

Class: 7
Subject: Science
Topic: OASK1507A103
No. of Questions: 22

Time: 3 Hrs.

M.M. 100

General Instructions

1. The question paper consists of 22 questions and is divided into four sections, A, B, C and D.
2. All questions are compulsory.
3. Section A comprises question numbers 1 to 10. These are multiple choice questions carrying one mark each. You are to select one most appropriate response out of the four provided options.
4. Section B comprises question numbers 11 to 15. These are SAQs carrying two marks each.
5. Section C comprises question numbers 16 to 20. These are SAQs carrying four marks each.
6. Section D comprises question numbers 21 to 22. These are SAQs carrying five marks each.

SECTION – A

- Q1. Which of the following substances helps in reducing the irritation caused by the sting of an ant?
- (a) Vinegar
 - (b) Lemon juice
 - (c) Calamine (zinc carbonate)
 - (d) Orange juice

Sol. (c)
Calamine (zinc carbonate) being a basic substance can neutralize the effect of acid present in the ant sting.

- Q2. Which of these substances are found in our body?
- (a) Hydrochloric acid (HCl)
 - (b) Deoxyribonucleic acid (DNA)
 - (c) Fatty acids
 - (d) All of the above

Sol. (d)
Hydrochloric acid is present in the stomach. Deoxyribonucleic acid is present in the cells of our body. Fats in our body contain fatty acids.

- Q3. What will happen if a solution of baking soda is put on turmeric paper?
- (a) The colour of turmeric paper changes from yellow to blue.
 - (b) The colour of turmeric paper changes from yellow to green.
 - (c) The colour of turmeric paper changes from yellow to red.
 - (d) The colour of turmeric paper changes from yellow to magenta.

Sol. (c)
Baking soda is a basic substance and thus changes the colour of yellow turmeric paper to red.

- Q4. Pick a good conductor of heat from the following:
- (a) Aluminum
 - (b) Plastic
 - (c) Wood
 - (d) Rubber

Sol. (a)
Aluminum is a good conductor of heat. Other are bad conductors of heat.

- Q5. The trapped air under the feathers of a bird:
- (a) Reduces heat transfer through conduction
 - (b) Increases heat transfer through conduction
 - (c) Stops heat transfer by conduction
 - (d) Does not affect heat transfer through conduction

Sol. (a)
It reduces heat transfer through conduction.

- Q6. The vacuum present in a vacuum flask reduces heat transfer by _____.
- (a) Convection
 - (b) Radiation
 - (c) Conduction and convection
 - (d) Conduction

Sol. (c)
Conduction and convection

- Q7. The air near the source of heat
- (a) Rises away from the source
 - (b) Moves closer to the source
 - (c) Remains in the same place
 - (d) Remains in the same place

Sol. (a)

The air near the source of heat rises away from the source.

- Q8. The base/fundamental unit of time is
(a) Minute
(b) Second
(c) Hour
(d) Year

Sol. (b)
The base / fundamental unit of time is second

- Q9. Average speed = _____
(a) Half distance travelled/time
(b) Half distance travelled \times time
(c) Total distance travelled/total time
(d) Total distance travelled \times total time

Sol. (c)
Average speed = Total distance travelled / total time

- Q10. A car moves with a speed of 40 km/h for 15 minutes, and then with a speed of 60 km/h for the next 15 minutes. The total distance covered by the car is
(a) 100 km
(b) 25 km
(c) 15 km
(d) 10 km

Sol. (b)
Distance covered in first 15 minutes = $40 \times \frac{1}{4} \text{ km} = 10 \text{ km}$
Distance covered in second 15 minutes = $60 \times \frac{1}{4} \text{ km} = 15 \text{ km}$
Hence, total distance covered = $10 + 15 = 25 \text{ km}$

SECTION – B

- Q11. Name the base present in milk of magnesia. What is it used for?

Sol. Magnesium hydroxide is the base present in milk of magnesia. It is used to neutralize the excess acid present in stomach and is hence used as an antacid.

