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ಸಂಕೇತ ಸಂಖ್ಯೆ : 83-E

Code No. : 83-E

A

CCE RF
CCE RR

Question Paper Serial No. **101**

ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಕ್ರಮ ಸಂಖ್ಯೆ

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತ ವಿಜ್ಞಾನ, ರಸಾಯನ ವಿಜ್ಞಾನ ಮತ್ತು ಜೀವ ವಿಜ್ಞಾನ / Physics, Chemistry & Biology)

(ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ / English Medium)

(ಶಾಲಾ ಅಭ್ಯರ್ಥಿ & ಪುನರಾವರ್ತಿತ ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / Regular Fresh & Regular Repeater)

ದಿನಾಂಕ : 11. 04. 2022] [Date : 11. 04. 2022

ಸಮಯ : ಬೆಳಗ್ಗೆ 10-30 ರಿಂದ ಮಧ್ಯಾಹ್ನ 1-45 ರವರೆಗೆ] [Time : 10-30 A.M. to 1-45 P.M.

ಗರಿಷ್ಠ ಅಂಕಗಳು : 80] [Max. Marks : 80

TEAR HERE TO OPEN THE QUESTION PAPER
ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ತೆರೆಯಲು ಇಲ್ಲಿ ಹರಿಯಿರಿ

General Instructions to the Candidate :

1. There are *three* parts in the question paper :
   Part A : Physics, Part B : Chemistry, Part C : Biology.
2. This question paper consists of objective and subjective types of 38 questions.
3. This question paper has been sealed by reverse jacket. You have to cut on the right side to open the paper at the time of commencement of the examination. Check whether all the pages of the question paper are intact.
4. Follow the instructions given against both the objective and subjective types of questions.
5. Figures in the right hand margin indicate maximum marks for the questions.
6. The maximum time to answer the paper is given at the top of the question paper. It includes 15 minutes for reading the question paper.

Tear here

PART - A

(PHYSICS)

I. *Four* alternatives are given for each of the following questions / incomplete statements. Choose the correct alternative and write the complete answer along with its letter of alphabet. **4 × 1 = 4**

1. The device used to produce electricity is

(A) Galvanometer

(B) Electric generator

(C) Ammeter

(D) Electric motor.

2. The correct formula that shows the relationship between potential difference, electric current and resistance in an electric circuit is

(A) $I = \frac{R}{V}$ (B) $I = VR$

(C) $V = \frac{I}{R}$ (D) $R = \frac{V}{I}$.

3. In Fleming's right hand rule, the middle finger indicates the direction of

(A) induced electric current

(B) magnetic field

(C) motion of the conductor

(D) mechanical force.

4. To get diminished and real image of an object from a convex lens, the object should be placed

(A) at principal focus F_1

(B) between principal focus F_1 and $2F_1$

(C) beyond $2F_1$

(D) between principal focus F_1 and optical centre O.

II. Answer the following questions : **2 × 1 = 2**

5. Magnetic field lines do not intersect each other. Why ?

6. Mention the SI unit of power of lens.

III. Answer the following questions : **2 × 2 = 4**

7. Draw the schematic diagram of an electric circuit comprising of electric cell, electric bulb, ammeter and plug key.

8. An object is placed at 25 cm in front of a concave mirror of focal length 15 cm. At what distance from the mirror should a screen be placed in order to obtain a sharp image ?

OR

A concave lens has focal length of 15 cm. At what distance should the object from the lens be placed so that it forms an image at 10 cm from the lens ?

IV. Answer the following questions : **3 × 3 = 9**

9. Which is the major component of biogas ? Write four characteristics of a good source of energy.

OR

Which element is used in making solar cell ? Write any four advantages of solar cells.

10. Draw the ray diagram to show the image formation by a convex lens, when the object is kept at $2F_1$ of the lens. With the help of the ray diagram mention the position and nature of the image formed.

[F_1 : Principal focus of the lens]

11. What are the functions of an earth wire ? It is necessary to connect the electric appliances having metallic body to the earth wire in domestic electric circuit. Why ? Explain.

OR

Explain Faraday's experiment related to electromagnetic induction. Mention the difference between direct and alternate current.

V. Answer the following question : **1 × 4 = 4**

12. a) What are the advantages of connecting electrical devices in parallel in an electric circuit instead of connecting them in series ?

b) How are ammeter and voltmeter connected in an electric circuit ? What are their function ?

VI. Answer the following question : **1 × 5 = 5**

13. a) What is refraction of light ? State two laws of refraction of light.

b) What is refractive index of light ? "The refractive index of diamond is 2·42." What is the meaning of this statement ?

