

**FULL SYLLABUS : GRAND TEST****GENERAL INSTRUCTIONS : Draw Diagrams with Pencils.**

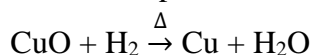
- All questions are compulsory. **Maximum Marks are 80.**
- The question paper consists of 30 Questions.
- **Section – A :** Question 1 to 14 are 1 mark each.
- **Section – B :** Question 15 to 24 are 3 marks each.
- **Section – C :** Question 25 to 30 are 4 marks each.

**SECTION A : (1 × 14 = 14)**

1. A lake has been polluted by sewage. On comparison with the sample of unpolluted water, the water in the lake is found to have increased content of some components. Identify these components.
2. Why LPG should be preferred over wood, coal and kerosene to cook food?
3. Answer Q. no. 3 (a) -3(d) on the basis of your understanding of the following paragraph and the related studied concepts:

Baking soda is used in small amounts for making bread and cakes. It helps to make these soft and spongy. An aqueous solution of baking soda turns red litmus blue. It is also used in soda acid fire extinguisher. Use this information to answer the following questions:

- (a) Write the equation for the reaction between baking soda and acid.
  - (b) How does it help in extinguishing fire?
  - (c) What is the reaction involved when it is heated?
  - (d) Is the pH value of baking soda solution lower than or higher than 7?
4. For Q.No. 4(i) -4(ii) are based on the information given related to answer the questions that follow:  
In thermal power plants, fossil fuels are burnt to produce heat which in turn converted into electrical energy. But the power plants which convert the kinetic energy of flowing water into electricity are called hydro power plants.
    - (i) Write one advantage of hydroelectricity.
    - (ii) The source of fuel in thermal power plant is
      - (a) petroleum
      - (b) CNG
      - (c) Coal
      - (d) LPG
    - (iii) Write one disadvantage of producing electricity by flowing water.
    - (iv) Burning of fossil fuels causes global warming due to production of
      - (a) natural gases
      - (b) carbon dioxide
      - (c) nitrogen
      - (d) oxygen
  5. Which component is being reduced in the given reaction?



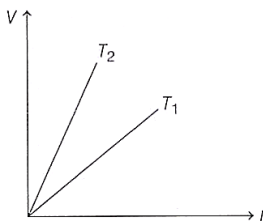
- (a) H<sub>2</sub>O
  - (b) Cu
  - (c) H<sub>2</sub>
  - (d) CuO
6. Which of the following is most appropriate for aerobic respiration?
    - (a) Glucose  $\xrightarrow{\text{Cytoplasm}}$  Pyruvate + Energy  $\xrightarrow{\text{Mitochondria}}$  CO<sub>2</sub> + H<sub>2</sub>O
    - (b) Glucose  $\xrightarrow{\text{Cytoplasm}}$  Pyruvate + Energy  $\xrightarrow{\text{Mitochondria}}$  CO<sub>2</sub> + H<sub>2</sub>O + Energy
    - (c) Glucose  $\xrightarrow{\text{Cytoplasm}}$  Pyruvate  $\xrightarrow{\text{Mitochondria}}$  CO<sub>2</sub> + H<sub>2</sub>O + Energy
    - (d) Glucose  $\xrightarrow{\text{Mitochondria}}$  Pyruvate  $\xrightarrow{\text{Cytoplasm}}$  CO<sub>2</sub> + H<sub>2</sub>O + Energy

7. When the sun light enters the atmosphere, then red colour of light is scattered  
 (a) maximum (b) minimum (c) same as all colours of light (d) None of these

**OR**

A defect in eye by which a person can see distant objects clearly but cannot see nearby objects clearly is called

- (a) myopia (b) hypermetropia (c) presbyopia (d) cataract
8. The graph between voltage  $V$  and current  $I$  flowing through a conductor at temperatures  $T_1$  and  $T_2$  is shown in the figure below:



