

Series RST-DS2

Code No. **RSPL/1**

Roll No.

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Candidates must write the Code on the title page of the answer-book.

- Please check that this question paper contains **12** printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains **30** questions.
- **Please write down the Serial Number of the question before attempting it.**
- **15** minutes time has been allotted to read this question paper.

SCIENCE

Time allowed : 3 hours]

[Maximum Marks : 80

General Instructions :

- (i) The question paper comprises three sections – A, B and C. Attempt all the sections.
- (ii) All questions are compulsory.
- (iii) Internal choice is given in each section.
- (iv) 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.
- (v) All questions in Section–B are three-mark, short-answer type questions. These are to be answered in about 50 - 60 words each.
- (vi) All questions in Section–C are five-mark, long-answer type questions. These are to be answered in about 80 - 90 words each.
- (vii) This question paper consists of a total of 30 questions.

SECTION-A

1. Give a reaction to show that metals react with base. 1

OR

What are different forms of calcium carbonate? Name any two.

2. Why is 'reuse' considered better than 'recycling' with reference to management of resources? 1

3. **Answer question numbers 3(a) to 3(d) on the basis of your understanding of the following paragraph and the related studied concepts.**

India's iconic white-marbled mausoleum Taj Mahal is changing its colour, presenting spots of yellow, brown and green in pictures that have shocked us. Earlier it was turning yellow and now it is becoming brown and green. It is a very serious problem. Taj Mahal is made of marble. Marble contains trace amounts of iron. Supreme Court has instructed the government to seek foreign help to fix what it described as a worrying change in the colour of the Taj Mahal.

- 3(a) What is the process involved in changing colour of Taj Mahal? 1

- 3(b) Which of the following makes the white marble yellow? 1

(i) base

(ii) acid

(iii) insects

(iv) none of these.

- 3(c) Name the process and chemical equation for changing of the colour to brown colour. 1

- 3(d) How can this problem of changing colours be solved? Write any two ways. 1

4. Question numbers 4(a) – 4(d) are based on the table given below, showing the power consumed by different electrical appliances in a house. Study the table and answer the questions that follow:

Electrical Appliances	Power Consumed in Watt
CFL	10 W
Fluorescent tube	40 W
Bulb	100 W
TV	250 W
Fridge	400 W
Geyser	2000 W

- 4(a) The current requirement of Geyser, CFL and TV respectively are: **1**
- (i) 0.45 A, 1.1 A, 9.1 A
 - (ii) 9.1 A, 0.05 A, 1.1 A
 - (iii) 0.05 A, 1.1 A, 9.1 A
 - (iv) 10 A, 0.05 A, 1.3 A
- 4(b) One of the circuits in this house is provided with a 5 A fuse. Which of the following appliances should not be connected to this circuit? **1**
- (i) Geyser and CFL
 - (ii) Bulb
 - (iii) Geyser
 - (iv) None of these
- 4(c) Which appliance is not suitable to use in the house with a 5 A fuse? Why? **1**
- 4(d) Find the current requirement of Fridge. **1**

5. In a synapse, chemical signal is transmitted from the 1
- (a) dendritic end of one neuron to the axonal end of another neuron.
 - (b) axonal end of one neuron to the cell body of the same neuron.
 - (c) cell body to the axonal end of the same neuron.
 - (d) axonal end of one neuron to the dendritic end of another neuron.
6. *Knightsia* is a fossil of 1
- (a) dinosaur
 - (b) tree trunk
 - (c) fish
 - (d) invertebrate
7. The complete breakdown of pyruvate into CO_2 and H_2O occurs in the 1
- (a) presence of oxygen in the cytoplasm.
 - (b) presence of oxygen in the mitochondria.
 - (c) absence of oxygen in the cytoplasm.
 - (d) absence of oxygen in the mitochondria.

OR

In human circulatory system, valves are present in

- (a) heart
- (b) arteries
- (c) veins
- (d) both (a) and (c)

8. Any change that occurs in the non-reproductive tissues of an organism **1**

(i) can be passed onto the DNA of the germ cells.

(ii) can be passed onto the next generation.

(iii) cannot be passed onto the DNA of the germ cells.

(iv) cannot be passed onto the next generation.

(a) (i) and (ii)

(b) (ii) and (iii)

(c) (iii) and (iv)

(d) (i) and (iv)

9. Myopic eye can be corrected by **1**

(a) convex lens

(b) cylindrical lens

(c) concave lens

(d) bifocal lens

10. Focal length of eye lens is **1**

(a) fixed

(b) variable

(c) neither fixed nor variable

(d) sometimes fixed and sometimes variable

11. Scattering of light causes

1

- (a) blue colour of sky.
- (b) colour of water in deep sea.
- (c) reddening of sun at sunrise and sunset.
- (d) All of these.

OR

The danger signals installed at the top of tall buildings are red in colour. These can be easily seen from a distance because among all other colours, the red light

- (a) is scattered the most by smoke or fog
- (b) is scattered the least by smoke or fog
- (c) is absorbed the most by smoke or fog
- (d) moves fastest in air

12. For which of the following do you use convex mirror?

1

- (a) Shop-security mirrors
- (b) Torches
- (c) TV dish antenna
- (d) Doctor's head mirrors

Direction (Q.13 and Q.14): In the following Questions, the Assertion and Reason have been put forward. Read the statements carefully and choose the correct alternative from the following:

- (a) Both Assertion and Reason are correct and Reason is the correct explanation of the Assertion.

(b) Assertion and Reason are correct but Reason is not the correct explanation of the Assertion.

(c) Assertion is true but Reason is false.

(d) The statement of the Assertion is false but Reason is true.

