

Series EAD

Code **RSPL**

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 **10** 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. Why is combustion reaction an oxidation reaction? 1
2. What happens chemically when quicklime is added to water? 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.**

The dog is an example of how selection can change the frequency of alleles in a population. Dog have been artificially selected for certain characteristics for many years and different breeds have different alleles.

- (a) What do you understand by the term artificial selection? 1
 - (b) Which of the following statements is not true about micro-evolution? 1
 - (i) Changes are small even though they are significant.
 - (ii) It properly explains how many new species come into existence.
 - (iii) It simply changes the common characteristics of a particular species.
 - (iv) Two independent species can be evolved.
 - (c) Write the term for the type of evolution being discussed in the example in the passage. 1
 - (d) What name would you give to the type of allele discussed in the above passage? 1
4. **Question numbers 4(a) to 4(d) are based on the table indicating air pollution of major industrial cities in India. Study the table and answer the questions that follow.**

City	Mean value of SO ₂ (mg/m ³)	Suspended particulate matter (mg/m ³)
Mumbai	48.1	240.8
New Delhi	44.4	601.1
Kolkata	33.9	340.7
Kanpur	16.9	543.5
Ahmedabad	12.7	306.6
Chennai	9.3	100.9
Nagpur	8.7	261.6
Hyderabad	6.1	140.2
Jaipur	5.2	146.1

- (a) From the values given in the table, identify which city is least polluted? **1**
- (b) Name two air pollutants other than those given in the table. **1**
- (c) As a citizen of Delhi, what steps can you take to reduce the level of suspended particulate matter in the air around yourself. Write any two. **1**
- (d) Which of the following is not helpful in reducing air pollution in Delhi? **1**
- (i) Maintenance of roads
 - (ii) Improving poor road signs
 - (iii) Bigger trucks
 - (iv) Dumping waste and burrying it in soil

5. Heat is evolved during **1**

- (a) Combination reaction
- (b) Combustion reaction
- (c) Endothermic reaction
- (d) Displacement reaction

OR

Which of the following statement is correct? When dilute HCl is added to iron fillings

- (a) No reaction takes place
- (b) Chlorine gas and iron hydroxide are produced.
- (c) Hydrogen gas and iron chloride are produced.
- (d) Iron salt and water are produced.

6. Role of oxidising agent in a reaction is **1**

- (a) supply oxygen in a reaction
- (b) remove hydrogen
- (c) both (a) and (b)
- (d) None of these

- 7. Which of these is not a part of the small intestine? 1**
- (a) Duodenum
 - (b) Ileum
 - (c) Rectum
 - (d) Jejunum

OR

During the contraction of heart, what prevents the backflow of blood?

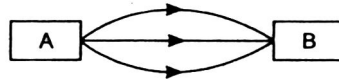
- (a) Valves in heart
 - (b) Thick muscular walls of ventricles
 - (c) Thin walls of atria
 - (d) All of above
- 8. Which one of the following blood vessels contain only deoxygenated blood? 1**
- (a) Capillaries (b) Pulmonary vein (c) Pulmonary artery (d) Aorta
- 9. Filtration units of kidneys are called 1**
- (a) nephrons
 - (b) urethra
 - (c) neurons
 - (d) ureter
- 10. The focal length of eye lens increases when eye muscles are 1**
- (a) contract and lens becomes thicker
 - (b) contract and lens becomes thinner
 - (c) relaxed and lens becomes thinner
 - (d) relaxed and lens becomes thicker

11. At the time of short circuit, the current in the circuit

1

- (a) varies continuously
- (b) increases heavily
- (c) does not change
- (d) reduced considerably

12.



1

Magnetic field lines between two faces A and B are shown. Choose the correct statement:

- (a) Both faces A and B of two bar magnets are North pole.
- (b) Both faces A and B of two bar magnets are South pole.
- (c) Face A is South pole while face B is North pole.
- (d) Face A is North pole while face B is South pole.

OR

Magnetic field inside a long solenoid carrying current is

- (a) zero
- (b) different at all points
- (c) partly uniform and partly non-uniform
- (d) same at all points

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 the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.
- (b) The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.
- (c) Assertion is true but the Reason is false.
- (d) The statement of the Assertion is false but the Reason is true.

- 13. Assertion:** Balancing of chemical equations is necessary. 1
Reason: Law of conservation of matter must hold good during a chemical reaction.
- 14. Assertion:** Silver does not evolve hydrogen gas with dil. H_2SO_4 . 1
Reason: Silver is less reactive metal than Hydrogen.

SECTION-B

- 15.** Tooth enamel is the hardest substance in our body. 3
- (a) Name the compound it is made up of.
- (b) At what pH of the mouth does it gets corroded?
- (c) State the role of bacteria in the mouth. Suggest a method to prevent tooth decay.

OR

Salt A commonly used in bakery products, on heating gets converted into another salt B; which itself is used for removal of hardness of water and a gas C is evolved. The gas C when passed through lime water, turns it milky. Identify A, B and C.

- 16.** How is the amount of urine produced in human regulated? 3

OR

What are the methods used by the plants to get rid of excretory products?

