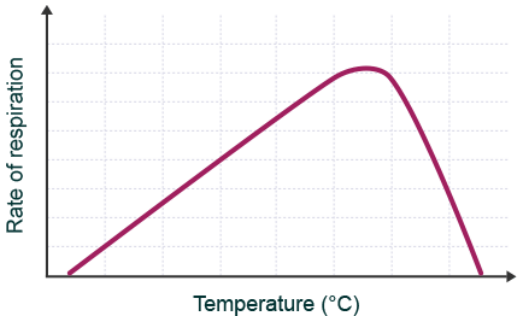
Q. No 17 and 18 contain five sub-parts each. You are expected to answer any four sub parts in these questions. In Q.No.19 and 20 ,all subparts are to be answered.

17. The blood of an athlete was tested before, during and after a 400m race. Refer the graph given below and complete the following table about each section of the race. **1x4**



	Section of race	Strategy	Anaerobic or aerobic respiration?	Explanation
i	A to B	Sprint start		
ii	B to C	Stops accelerating and maintains pace		
iii	C to D	Sprint finish		
iv	D to E (after the race has finished)	Warm down, then rest		

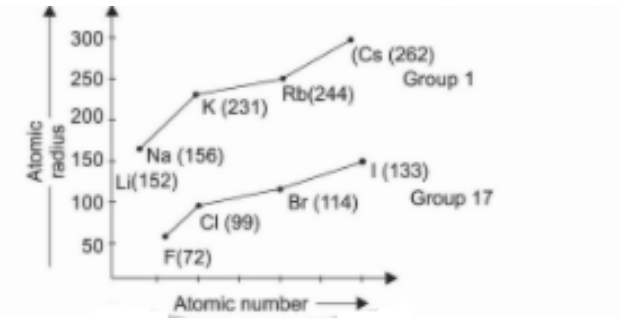
v. Analyse the graph given below and mention the reason for the dip in rate of respiration after it reaches an optimal level.



18. Read the following and answer any four questions from 18 (i) to 18 (v).

Modern periodic table has 18 vertical columns known as groups and 7 horizontal rows known as periods. First period contains 2 elements, second and third period contain 8 elements, 4th and 5th period contain 18 elements and 6th and 7th period contain 32 elements. The graph is plotted between atomic number and atomic radius of group 17 and group 1 elements.

1x4



(i) Which of the following has lowest electronegativity?

(a) Cs (b) Br (c) Na (d) Cl

(ii) Which among the following groups will have elements with largest atomic radii?

(a) Group-17 (b) Group-15 (c) Group-2 (d) Group-1

(iii) Which of the following accept electron easily?

(a) I (b) Br (c) Cl (d) F

(iv) What happens to atomic radii in a group from top to bottom?

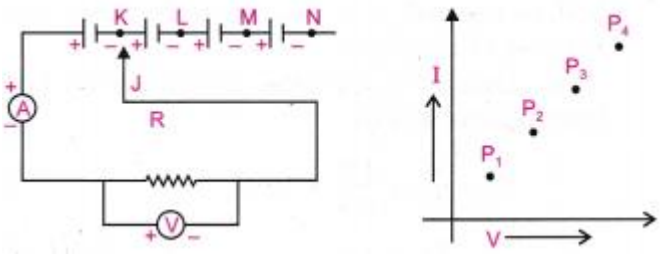
(a) Increases then decreases (b) Decrease

(c) Increases (d) Decreases then increases

(v) Which element is responsible for increasing blood pressure?

(a) Cl (b) Na (c) I (d) F

19. A student performs an experiment on studying the dependence of the current (I) flowing through a conductor on the potential difference (V) applied across it by setting up his circuit as shown. He records four values by keeping the sliding contact J, in the positions K, L, M and N, one by one. The corresponding points on his V-I graph are labelled as Pl, P2, P3 and P4. The point P3, would correspond to the case when the sliding contact, J, is in the position **1x4**



i) The point P3, would correspond to the case when the sliding contact, J, is in the position

a) K b) L c) M d) N

ii) Name a device that helps to maintain potential difference cross a conductor.

a) Voltmeter
b) Ammeter
c) Galvanometer
d) Battery

iii)If the area of cross section of wire becomes half when its length is stretched to double.

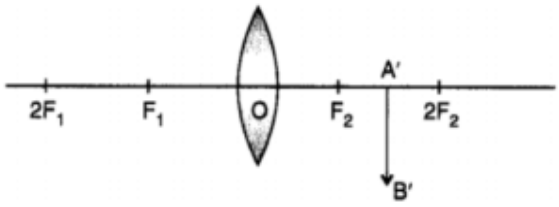
How the resistance of wire is affected in new condition?

a)Resistance increases four times after stretching of wire.
b)Resistance decreases four times after stretching of wire.
c)Resistance increases twice times after stretching of wire.
d)Resistance decreases twice times after stretching of wire.

iv) A voltmeter has a least count of 0.05 volt. While doing Ohm's law experiment, a student observed that the pointer of the voltmeter coincides with 15th division, then what would be the observed reading?

a) 0.85 V
b) 8.5V
c) 7.5 V
d) 0.75 V

20. An incomplete ray diagram is shown below where the image A'B' for an object AB (placed somewhere in front of lens) is formed after refraction through the convex lens.



