

# NEW HORIZON GURUKUL

Pre-board / Periodic Test - III 2019-20

Class: X

Max. Marks: 80

Subject: General Science (Code-086)

Time: 3 hour

## General Instructions:

1. The question paper comprises three sections – A, B and C. Attempt all the sections.
2. All questions are compulsory.
3. Internal choice is given in each section.
4. All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
5. All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50 - 60 words each.
6. All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80 – 90 words each.
7. This question paper consists of a total of 30 questions.

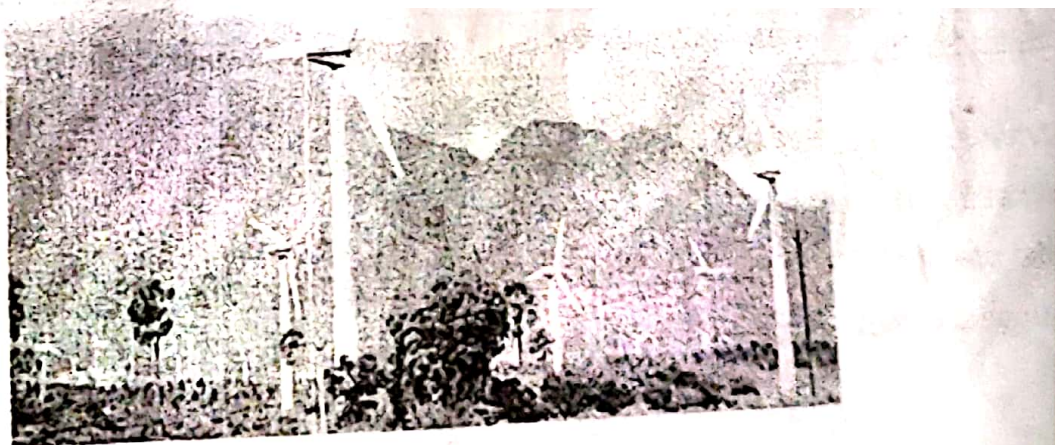
## SECTION A

1. Write the number of covalent bonds in the molecule of Butane 1

2. Out of Li and K which has strong metallic character and why? 1

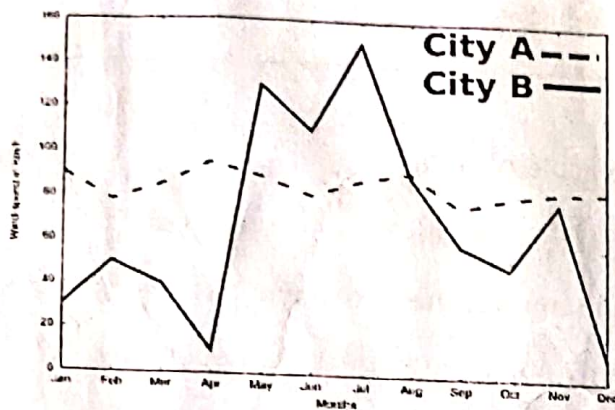
3. Read the paragraph and graph given below and answer the questions that follow;

Renewable energy sources such as wind energy are vital for the Indian economy, not only from the point of view of supply, but also from the perspective of environmental and social benefits. India is the world's fifth largest wind-power producer and the largest windmill facilities in India are installed in Tamil Nadu. Muppandal is a small village of Tamil Nadu and one of the most important sites of wind-farm in the state. It uses wind from the Arabian Sea to produce renewable energy. The suitability of Muppandal as a site for wind farms stems from its geographical location as it has access to the seasonal monsoon winds.



The electrical generators used on wind turbines in sites like Muppandal, produce an output AC of 240 V and a frequency of 50 Hz even when the wind speed is fluctuating. A transformer may be required to increase or decrease the voltage so it is compatible with the end usage, distribution or transmission voltage, depending on the type of interconnection.

- a) State the principle behind electric generator 1
- b) The output frequency of wind turbine is 50 Hz. What is meant by this statement? 1
- c) Why do you think Muppandal is at an advantageous position for this project? 1
- d) Based on the data represented in the graph below, which of the two cities A or B would be an ideal location for establishing a wind-farm and why? 1



4. Study the lab report of blood sugar levels of a patient given below and answer the questions that follow.

Age/Gender : 57 Y O M O D /M	Received : 02/Nov/2019 01:36PM
UHID/MR No : DPPN.0005000947	Reported : 02/Nov/2019 02:46PM
Visit ID : DPPN07V1246	Status : Final Report
Ref Doctor : Dr.SELF	Client Name : PCC KADUBEE SANAHALLI
IP/OP NO :	Patient location : Panathur, Bangalore

DEPARTMENT OF BIOCHEMISTRY				
Test Name	Result	Unit	Bio. Ref. Range	Method
GLUCOSE, FASTING, 11AF PLASMA	167	mg/dL	70-100	HEXOKINASE
GLUCOSE, POST PRANDIAL (PP), 2 HOURS, 11AF PLASMA	266	mg/dL	70-140	HEXOKINASE

- a. What do you infer from the above lab report of blood sugar? 1
- b. What could be the reason for the high sugar level in blood after breakfast (post prandial)? 2
- c. Suggest a diet plan for the above patient. 1

5. A white light falls on a surface of a glass prism. Four students A, B, C and D recorded the sequence of colours from top to the bottom of screen. Which of the students recorded the correct sequence?