Q12. What is an antacid? How does an antacid work?

Sol. Antacid are a group of mild bases which have no toxic effects on the body and are used to cure indigestion. Being basic in nature, antacids react with excess acid in the stomach and neutralize it.

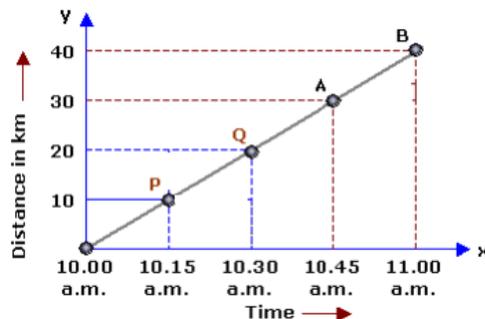
Q13. How does heat and temperature differ from each other?

Sol. Heat is the form of energy which can cause hotness to a body, while temperature is the degree of hotness or coldness of a body.

Q14. Your car moves with a speed of 40 km/h for 10 minutes, and then with a speed of 60 km/h for the next 15 minutes. What is the total distance covered by the car?

Sol. Distance covered in first 10 min = $40 \times (10/60)$ km = $20/3$ km
Distance covered in second 15 min = $60 \times (15/60)$ km = 15 km
Total distance = $(20/3) + 15 = 65/3 = 21.66$ km

Q15. A body moves along a path. Its distance–time graph is shown below. How much distance will it cover in 6 hours?



Sol. The body starts at 10.00 am, and it covers a distance of 40 km by 11.00 am.
Thus, the speed at B = Distance / Time = $40/1 = 40$ km /hr
Therefore, the distance covered in 6 hours is given by
Distance = speed \times Time = $40 \times 6 = 240$

- Q16. (i) Define sericulture.
(ii) What is a cocoon?
(iii) Explain the process of obtaining silk thread from the cocoon.

Sol. (i) The process of rearing of silkworms for obtaining silk is called sericulture.
(ii) The covering of silk fibres inside which the caterpillar covers itself is called a cocoon.
(iii) The cocoons of silk moth are used to obtain silk fibres. The cocoons are kept under the sun or boiled or exposed to steam. The silk fibres are then separated out. This process of separating the silk fibres from the cocoon is called reeling.

- Q17. Differentiate between acids and bases (four points).

Sol.

Acids	Bases
1. They are sour in taste.	1. They are bitter in taste.
2. They give corrosive touch	2. They give soapy touch.
3. They turn blue litmus to red.	3. They turn red litmus to blue
4. They have no effect on the Colour of phenolphthalein.	4. They turn phenolphthalein from pink to Colourless.

- Q18. (i) An iron ball at 40°C is dropped in a mug containing water at 40°C. What will be the passage of flow of heat in the system? Explain.
(ii) How does heat flow in a body having one end cool and the other at high temperature?

Sol. (i) There will be no flow of heat either from the iron ball to water or from water to the iron ball because both are at the same temperature, so heat transfer will not take place.
(ii) Heat flows from higher temperature to lower temperature, so heat will go from the hotter end to the colder end.

- Q19. (i) What is a laboratory thermometer?
(ii) Which thermometer is used to measure high temperatures?
(iii) Stainless steel pans are usually provided with copper bottoms. Why?

Sol. (i) A laboratory thermometer is a thermometer used to measure temperature in the range – 10° C to 110° C.
(ii) A pyrometer is used to measure high temperatures.
(iii) Stainless steel pans are usually provided with copper bottoms because copper is a better conductor of heat than stainless steel, and hence, food can be cooked at a faster rate.

- Q20. (i) Give two examples of periodicity observed in nature?

- Sol. (i) Example 1 – Revolution of the Earth around the Sun causes the change in season on a periodic basis.
Example 2 - Rotation of the Earth around its own axis causes days and nights periodically.