The correct relation between  $T_1$  and  $T_2$  is

- (a)  $T_1 < T_2$  (b)  $T_1 > T_2$  (c)  $T_1 = T_2$  (d)  $T_1 T_2 = 1$
9. The genotype of the height of an organism is written as  $Tt$ . What conclusion may be drawn?
- (a) There is one allele for height with two different forms  
 (b) There are at least two different alleles for the gene for height  
 (c) The allele for height has at least two different genes  
 (d) There are two different genes for height, each having a single allele

**OR**

During fertilisation, the zygote received Y-chromosome from the father. The sex of this particular zygote will be

- (a) girl (b) boy (c) girl or a boy (d) None of these
10. What are the products obtained by alcoholic fermentations?
- (a) Ethanol + Lactic acid + Energy  
 (b) Lactic acid + Carbon dioxide + Energy  
 (c) Ethanol + Carbon dioxide + Energy
11. The compound which is used as an oxidising agent in many chemical industries is
- (a) bleaching powder (b) Sodium hydrogen carbonate  
 (c) Sodium carbonate (d) None of these
12. Power of a concave lens of focal length 150 cm is
- (a)  $-0.75$  D (b)  $1.5$  D (c)  $0.67$  D (d)  $-0.67$  D

**Assertion-Reason Type Questions(Q.no 13-14)**

In each of the following questions, a statement of Assertion is given by the corresponding statement of Reason. Of the statements, mark the correct answer as

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.  
 (b) If both Assertion and Reason are true, but Reason is not the correct explanation Assertion.

(c) If Assertion is true, but Reason is false.

(d) If Assertion is false, but Reason is true.

**13. Assertion** Fertilisation is a unique feature in flowers.

**Reason** It is followed by pollination.

**14. Assertion** Soaps are made up of sodium salts of sulphonic acids.

**Reason** Soaps are made up of sodium salts of sulphonic acids.

## SECTION B : (3 × 10 = 30)

**15.** Describe the events that occur after the fertilisation of germ cells in plants.

**OR**

Explain the following methods of contraception by giving one example of each.

(i) Barrier method

(ii) Chemical method

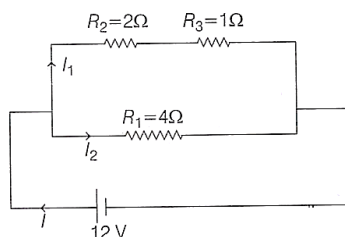
(iii) Surgical method

**16.** A housewife wanted her house to be white washed. She bought 10 kg of quicklime from the market and dissolved in 30L of water. On adding lime to water, she noticed that the water started boiling even when it was not being heated. Draw your own conclusion from the given information and also give the chemical reaction involved.

**17.** 'It has been observed that the movement of the shoot of a plant is different from the movement of the roots when stimulus in the form of gravity is provided.

Derive your own conclusions from the statement give above.

**18.** An electrical circuit is as shown below:



Find the value of current  $I_1$  and  $I_2$ .

**19.** Why did Mendel choose pea plants for his experiments?

**20.** A boy was travelling in a CNG auto with his mother. The auto-driver took the auto to the CNG filling station for filling the empty cylinder. The boy asked his mother about the gas which is filled in the auto. His mother replied, this gas is CNG. CNG is used in place of petrol or diesel because it is cheaper, pollution free and eco-friendly.

Read the given passage and answer the following questions:

(i) What is the full form of CNG?

(ii) Name the main constituent of CNG. Also draw its structure.

(iii) Name any other pollution free fuel which is widely used by human beings.

**OR**

Ethanoic acid, which is a weak acid, is commonly known as acetic acid. It is widely used for making vinegar and it is also used as a preservation in pickles etc.

Why is acetic acid called a weak acid though there are four hydrogen atoms in the molecule?

21. (i) Write four points of differences between pollination and fertilisation.  
(ii) Name the various agents of pollination.
22. A 6 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 25 cm. the distance of the object from the lens is 40 cm.  
Then, determine  
(i) the position and (ii) the size of the image formed.
23. Acid are the chemical substances which have a sour taste, whereas bases are the chemical substances which are bitter in taste, soapy to touch.  
(a) Give a chemical test to distinguish between an acid or a base.  
(b) Choose strong acid, strong base and weak acid from the following compounds:  
 $\text{H}_2\text{CO}_3$ ,  $\text{HNO}_3$ ,  $\text{CH}_3\text{COOH}$ ,  $\text{NaOH}$ ,  $\text{NH}_4\text{OH}$ ,  $\text{KOH}$ ,  $\text{Ca}(\text{OH})_2$ ,  $\text{HCl}$ .
24. Explain the working of an electric motor with the help of a labelled diagram.