Observe the above figure and answer the following:

i) Where should object AB been placed? **1x4**

(a) Beyond $2F_1$
(b) Between 2 F_1 and F_1
(c) At F_1
(d) At $2F_1$

ii) What is the size of the image?
(a)Enlarge than the object
(b)Diminished than the object
(c)Same as that of the object
(d)None of the above

iii) Redraw the ray diagram by keeping the object at the required position.

iv) A lens is formed by combining two thin lenses of powers + 12 D and – 8 D in contact with each other. What will be the focal length of combination?

(a) 25 cm
(b) 25m
(c) 4m
(d) 4cm

Section- B

21.a)How is the presence of villi in small intestine helpful?

b) Arteries can function without values unlike veins. Justify. 2

OR

a)Roughage present in diet is not absorbed by the body. Why?

b)Give one advantage in having four chambered in mammals.

22. List out the steps in photosynthesis in green algae. 2

23. An alkane has molecular weight 86. Write its molecular formula. What will be its physical state? 2

OR

Write the molecular formula of ethene and draw its electron dot structure.

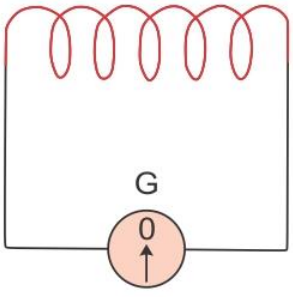
24. A student carried out experiments to find the order of reactivity of four metals. He placed a sample of each metal in four solutions shown in the table. He recorded the following results: 2

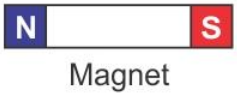
Solution/Metal	Cu	Pb	Ag	Zn	Symbol-Represent
Copper nitrate	×	✓	×	✓	✓ Reaction take place
Lead nitrate	×	×	×	✓	
Silver nitrate	✓	✓	×	✓	
Zinc nitrate	✓	×	×	×	× No Reaction

a) What will happen when Zinc metal is added to Copper nitrate solution?

b) What happens when Cu metal is added to Silver nitrate solution? Write chemical reaction involved.

25. A coil of insulated copper wire is connected to a galvanometer as shown in the figure below. What will happen if a bar magnet is (i) pushed into the coil, (ii) withdrawn from inside the coil, (iii) held stationary inside the coil? 2





26. Draw the pattern of magnetic field lines in and around long current carrying solenoid. Indicate (i) the polarity at each end and (ii) the direction of magnetic field. 2

SECTION-C

27. What is atmospheric refraction? Use this phenomenon to explain the advanced sunrise and delayed sunset. Draw diagrams to illustrate your answers. 3

28. Suggest any three methods to implement "refuse and repurpose strategy" in 5R's waste management model. 3

29. Draw a neat labeled diagram of nephron and explain the formation of urine in humans. 3

30. (a) State Modern Periodic Law and justify the basis for the arrangement of elements as atomic number.
(b) Explain Dobereiner's law of triads with one example. 3

31. (a) The elements of the second period along with their atomic numbers in parentheses are given below:
B (5), Be (4), O (8), N (7), Li (3), C (6), F (9)
(i) Arrange them in the same order as they appear in the periodic table.
(ii) Which element has the largest and smallest atom?

(b) Why does atomic radius change as we move from left to right in a period? 3

32. Give reasons for the following observations:
(i) Ionic compounds in general have high melting and boiling points.
(ii) Sodium chloride is soluble in water but not in kerosene or petrol.
(iii) Melting point of NaCl is 1074 K while of $MgCl_2$ is 981 K. 3

33. An object 5.0 cm in length is placed at a distance of 20 cm in front of a convex mirror of radius of curvature 30 cm. Find the position of the image, its nature and size. 3

SECTION D

34. You have four solutions A, B, C and D. The pH of solution A is 6, B is 9, C is 12 and D is 7,
a) Identify the most acidic and most basic solutions.
b) Arrange the above four solutions in the increasing order of H+ ion concentration.
c) State the change in colour of pH paper on dipping in solution C and D.
d) How is pH responsible for tooth decay? 5

OR

a) Identify the compound of calcium which is yellowish white powder and is used

for disinfecting drinking water. Write its chemical name and formula. How is it manufactured? Write the chemical equation for the reaction involved. Also list two other uses of the compound.

b) Write the balanced chemical equation of chlor-alkali process.

35.a) What makes cross-pollination superior over self-pollination?

b) With the help of a diagram, describe the germination of pollen and fertilization process in angiosperms. 5

36. Define D.C motor? What is its Principle? Explain its working and application. 5

OR

36.a)There are m resistor each of resistance R. First they all are connected in series and equivalent resistance is X. Now they are connected in parallel and equivalent resistance is Y. What is the ratio of X and Y?

b) A torch bulb is rated 2.5 V and 750 mA. Calculate ;

(i) its power

(ii) its resistance and

(iii) the energy consumed, if the bulb is lighted for 4 hours.