

Total No. of Questions : 18]

[Total No. of Printed pages : 6

**XARPLKGN20**

**2602**

**SCIENCE**

**(Physics, Chemistry and Life Science)**

**Time : 3 Hours]**

**[Maximum Marks : 84**

**Section-A**

**(PHYSICS)**

**(Long Answer Type Questions)**

**6**

1. State and explain Ohm's law. Mention condition under which Ohm's law is applicable.

*Or*

Derive an expression for the equivalent resistance of three resistances connected in series and parallel.

**(Short Answer Type Questions)**

**4 each**

2. What is Reflection ? State the laws of reflection. Draw the suitable ray diagram.

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**H-2**

**Turn Over**

( 2 )

*Or*

What is power of a lens ? Give *two* uses of concave mirrors.

3. Explain Myopia. How is it corrected ? Explain with diagram.

*Or*

Why do stars twinkle and planets do not ?

4. Draw ray diagram to show the formation of images when the object is placed in front of a concave mirror :

- (i) Between its pole and focus point
- (ii) On the centre of curvature

*Or*

Define magnification of a spherical mirror. State new Cartesian sign conventions of mirrors (Spherical).

**(Very Short Answer Type Questions)**

**2 each**

5. (i) State Fleming's left hand rule.

(ii) What are the advantages of nuclear energy ?

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(iii) What is the difference between a convex lens and a concave lens ?

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**(Multiple Choice Questions)**

1 each

6. (i) Defect Hypermetropia can be corrected by using :
- (A) Concave mirror
  - ☒ (B) Convex mirror
  - (C) Concave lens
  - ☒ (D) Convex lens
- (ii) The device used for producing current is called a :
- ☒ (A) Generator
  - (B) Galvanometer
  - (C) Ammeter
  - (D) Motor
- (iii) At the time of short circuit the current in the circuit :
- (A) Reduces substantially
  - (B) Does not change
  - ☒ (C) Increases heavily
  - (D) Vary continuously
- (iv) A solar water heater cannot be used to get hot water on :
- (A) A sunny day
  - ☒ (B) A cloudy day
  - (C) A hot day
  - (D) A windy day

**Section-B**

**(CHEMISTRY)**

**(Long Answer Type Questions)**

6

7. What is an homologous series ? Give its characteristics.

*Or*

What is Soap ? Explain mechanism of the cleansing action of soap.

**(Short Answer Type Questions)**

4 each

8. How we differentiate metals from non-metals ?

*Or*

What are Ores ? How are metals extracted from ores ? Write the various steps involved in the extraction.

9. Why do you think noble gases are placed in a separate group ?

*Or*

What is atomic radius ? How does the atomic radius of the element change in a group ?

10. Define combination reaction and decomposition reaction. Give an example of each.

*Or*

What do you mean by a chemical equation ? Give an example.

**(Very Short Answer Type Questions)**

2 each

11. (i) Give names and formula of *two* strong bases.
- (ii) What is the pH value of an acid on pH scale ? Give an example.
- (iii) Give *two* properties of Ethanol.

**(Multiple Choice Questions)**

1 each

12. (i) Which one of the following types of medicines is used for treating indigestion ?
- (A) Antibiotic
- (B) Analgesic
- ☒ (C) Antacid
- (D) Antiseptics
- (ii) Which one of the following processes involve chemical reaction ?
- (A) Storing of oxygen gas under pressure in a gas cylinder
- (B) Liquefaction of air
- 
- (C) Keeping petrol in a China dish in the open
- ☒ (D) Heating copper wire in presence of air at high temperature
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(iii) Galvanisation is a method of protecting iron from rusting by coating with a thin layer of :

- (A) Calcium
- (B) Aluminium
- (C) Zinc
- (D) Silver

(iv) An Alloy is :

- (A) An element
- (B) A compound
- (C) A homogeneous mixture
- (D) A heterogeneous mixture

**Section-C**

**(LIFE SCIENCE)**

**(Long Answer Type Questions)**

6

✓ 13. What is Nutrition ? What are the differences between autotrophic and heterotrophic nutrition ?

*Or*

What is Digestion ? Explain the process of digestion of food in

**(Short Answer Type Questions)**

4 eac

- ✓ 14. Draw the structure of a neuron and explain its function.

*Or*

✓ Design an experiment to demonstrate hydrotropism with requisite diagram.

15. Draw a neat, clean and labelled diagram of male reproductive system in human beings.

*Or*

✓ Explain the sexual reproduction in flowering plants with diagram (L.S. of flower).

16. How is the sex of the child determined in human beings ?

*Or*

What are the different ways in which individuals with a particular trait may increase in a population ?

**(Very Short Answer Type Questions)**

2 eac

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17. (i) What are biodegradable substances ?  
(ii) What is the role of decomposers in the ecosystem ?
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**(Multiple Choice Questions)**

1 eac

18. (i) Deforestation generally decreases :
- (A) Rainfall ✓
  - (B) Soil erosion
  - (C) Drought
  - (D) Global warming
- (ii) Non-conventional sources of energy is :
- (A) Coal
  - (B) Wood
  - (C) Petroleum
  - (D) Biogas and Solar energy
- (iii) The anthers contain :
- (A) Sepals
  - (B) Ovules
  - (C) Carpels
  - (D) Pollen grains
- (iv) Which of the following is not a part of the female reproductive systems in human beings ?
- (A) Ovary
  - (B) Uterus
  - (C) Vas deferens
  - (D) Fallopian tube