- a. Student A: violet, blue, green, yellow, red
- b. Student B: red, blue, green, yellow, violet
- c. Student C: red, yellow, green, blue, violet
- d. Student D: red, green, yellow, blue, violet

OR

A person cannot see distinctly objects beyond 2m. This defect can be corrected by using a lens of power

- a) + 0.5 D
- b) - 0.5 D
- c) + 0.2 D
- d) - 0.2 D

6. Two metallic wire A and B are connected in series. Wire A has length  $L$  and radius  $r$ , while wire B has length  $2L$  and radius  $2r$ . Find the ratio of the total resistance of series combination and the resistance of wire A, if both the wires are of same material. 1

7. Which instrument is used for converting electrical energy into mechanical energy?

- a. Electric generator
  - b. Electric motor
  - c. Electric iron
  - d. Electric oven
- 1

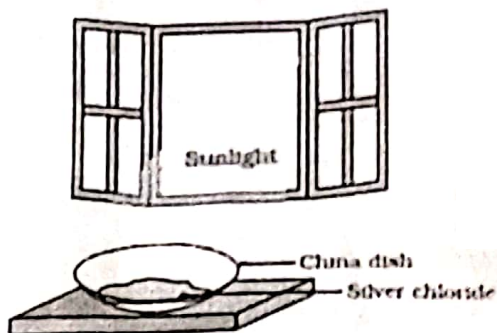
8. The most appropriate definition of a natural resource is that it is a substance /commodity that is \_\_\_\_\_

- a) present only on land
  - b) a gift of nature which is very useful to mankind
  - c) a man-made substance placed in nature
  - d) available only in forest.
- 1

9. The main cause for abundant coliform bacteria in the river Ganga is \_\_\_\_\_

- a) Disposal of unburnt corpses into water
  - b) Discharge of effluents from electroplating industries
  - c) Washing of clothes
  - d) Immersion of ashes
- 1

10. The chemical equation correctly representing the change taking place in the given below diagram is :



- a)  $2\text{AgCl(s)} \xrightarrow{\text{sunlight}} 2\text{Ag(l)} + \text{Cl}_2\text{(g)}$
- b)  $2\text{AgCl(l)} \xrightarrow{\text{sunlight}} 2\text{Ag(s)} + \text{Cl}_2\text{(g)}$
- c)  $2\text{AgCl(s)} \xrightarrow{\text{sunlight}} 2\text{Ag(l)} + \text{Cl}_2\text{(l)}$
- d)  $2\text{AgCl(s)} \xrightarrow{\text{sunlight}} 2\text{Ag(s)} + \text{Cl}_2\text{(g)}$

1

11. When  $\text{HCl(aq)}$  is exactly neutralized by  $\text{NaOH(aq)}$ , the hydrogen ion concentration in the resulting solution is :

- a) always less than the concentration of the hydroxide ions
- b) always greater than the concentration of hydroxide ions
- c) always equal to the concentration of the hydroxide ions
- d) sometimes greater than and sometimes less than the concentration of the hydroxide ions.

12. From the part of the periodic table given, the most reactive non-metal is

1 Lithium	2	13	14 Carbon	15	16 Oxygen	17 L	18 Neon
X			S		P	Q	
Y						R	
Z						T	

- a) S
- b) P
- c) R
- d) Q

1

13. Assertion: For welding purpose a mixture of oxygen and ethyne is used.  
Reason: Ethyne when burnt in air gives smoky flame.
- a) both assertion and reason are true and reason is the correct explanation of assertion.
  - b) both assertion and reason are true, but reason is not the correct explanation of assertion.
  - c) assertion is true, but reason is false.
  - d) both assertion and reason are false.

1

14. Consider a circular loop of wire lying in the plane of the table. Let the current pass through the loop clockwise. Apply the right hand rule to find out the direction of the magnetic field inside and outside the loop.

1

### SECTION B

15. a) A redox reaction is complimentary in itself. Explain.  
b) A small amount of quick lime is placed in a beaker. Slowly some water is added. What do you expect to happen in the situation?
16. a) Five test tubes as A, B, C, D and E are taken with 5 mL of unknown solutions in them. After putting a small strip of universal indicator in each of them, following colours appear on these Solution 'A' – Orange, Solution 'B'- Green, Solution 'C'- Red, Solution 'D'- Blue, Solution' E- Violet. Rearrange these solutions in increasing order of their pH values.  
(b) The pH of three solutions are 6,3 and 1. Rearrange them in increasing order of acidic strength.

