

931

824 (BK)

2019

SCIENCE

(English Version)

Time : 3 Hrs 15 mins.] [Full Marks : 70

Note : First 15 minutes are allotted for the candidates to read the question paper.

Instructions :

- (i) This question paper is divided into three parts, A, B and C.
- (ii) First question of each part is multiple choice type. Four alternative answers are given in each. Select the correct answer and write down in your answer-book.

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824 (BK)

2

- (iii) Attempt all the questions of each part together at one place. Each part should be attempted on a new page.
- (iv) All questions are compulsory.
- (v) Marks of the questions are mentioned against them.
- (vi) Illustrate your answers with neat and labelled diagrams and chemical equations wherever necessary.

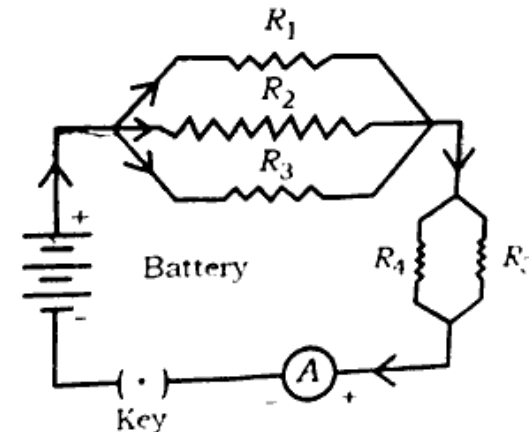
PART - A

1. a) Where an object should be placed in front of the concave mirror so that its image be erect and larger in size ?
 - i) At the centre of curvature C of the mirror
 - ii) At the focus point F of the mirror
 - iii) In between the centre of curvature C and the focus point F of the mirror
 - iv) In between the pole P and the focus point F of the mirror. 1

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- b) A person is suffering from short-sightedness defect. Which of the lens or mirror he should use to correct his vision ?
- Convex lens
 - Concave lens
 - Convex mirror
 - Concave mirror. 1
- c) Unit of electrical energy is
- volt
 - watt
 - ampere
 - watt-second. 1
- d) A current carrying conductor is placed in between the poles of the stable magnetic field. The direction of force acting on the conductor is given by the law
- Maxwell's cork-screw rule
 - Fleming's Right hand rule
 - Fleming's Left hand rule
 - Ohm's law. 1

2. a) What is long-sightedness defect of vision ? How can this defect be removed ? 2
- b) What do you mean by scattering of light ? 2
- c) The refractive index of glass is 1.5. The speed of light in air is 3×10^8 m/s. Find the speed of light in glass. 2
3. a) In the following diagram resistances are $R_1 = 15 \Omega$, $R_2 = 10 \Omega$, $R_3 = 30 \Omega$, $R_4 = 5 \Omega$, $R_5 = 20 \Omega$ and battery is 18 volt. Calculate the total resistance and the electrical current flowing in the circuit. 4



Two lamps with rating constants 100 watt, 220 volt and 200 watt, 220 volts are connected in a parallel combination and with mains of electrical supply 220 volts. Calculate the current flowing through the mains. 4

- b) A convex mirror with radius of curvature 5 metre is attached with a motorcycle to see the objects behind the motorcycle. Describe the position, nature and size of the image, formed by this mirror, of another motorcycle coming from behind at a distance of 5 metre. 4

OR

Calculate the position of an image of an object placed 30 cm away from a concave lens of focal length 15 cm. Also calculate the magnifying power of the lens. 4

824 (BK)

6

4. What is the working principle of an electrical motor ? Describe its construction and working method clearly with diagram. 7

OR

What is the working principle of an alternating current electric generator ? Describe its construction and working clearly with diagram. 7

PART - B

5. a) Propanol is
- i) C_3H_5OH
 - ii) C_2H_5OH
 - iii) C_3H_6OH
 - iv) C_3H_7OH

1

- b) To keep edibles safer, in packaging coating of tin is preferred instead of zinc, because
- zinc is relatively less reactive
 - ~~tin~~ tin is relatively less reactive
 - melting point of zinc is less
 - melting point of tin is less. 1
- c) Baking powder releases which gas on heating?
- CO
 - Na_2CO_3
 - CO_2
 - O_2 . 1

6. ~~ax~~ What happens when —

- ethanol reacts with alkaline potassium permanganate?
- methane is mixed to chlorine gas in presence of sunlight?

1 + 1

b) ~~ax~~ How is copper isolated from the ore of copper glance? 2

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7. a) Write balanced equation of the following reactions :

- Dilute sulphuric acid reacts with granular zinc.
- Dilute hydrochloric acid reacts with aluminium powder. 1 + 1

b) i) Carbon forms number of compounds due to which of its two specific properties?

ii) Draw the structural formula of bromopentane. 1 + 1

c) i) Mendeleef's periodic table was based on which law?

ii) The cleaning action of soaps or detergents are based on which groups? Clarify. 1 + 1

XV VII 812

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8. a) Write short notes on the following :
2 + 2
- Saponification
 - Homologous series.
- b) Give a method of preparation of Plaster of Paris and also give one use. 2 + 1

OR

- a) Write the chemical equations for the reactions of esterification of ethanoic acid and also write its reaction with NaOH and NaHCO₃.
2 + 1 + 1
- b) Write chemical equation for the preparation of washing soda and also give its one use. 2 + 1

PART - C

9. a) Source of fossil energy is
- wind energy
 - solar energy
 - coal
 - Hydroelectric.
- b) Which one is the nearest member of human in evolutionary history?
i) Monkey ii) Bat
iii) Rabbit iv) Chimpanzee. 1
- c) Sex chromosomes in man are
i) XY ii) XX
iii) Y iv) X. 1
- d) Bile juice is secreted in
i) Gall bladder
ii) liver
iii) Pancreas
iv) Stomach. 1

10. a) Describe the importance of stomata in plant. 2
- b) Describe the advantage of division of human heart in right and left parts. 2
- c) Illustrate with example the division and fragmentation method of reproduction in living organisms. 1 + 1
11. a) What do you mean by biotic and abiotic degradation ? Write the effects of it on environment. 1 + 1 + 2

OR

Describe the food web with the example of a land ecosystem. 2 + 2

- b) Where does exchange of oxygen and carbon dioxide occur in human ? Describe its function with diagram. 1 + 1 + 2

OR

What is hormone ? Mention the name of hormone responsible for diabetes and name the organ from which it is secreted. 2 + 1 + 1

12. What are Mendel's laws of inheritance ? Explain it with example of seeds of pea having round, wrinkled, yellow and green characters with the help of diagrams. 2 + 2 + 3

OR

Draw a labelled diagram of a human digestive system. Describe the process of digestion. $3\frac{1}{2} + 3\frac{1}{2}$

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