**OR**

- (i) Name a device that helps to maintain a potential difference across a conductor.
- (ii) What are the advantages of connecting electrical appliances in parallel with the battery instead of connecting them in series?

### SECTION C : (5 × 4 = 20)

25. (i) What is the importance of forests as a resource?  
(ii) Suggest some approaches for the conservation of forests.
26. (i) Write the names of the functional groups in



- (ii) Describe three chemical tests to distinguish between ethanol and ethanoic acid.  
(iii) Write a chemical equation to represent what happens when hydrogen gas is passed through an unsaturated hydrocarbon in the presence of nickel as a catalyst?

**OR**

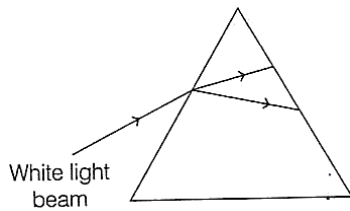
Write the structures of the following compounds.

- (i) 3, 4, 4, 5-tetramethylheptane      (ii) 2, 5-dimethylhexane  
(iii) 3-methylhexane      (iv) 3-ethyl- 5-methylheptane
27. (i) Name the metal for each case:  
(a) It does not react with cold as well as hot water but reacts with steam.  
(b) It does not react with any physical state of water.  
(ii) What is a thermite reaction. Give its equation and state one use of this reaction?
28. (i) A student sitting at the back of the classroom cannot read clearly the letters written on the blackboard. What advice will a doctor give to her? Draw ray diagram for the correction of this defect.  
(ii) A person cannot see objects beyond 2 m distinctly. State the nature and focal length of the lens which could be used to correct his vision.

**OR**

- (i) A person cannot see objects beyond 80 cm from his eye, while a person with normal eyesight can see objects easily placed upto 160 cm from the eye. Find the nature, the focal length and the power of the correcting lens.

(ii) Study the diagram given below carefully and answer the questions that follow:



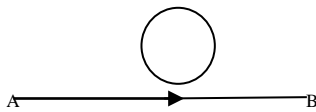
Complete the given diagram by indicating the names of the emerging colours in correct sequence.

(iii) A person needs a lens of power  $-5.5\text{ D}$  for correcting his distant vision.

For correcting his near vision he needs a lens of power  $+1.5\text{ D}$ . What is the focal length of the lens required for correcting

(i) distant vision, (ii) near vision?

29. (i) A circular metallic loop is kept above the wire AB as shown below:



What is the direction of induced current produced in the loop, if the current flowing in the straight wire

(a) is steady, i.e., does not vary?

(b) is increasing in magnitude?

Justify your answer in each case.

(ii) A copper coil is connected to a galvanometer. What would happen, if a bar magnet is

(a) pushed into the coil with its South-pole entering first?

(b) held at rest inside the coil?

30. (i) Draw a diagram of the human respiratory system and label the following parts.

(a) Parts where air is filtered by fine hairs and mucus.

(b) Parts which terminates in balloon-like structures.

(c) Balloon-like structures where exchange of gases takes place.

(d) Part which separates chest cavity from abdominal cavity.

(ii) The breathing rate in aquatic organisms is much faster than in terrestrial organisms. Comment.

(iii) Both the battery and ATP can provide energy for many different kinds of uses. Justify the statement.

**OR**

(i) Draw a neat diagram of the human digestive system and label the following parts.

(a) Part in which peristalsis occur.

(b) Part which stores the bile.

(c) Part which helps in absorption of food.

(ii) In case of kidney failure, artificial kidneys are used. Comment.

(iii) The release of HCl is an important factor in protein digestion in stomach. Validate the statement.