(ii) A bike moves with a speed of 60 km/h and covers 25 km, and then with a speed of 50 km/h covers 20 km to reach the destination. What is the total time taken by the bike to reach the destination?

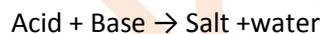
Sol. $\text{Time} = \text{Distance} / \text{Speed}$
 $= (25/60) + (20 / 50)$
 $= (5/12) + (2/5)$
 $= [(5 \times 5) + (12 \times 2)] / (12 \times 5)$
 $= [25 + 24] / 60$
 $= 49/60 \text{ h}$
 $= 49 \text{ min}$

SECTION – D

Q21. (i) What is neutralization? How is a neutralization reaction represented?
(ii) Describe the neutralization reaction between sodium hydroxide and hydrochloric acid with the help of an activity.

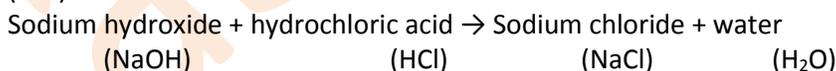
Sol. (i) The reaction in which an acid reacts with a base to form salt and water is called neutralization.

A neutralization reaction can be represented as



The salt formed during a neutralization reaction depends on the acid and the base which are reacted with each other. Some heat is always evolved (or produced) in a neutralization reaction.

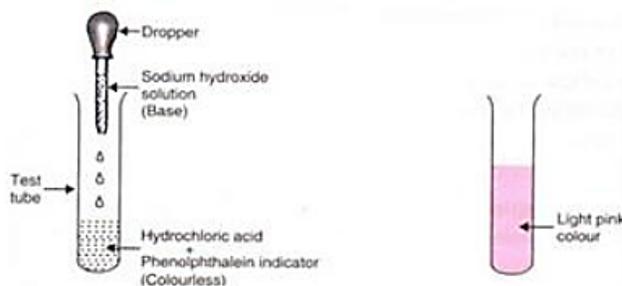
(ii) Sodium hydroxide is a base and hydrochloric acid is an acid. So, when sodium hydroxide is treated with hydrochloric acid, a neutralization reaction takes place to form sodium chloride (salt) and water. This can be written as



We take 5 ml of dilute hydrochloric acid solution in a test tube. The hydrochloric acid solution is colorless. Add 2 or 3 drops of phenolphthalein indicator to the acid in the test tube. Shake the test tube gently. Phenolphthalein indicator is colorless. There is no change in the colour of the phenolphthalein indicator on adding it to the hydrochloride acid solution.

Take sodium hydroxide solution (base) in a dropper. Add this sodium hydroxide solution to hydrochloric acid in the test tube drop wise (stirring the test tube gently after each addition). Continue to add sodium hydroxide solution drop by drop (while stirring) till a light pink colour just appears in the solution in the test tube. We then stop adding more of sodium hydroxide solution.

At this stage, all the hydrochloric acid taken in the test tube has been completely neutralised by the sodium hydroxide base. Thus, a neutralisation reaction has taken place in the test tube. The completion of neutralisation reaction is indicated by the fact that when all the acid has been neutralised, a little excess of the base changes the colour of the phenolphthalein indicator to pink. This makes the solution in the test tube light pink.



- Q22. (i) What is a simple pendulum? Define the time period of a simple pendulum.
(ii) State whether the following statement is true or false: The time period of a given pendulum is not constant.
(iii) In an experiment to measure the time period of a simple pendulum, the time for 20 complete oscillations was found to be 36 s. What is the time period of this pendulum?

Sol. (i) A simple pendulum consists of a small metal ball (called bob) suspended by a long thread from a rigid support such that the bob is free to swing back and forth. The time of a simple pendulum is the time taken by the pendulum bob to make one complete oscillation.

(ii) False, For a particle pendulum, the time remains constant throughout.

(iii) Time for 20 complete oscillation = 36 s

Time for 1 complete oscillation = $36 / 20 = 1.8$ s

So, the time of the pendulum = 1.8 s