13. Assertion: Reactivity of elements follows the order $Cs > Rb > K > Na > Li$.

Reason: Reactivity of metals decreases in going from top to bottom in a group. 1

14. Assertion: MCBs/fuses of proper rating are provided in domestic electric circuits.

Reason: MCBs/fuses avoid overloading of electric circuits. 1

SECTION-B

15. (a) What is ozone? How is it formed at the higher levels of atmosphere?

(b) What is the advantage of its presence there? 3

OR

Give three reasons as to why we should use fossil fuels judiciously?

16. (a) Write down the differences between the transport of materials through xylem and phloem.

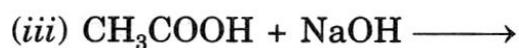
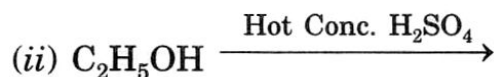
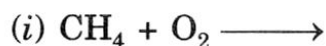
(b) Define transpiration. 3

17. (a) What happens when water is added to calcium oxide?

(b) Write the balanced chemical equation for the above reaction.

(c) Is it exothermic or endothermic? What other type of reaction is this? 3

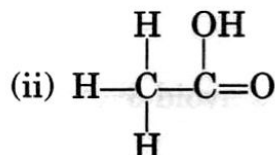
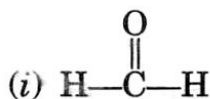
18. Complete the following equations:



3

OR

(a) Define the term functional group. Identify the functional group present in the following. Also write their IUPAC names.



(b) A non-metal 'X' exists in three forms 'A', 'B' and 'C'. 'A' is the hardest substance, 'B' is the good conductor of electricity and 'C' is the football type structure containing 60 carbon atoms. Identify 'A', 'B', 'C' and 'X'.

19. List three advantages of synthetic detergents over soaps.

3

20. (a) Draw a diagram of the longitudinal section of a bisexual flower and label on it, the following parts:

stigma, style, ovary, anther

(b) Write two differences between asexual and sexual reproduction.

3

21. (a) Mention the characteristic features found in the respiratory organs of the terrestrial organisms.

(b) Name the following:

(i) The blood vessels which carry oxygen-rich blood to the heart.

(ii) The heart chamber that receives de-oxygenated blood.

3

22. All the electrical gadgets connected in any electrical circuit are in parallel. Explain, why? Give three reasons. 3

OR

Three resistances R_1 , R_2 and R_3 are connected in parallel. Total current flowing through the circuit is I . Derive expressions for currents flowing through three resistances.

23. (a) Whose heating capacity is maximum:

CNG, LPG, petrol? Give reasons.

- (b) Natural gas is a clean fuel. Justify giving three points. 3

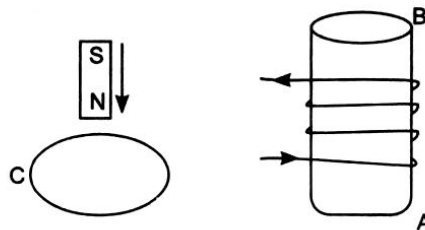
24. Show the following with well-labelled diagrams:

- (a) eye of a person suffering from long-sightedness.

- (b) corrected eye for long-sightedness. 3

SECTION-C

25. (a) A current I passes through a circular loop C and a solenoid AB is shown below:

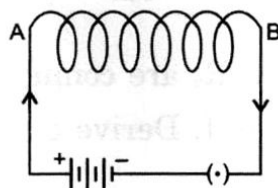


What is the polarity of:

- (i) the face of the loop you are looking at?
(ii) the end B of the solenoid?
- (b) What are permanent magnet and electromagnet? Give two uses of each. 5

OR

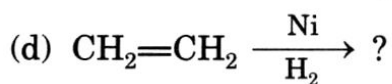
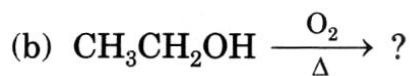
Observe the figure given below and answer the following questions:



- (a) Write the special name given to the coil AB which has many circular turns of insulated copper wire.
 - (b) State the nature of magnetic field inside AB when a current is passed through it.
 - (c) Draw the diagram showing the pattern of magnetic field lines through and around AB.
 - (d) List two factors on which the strength of the magnetic field produced by AB depends.
 - (e) What is the effect of placing an iron core in the coil AB?
- 26.** (a) The radius of curvature of a convex mirror used on a moving automobile is 2.0 m. A truck is coming behind it at a constant distance of 3.5 m. Calculate:
- (i) position of image.
 - (ii) size of image relative to size of truck.
 - (iii) find nature of the image formed.
- (b) Show the reflection of a beam of light coming from a far-off object by a
- (i) Convex mirror
 - (ii) Concave mirror

5

27. Complete the following equations:



5

28. Properties of elements are given below. Where would you locate the following elements in the periodic table? Give name and symbol of elements.

(a) A non-metal with allotropes which forms basis of organic chemistry.

(b) An element with variable valency stored under water.

(c) An inert gas with atomic number 18.

(d) Galvanisation of iron is done using this element to protect it from rusting.

(e) An element which is a soft metal and is stored under kerosene.

5

OR

Properties of elements are given below. Where would you locate the following elements in the periodic table? Give name and symbol of elements.

(a) A noble gas with completely filled first shell.

(b) A metalloid in period 3.

(c) An alkali metal of period 2 which dissolves in water giving strong alkali.

(d) Element of group 2 with atomic no. 12.

(e) Most electronegative element.

29. (a) Where are fats digested in the human alimentary canal? Explain the process and mention the end products.

(b) Write any two functions performed by lymph in our body.

5

30. (a) What is placenta in a human female? Describe its structure and functions.

(b) How do oral pills function as contraceptives? What way can they be harmful?

5

OR

(a) How do Mendel's experiments show that traits are inherited independently of one another?

(b) Differentiate between homologous and analogous organs with an example of each.