- 17.** State one reason for the following: 3
- (a) Potato chips manufacturers usually flush bags of chips with nitrogen gas.
- (b) Iron articles lose their shine gradually.
- (c) Foods should be kept in airtight containers.
- 18.** Explain with a suitable example, the metal used to reduce the following: 3
- (a) Oxides of less reactive metals.
- (b) Oxides of moderately reactive metals.
- (c) Oxides of highly reactive metal.

19. The value of current I flowing in a given resistor for the corresponding values of potential difference V across the resistor are given below: 3

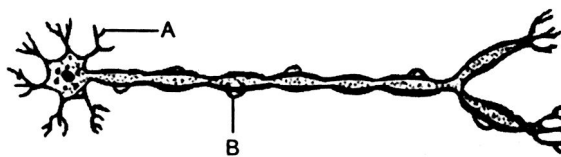
I (ampere)	0.5	1.0	2.0	3.0	4.0
V (volt)	1.6	3.4	6.7	10.2	13.2

Plot a graph between V and I and calculate the resistance of the resistor.

OR

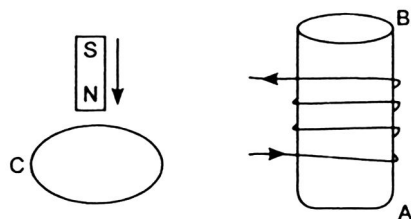
- (a) Why is the tungsten used almost exclusively for filament of electric lamps?
- (b) Why are the conductors of electric heating devices, such as bread-toasters and electric irons, made of an alloy rather than a pure metal?
- (c) Why is the series arrangement not used for domestic circuits?
20. Give reasons for the following: 3
- (a) The extent of duration of a ray of light on passing through a glass prism depends on its colour.
- (b) Lights of red colour are used for danger signals.
- (c) The focal length of the eye lens increases when ciliary muscles are most relaxed.
21. (a) What is the major problem in harnessing nuclear energy? 3
- (b) What is a clean fuel?
- (c) Why does the use of dry wood as domestic fuel not considered to be good?
22. (a) State the laws of refraction of light. 3
- (b) Give an expression to relate the absolute refractive index of a medium with speed of light in vacuum.

23.



- (a) Name the parts labelled A and B in the structure of neuron drawn above. 3
- (b) Which part acquires the information in the neuron?
- (c) Where is the impulse converted into a chemical signal for onward transmission?

24. A current I passes through a circular loop C and a solenoid AB , is shown below: **3**



What is the polarity of:

- (a) the face of the loop you are looking at?
- (b) the end B of the solenoid?

SECTION-C

25. A person needs a lens of power -4.5 D for correction of her vision. **5**

- (a) What kind of defect in vision is she suffering from?
- (b) What is the focal length of the corrective lens?
- (c) What is the nature of the corrective lens?
- (d) Draw a ray diagram including the defect and its correction.

OR

Write the functions of the given parts of human eye:

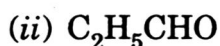
- (a) Aqueous humour
 - (b) Retina
 - (c) Ciliary muscles
 - (d) Pupil
 - (e) Iris
26. (a) Why is variation beneficial to the species but not necessarily for an individual? Explain with help of a suitable example. **5**
- (b) What is meant by the term speciation? List four factors which could lead to speciation.

27. Both soaps and detergents are some type of salts. What is the difference between them? Describe in brief the cleansing action of soap. Why do soaps not form lather in hard water? List two problems that arise due to the use of detergents instead of soaps.

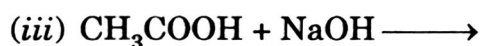
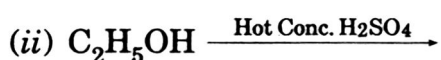
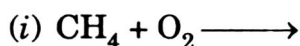
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OR

(a) Name the functional group present in each of the following compounds:



(b) Complete the following equations:



28. (a) Why do we classify elements?

5

(b) What were the two criteria used by Mendeleev in creating his periodic table?

(c) Why did Mendeleev leave some gaps in his Periodic table?

(d) In Mendeleev's Periodic Table, why was there no mention of Nobel gases like Helium, Neon and Argon?

(e) Would you place the two isotopes of chlorine, Cl-35 and Cl-37 in different slots because of their different atomic masses or in the same slot because their chemical properties are the same? Justify your answer.

29. (a) Define electric power. Express it in terms of potential difference V and resistance R.

5

(b) An electrical fuse is rated at 2A. What is meant by this statement?

(c) An electric iron of 1 kW is operated at 220 V. Find which of the fuses that respectively rated at 1 A, 3 A and 5 A can be used in it.

30. (a) Draw a sectional view of human female reproductive system and label the parts where:

5

(i) eggs develop.

(ii) fertilization takes place

(iii) fertilized egg gets implanted.

(b) Describe, in brief, the changes that the uterus undergoes:

(i) to receive the zygote

(ii) if zygote is not formed.

OR

Answer the following:

(a) Name any four asexual methods of reproduction.

(b) Explain the diagram by which an *Amoeba* reproduces.

(c) Give one difference between fission and fragmentation.