



FDN-X
CODE-A

Aakash

Medical | IIT-JEE | Foundations

(Divisions of Aakash Educational Services Limited)

Regd. Office : Aakash Tower, 8, Pusa Road, New Delhi-110005 Ph.: 011-47623456

MM : 80

Mock Test-4 (Science)

Time : 3 Hrs.

Class-X (2019-2020)

COMPLETE SYLLABUS

GENERAL INSTRUCTIONS :

- (i) The question paper comprises **three** sections **A**, **B** and **C**. You are to attempt all the sections.
- (ii) All questions are **compulsory**.
- (iii) **Section A** comprises of **20 questions** (9 VSA, 8 MCQ and 3 AR Type) of **1 mark** each. **Section B** comprises of **10 questions** of **3 marks** each. **Section C** comprises of **6 questions** of **5 marks** each.
- (iv) There is no overall choice in the paper. However, internal choice is provided in **3 questions of 1 mark**, **3 questions of 3 marks** and **3 questions of 5 marks**.
- (v) Use of calculator is not permitted.
- (vi) It is mandatory to use Blue/Black Ballpoint Pen to write the answer

----- TO BE FILLED BY THE -----
TEACHER

Name : _____

Marks obtained in :

Physics

Chemistry

Biology

Total

Section : _____

Roll No. :

SECTION-A

Very Short Answer Type Questions :

[9×1=9]

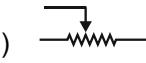
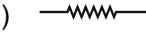
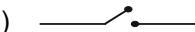
1. Write the chemical formula of fourth member of alkyne family. [1]
2. How does metallic character of an element vary across a period (from left to right) in the Modern Periodic Table? [1]
3. A magnetic force is experienced by charge particle when charged particle moves through a magnetic field. Magnetic force also experienced by wire when current flows through wire and it is placed in magnetic field. John Ambrose Fleming suggested a role for finding the direction of the force experienced by a current carrying wire placed in a magnetic field that is perpendicular to current in wire.
 - (a) Can magnetic force change the speed of moving charge particle? [1]
 - (b) State the Fleming's left hand rule. [1]
 - (c) Define the device which is based on the principle of effect of magnetic force on current carrying wire. [1]
 - (d) Name the quantity which is equal to the slope of V-I graph. [1]
4. Refer to the given table.

Hormones related to disorders/effects on body	Symptoms/characteristics
(i) Diabetes	Increased blood sugar level
(ii) Puberty	Development of secondary sexual characters in human males
(iii) Dwarfism	Short height
(iv) Goitre	Swollen neck

- (a) Identify the hormones which are responsible for the disorders/changes given in rows (i) and (ii) of the above table. [1]
- (b) Name the hormone which is responsible for causing goitre and what is its function? [1]
- (c) Identify the hormone which causes dwarfism in humans and also name the endocrine gland which secretes it. [1]

Multiple Choice Type Questions :

[8×1=8]

5. The range of value of m for erect and diminished image formed by a convex mirror of a real object [1]
 - (1) $m > 1$
 - (2) $0 < m < 1$
 - (3) $-1 < m < 0$
 - (4) $m < -1$
6. The variable resistance is represented by [1]
 - (1) 
 - (2) 
 - (3) 
 - (4) 

OR

Which of the following devices should be used for protecting the circuits due to short circuiting or overloading of the circuits? [1]

- (1) Switch
- (2) Resistance
- (3) Socket
- (4) Fuse

7. In a box type solar cooker a thick glass sheet is used to [1]
 (1) Absorb all radiations from Sun (2) Reflect all radiations from Sun
 (3) Produces greenhouse effect (4) Transmit all radiations of box

8. Which of the following is a part of nephron that collects filtered urine? [1]
 (1) Glomerulus (2) Bowman's capsule
 (3) Renal vein (4) Renal artery

9. The formation of human sperms takes place in that reproductive part which is located in [1]
 (1) Penis (2) Scrotum
 (3) Prostate gland (4) Bladder

OR

Wings of birds and bats are [1]
 (1) Different in origin and function (2) Different in origin but similar in function
 (3) Similar in origin but different in function (4) Similar in origin and function

10. Which of the following is a precipitation reaction? [1]
 (1) $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$ (2) $CaO + H_2O \rightarrow Ca(OH)_2$
 (3) $Na_2SO_4 + BaCl_2 \rightarrow BaSO_4 + 2NaCl$ (4) $2NaOH + H_2SO_4 \rightarrow Na_2SO_4 + 2H_2O$

11. All of the following are olfactory indicators, **except** [1]
 (1) Onion (2) Clove
 (3) Vanilla (4) Turmeric

12. Which among the following is a Dobereiner's triad? [1]
 (1) Li, K, Rb (2) F, Cl, I
 (3) Ca, Sr, Ba (4) H, Li, Na

OR

The chemical formula of the oxide of eka-aluminium is [1]
 (1) Al_2O_3 (2) Ge_2O_3
 (3) Ga_2O_3 (4) Ga_2O

Assertion & Reason Type Questions : [3×1=3]

Read the given statements carefully and choose the correct option.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A)
 (2) Both (A) and (R) are true and (R) is not the correct explanation of (A)
 (3) (A) is true but (R) is false
 (4) (A) is false and (R) is true

13. A : Graphite is a good conductor of electricity. [1]
 R : Graphite is an allotrope of carbon

14. A : A good source of energy is the one which is easy to transport [1]
 R : Easily transferable source produces large heat

15. A : All organisms use simple food material obtained from inorganic sources in the form of carbon dioxide and water. [1]
 R : The heterotrophs survival depends directly or indirectly on autotrophs.