PART - B

(CHEMISTRY)

VII. ***Four*** **alternatives are given for each of the following questions / incomplete statements. Choose the correct alternative and write the complete answer along with its letter of alphabet.** **2 × 1 = 2**

14. The gas liberated at the cathode in the electrolysis of water is

(A) Oxygen

(B) Hydrogen

(C) Chlorine

(D) Nitrogen.

15. Atomic number of chlorine is 17. The period number of this element in modern periodic table is

(A) 2 (B) 7

(C) 4 (D) 3.

VIII. Answer the following questions : **4 × 1 = 4**

16. State modern periodic law.

17. Write any two uses of Plaster of Paris.

18. Write the structural formula of ethene molecule.

19. $ZnO + C \rightarrow Zn + CO$

In this reaction name the reactant

i) that is oxidised and

ii) that is reduced.

IX. Answer the following questions : **3 × 2 = 6**

20. The pH values of *A, B* and *C* solutions are 5, 6 and 7 respectively. Which of these solutions is more acidic in nature ? Why ?

21. Draw the diagram to show the arrangement of the apparatus used for testing the conductivity of salt solution and label 'graphite rod'.

22. Give reason :

a) Metals are used in making cooking vessels.

b) Sodium metal is stored in kerosene.

OR

Give reason :

a) When a calcium metal reacts with water, the liberated hydrogen gas does not catch fire.

b) Ionic compounds have high melting and boiling points.

X. Answer the following questions : **3 × 3 = 9**

23. What is atomic size ? In the modern periodic table the atomic size decreases along a 'period' and increases down the 'group'. Why ? Explain.

24. Draw the diagram of arrangement of the apparatus to show the reaction of zinc granules with dilute sulphuric acid and testing hydrogen gas by burning. Label the following parts :

i) Zinc granules

ii) Delivery tube.

25. Write the balanced chemical equation for the following chemical reactions :

i) Calcium carbonate $\xrightarrow{\text{Heat}}$ Calcium oxide + Carbon dioxide

ii) Hydrogen + Chlorine $\longrightarrow$ Hydrogen chloride

iii) Magnesium + Hydrochloric acid $\longrightarrow$ Magnesium chloride + Hydrogen.

OR

Which type of chemical reaction takes place when an iron nail is dipped in copper sulphate solution ? Why ? Write a balanced chemical equation for this chemical reaction.

XI. Answer the following question : **1 × 4 = 4**

26. a) What are structural isomers ? Write the molecular and structural formula of butane.

b) What is catenation ? Write general formula for alkenes.

PART - C

(BIOLOGY)

XII. *Four* alternatives are given for each of the following questions / incomplete statements. Choose the correct alternative and write the complete answer along with its letter of alphabet. **2 × 1 = 2**

27. Atmospheric layer that absorbs ultraviolet radiations coming from the sunlight is made up of this molecule.

(A) N_2 (B) H_2

(C) O_3 (D) O_2.

28. In humans, sexually transmitted viral infection is

(A) AIDS

(B) Syphilis

(C) Tuberculosis

(D) Gonorrhoea.

XIII. Answer the following questions : **2 × 1 = 2**

29. What is the role of decomposers in an ecosystem ?

30. In males, testes are located outside the abdominal cavity in scrotum. Why ?

XIV. Answer the following questions : **3 × 2 = 6**

31. Mention the function of the following plant hormones :

i) Auxin

ii) Cytokinin.

32. Draw the diagram showing the longitudinal section of a flower and label 'ovary'.

33. Give reason :

a) 'Ventricles of the human heart have thick wall.'

b) 'It is necessary to separate oxygenated and deoxygenated blood in mammals and birds.'

XV. Answer the following questions : **3 × 3 = 9**

34. When a tall (*TT*) pea plant is crossed with a dwarf (*tt*) pea plant, represent the result obtained in F_2 generation of monohybrid cross with the help of checker board and mention the ratio of varieties of plants.

35. What is trophic level ? Flow of energy in an ecosystem is always unidirectional. Why ? Explain.

36. a) Mention any four main factors that lead to the rise of new species.

b) The experiences of an individual acquired during its lifetime cannot be passed on to its progeny. Give reason.

OR

What are fossils ? Mention the methods of estimation of dating fossils and explain briefly.

XVI. Answer the following questions : **2 × 4 = 8**

37. Which molecule is formed during the first step of cellular respiration by the breakdown of glucose molecule in cytoplasm ? Mention the types of respiration and write any two differences between them.

OR

Which are the factors essential for photosynthesis ? Mention the events that occur during this process and represent this process by balanced chemical equation.

38. Draw the diagram showing the structure of the human brain and label the following parts :

i) Cerebrum

ii) Cerebellum.