3

3

OR

- a) An aqueous solution of Sodium carbonate is basic and not acidic. Assign reason.
  - b) If bottle full of sulphuric acid is left open in the atmosphere by accident, the acid starts flowing out of the bottle of its own. Assign reason.
17. The following table shows the position of six elements A, B, C, D, E and F in the Periodic table:

Groups → Periods ↓	1	2	3 to 10	11	12	13	14	15	16	17	18
2.	A							B			C
3.		D				E					F

Using the above table answer the following questions.

- Which element will form only covalent compounds?
- Which element is a metal with valency 2?
- Which element is a non-metal with valency 3?
- Write a common name for the family of elements C and F
- Out of D and E, which one has a bigger atomic radius and why?

18. If all the waste we generate is biodegradable, will this have no impact on the environment? Justify with three valid reasons.

OR

Give reasons for the following;

- CFC based products should be avoided Give a reason
- Suggest one eco-friendly method for medical waste disposal.
- As an individual, how will you minimize use of non-biodegradable products

19. In human alimentary canal, name the site of complete digestion of various components of food. Explain the process of digestion. 3

20. In Mendel's monohybrid cross between tall and short pea plants, all offspring were tall. Show the cross using Punnett's square. What does this tell us about the trait? What is the ratio of tall and short plants in  $F_2$  generation? 3

21. Define reflex action. Give one example. Show with the help of a flow diagram the path of reflex action 3

22. a) One-half of a convex lens is covered with a black paper. Will this lens produce a complete image of the object? Explain your observations 3

b) A concave mirror produces three times magnified (enlarged) real image of an object placed at 10 cm in front of it. Where is the image located? (1+2)

23. Explain with the help of a labelled diagram the distribution of magnetic field due to a current through a circular loop. Why is it that if a current carrying coil has  $n$  turns the field produced at any point is  $n$  times as large as that produced by a single turns? 3

24. Make a diagram to show how hypermetropia is corrected. The near point of a hypermetropic eye is 1 m. What is the power of the lens required to correct this defect? Assume that the near point of the normal eye is 25 cm.

3

OR

A person cannot see object farther than 10m from eye clearly. Name the defect of vision, he is suffering from. How can it be corrected? Draw ray diagram for (i) defective eye (ii) its correction.

### SECTION C

- 25 a) How does anodizing process help in prevention of corrosion ?  
b) Carbon can reduce copper oxide but why can't it reduce calcium oxide?  
c) Aluminium is very reactive metal, but why does it not corrode in air?  
d) Why is Sodium metal kept immersed in kerosene oil?  
e) Differentiate between Calcination and Roasting.

5

OR

No chemical reaction takes place when granules of a solid A are mixed with the powder of another solid B. However when the mixture is heated, a reaction takes place between its components. One of the components, C, is a metal and settles down in the molten state while the other product, D, floats over it. It was observed that the reaction is highly exothermic.

- a) Based on the given information make an assumption about A and B and write a chemical equation for the chemical reaction indicating the conditions of reaction, physical state of reactants and products and thermal status of reaction.  
b) Mention any two types of reactions under which above chemical reaction can be classified.
26. What is the difference between the chemical composition of soaps and detergents? State in brief the action of soaps in removing an oily spot from a shirt. Why are soaps not considered suitable for washing where water is hard.?

27. a). Draw a diagram of V.S of human heart and label the following parts ;  
i) Right ventricle    ii) aorta    iii) left atrium    iv) pulmonary arteries  
b) Give reasons for the following ;  
i) The muscular walls of ventricles are thicker than wall of atria.  
ii) Arteries have thick elastic walls.

(3+2=5)

28. List three techniques that have been developed to prevent pregnancy. Which one of these techniques is not meant for males? How does the use of these techniques have a direct impact on the health and prosperity of a family? 5

OR

a) Describe the various steps involved in the process of binary fission with the help of a diagram.

b) Why do multicellular organisms use complex way of reproduction?

3.125

29. a) A wire of resistance 20 Ohms is bent in the form of a closed circle. What is the effective resistance between two points at the ends of any diameter of the circle?

c) An electric lamp of 100  $\Omega$ , a toaster of resistance 50  $\Omega$ , and a water filter of resistance 500  $\Omega$  are connected in parallel to a 220 V source. What is the resistance of an electric iron connected to the same source that takes as much current as all three appliances, and what is the current through it? 5

30. From the given data showing object distance and focal length of three concave mirrors 226

answer the following questions:

Sl.No.	Object Distance (cm)	Image Distance (cm)	Focal length
1	30	20	
2	10	15	
3	20	10	

(i) Out of the three in which case the mirror will form the image having same size as the object?

(ii) Which mirror is being used as a make-up-mirror and why?

(iii) Draw ray diagram for part (i) and part (ii). 5

OR

A convex lens forms a real and inverted image of a needle at a distance of 50 cm from it. Where is the needle placed in front of the convex lens if the image is equal to the size of the object? Also, find the power of the lens.