SECTION-B

Short Answer Type Questions : [10×3=30]

16. (a) What do you observe when iron nails are kept in a copper sulphate solution for some time? [1]
 (b) Write the type of reaction. [1]
 (c) Write the balanced chemical equation for the reaction. [1]
17. A compound 'X' of sodium is used for removing permanent hardness of water.
 (a) Name the compound and write its chemical formula. [1]
 (b) What happens when crystals of 'X' are heated? Write balanced chemical equation only. [1]
 (c) Write any two physical properties of X. [1]

OR

- (a) What is an acid? [1]
 (b) Classify the following acids as mineral acids and organic acids.
 Nitric acid, formic acid, sulphuric acid, acetic acid [2]
18. Two elements 'A' and 'B' have atomic numbers 11 and 17 respectively
 (a) Write the period of the Modern Periodic Table to which these elements belong. [1]
 (b) What type of bond is formed between them? Write the chemical formula of the compound formed. [2]
19. What is photosynthesis? Write down the process of photosynthesis in a single equation. [3]
20. Draw a neat figure of human brain and label the following parts in it. [3]
 (a) Cerebrum
 (b) Cerebellum
 (c) Pituitary gland
 (d) Mid-brain
21. Give any three differences between binary fission and multiple fission. [3]
22. Who are the stakeholders, when we consider the conservation of forests? Give any three examples. [3]

OR

- What are biodegradable and non-biodegradable substances? Give a short note. [3]
23. Explain with the help of diagram, why a stick partly immersed in water appears to be bent at the water surface? [3]
24. What is short circuiting and overloading in an electric supply? [3]

OR

- Write the precautions in the use of electricity. [3]
25. Why does it take some time to see objects in a dim light room when you enter the room from bright sunlight outside [3]

SECTION-C

Long Answer Type Questions : [6×5=30]

26. (a) How are the following metals obtained from their oxide/compound by reduction process? Write the chemical equation involved. [3]
 (i) Hg from HgO
 (ii) Zn from ZnO
 (iii) Na from NaCl

- (b) Name the constituents of following alloys [2]

- (i) Brass
- (ii) Bronze

OR

Differentiate between metals and non-metals on the basis of their physical properties. [Any five differences] [5]

27. (a) An organic compound 'C' is used as a solvent in tincture of iodine. Oxidation of 'C' yields an organic acid 'A' which is present in vinegar. Identify 'C' and 'A'. Write their name and structural formula. [2]

- (b) What happens when [2]

- (i) Compound 'C' burns in air
- (ii) Compound 'C' and 'A' react in the presence of sulphuric acid? (Give chemical equation only)

- (c) Write any two properties of 'A'. [1]

28. (a) Write any four contrasting visible characters of garden pea used by Mendel. [2]

- (b) Draw a cross between the progenies of a tall plant with round seeds (TTRR) and short plant with wrinkled-seeds (ttrr) and deduce the phenotypic ratio [3]

29. (a) Describe the experiment conducted by Miller and Urey through which they suggested how did organic molecules arise. [3]

- (b) How do we determine the age of fossil? [2]

OR

- (a) What do you mean by water harvesting? [2]

- (b) Give any six water harvesting structures with their areas where they are found. [3]

30. (a) A 3 cm tall object placed perpendicular to the principal axis of a concave mirror of focal length 15 cm. The distance of the object from the mirror is 20 cm. Find the nature, position and size of the image formed and represent the situation with the help of a ray diagram. [3]

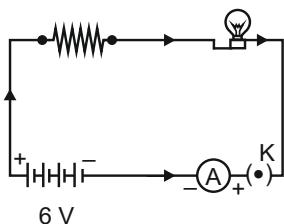
- (b) How are power and focal length of a lens related? You are provided with two lenses of focal length 10 cm and 20 cm respectively. Which lens you use to obtain more convergent light? [2]

31. (a) With the help of a suitable circuit diagram prove that the reciprocal of the equivalent resistance of a group of resistance joined in parallel is equal to the sum of the reciprocal of the individual resistances. [3]

- (b) In an electric circuit two resistors of $12\ \Omega$ each are joined in parallel to a 6 V battery. Find the current drawn from the battery [2]

OR

An electric lamp of resistance $20\ \Omega$ and a conductor of resistance $4\ \Omega$ are connected to a 6 V battery as shown in the circuit. Calculate:



- (a) The total resistance of the circuit
- (b) The current through the circuit
- (c) The potential difference across the (i) electric lamp and (ii) conductor, and
- (d) Power of the lamp

[5]