1. Please check that this question paper contains 7 printed pages
2. 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.
3. Please check that this question paper contains 40 questions.
4. Please write down the Serial Number of the question before attempting it.
5. 15 minute time has been allotted to read this question paper. During these time students are not allowed to write answers

PRE BOARD EXAMINATION

SUB: SCIENCE   **Marks: 80**

Class: X   **Time: 3 Hrs**

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) Internal choice is given in section B and C.
iv) Question numbers 1 to 10 in Section- A are Multiple Choice Questions; 11 to 16 are Very Short Answer Type and 17 to 20 are Assertion and Reasons, 1 mark questions.
v) Question numbers 21 to 30 in Section- B are 3 marks questions. These are to be answered in about 50 words each.
vi) Question numbers 31to 36 in Section- C are 5 marks questions. These are to be answered in 70 words each.

SECTION A

1. Explicate homologous series?

2. Critically analyze the Mendeleev's classification?

3. Answer question numbers 3(a) - 3(d) on the basis of your understanding of the following paragraph   and the related studied concepts.

   Nuclear energy produces electricity that can be used to power homes, schools, businesses, and hospitals. The first nuclear reactor to produce electricity was located near Arco, Idaho. The Experimental Breeder   Reactor began powering itself in 1951. The first nuclear power plant designed to provide energy to a   community was established in Obninsk, Russia, in 1954.

   Building nuclear reactors requires a high level of technology, and only the countries that have signed the Nuclear Non-Proliferation Treaty can get the uranium or plutonium that is required. For these reasons,   most nuclear power plants are located in the developed world.

3 (a). State the principle of harnessing nuclear energy through fission.

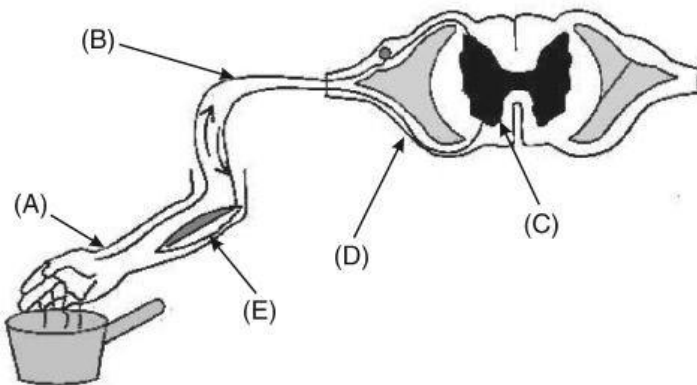3 (b) A n a l y z e the pros and cons of nuclear energy.

(c). Observe the

World energy consumption
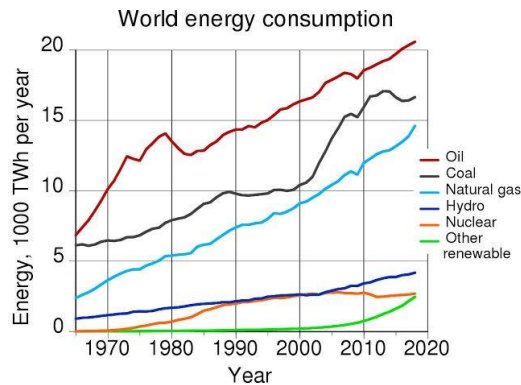
Based on the data represented in the graph above, write about the environmental consequences of exploiting sources of energy.

3(d).   Based on which equation does nuclear fission works?

4. Observe the diagram

.

4 (a) I d e n t i f y (B) and (E) from the diagram.

4 (b). Briefly explain the function of (B)

4 (c). Which one of the following features support reflex actions?

    a.   it is the skill which is not inherited & acquired during course of life.

    b.   it is under the control of cerebellum part of the brain.

    c.   it occurs automatically without the will of individual

    d.   it is the voluntary actions performed by impulse from brain. 4(d) Write two major difference between walking and reflex action.

5. Eye lens is composed of fibrous, jelly like material. The curvature can be modified by ciliary muscles. Identify the correct consequences of change in ciliary muscle,

     (A) Muscles relaxed, lens becomes thick, focal length increase

     (B) Muscles contracted, lens becomes thin, focal length decreases

     (C) Muscles relaxed, lens becomes thin, focal length increases

     (D) Muscles contracted, lens becomes thick, focal length increases

OR

Find the correct lens for the defects of vision.

(A) Concave lens for presbyopia   (B) Convex lens for hypermetropia

(C). Concave lens for hypermetropia   (D) Bifocal lens for hypermetropia

6. A resistance wire made from German silver has a resistance of 4.25 ohm. Calculate the resistance of another wire, made from the same material, such that its length increases by 4 times and area of cross section decreases by 3 times.

     (A) 50 ohm   (B) 51 ohm

     (C) 52 ohm   (D) 49 ohm

7. The commercial unit of electric energy is

     (A) Watt-minute   (B) Joule-second

     (C) Kilowatt-hour   (D) Volt-ampere

8. Through what movement, the people protests against rising the height of sardar sarovar dam.

     (A) Narmada bachao andolan   (B) Tehri dam andolan

     (C) Chipko anodal   (D) Kaveri dam andolan

OR

If grasshopper is eaten by a frogs, then the energy transfer will be from

     (A) Producer to decomposer   (B) Producer to primary consumer

     (C) Primary consumer to secondary consumer   (D) Secondary to tertiary consumer

9. During the process of hydrogenation of vegetable oils, name the catalyst used.

     (A) Alkaline KMNO4   (B) NaOH

     (C) Hot concentrated H_2SO_4 (D) Nickel catalyst

10. During double- displacement reaction of Na2SO4 and BaCl2, find the white precipitate formed.

     (A) NaCl   (B) $BaCl_2$ (C)$BaSO_4$ (D) $PbCl_2$

11. During indigestion, the stomach produces too much acid, this causes pain and irritation. Spot the antacids used as a remedy.

   (A) 1 m of hydrochloric acid   (B) Sodium chloride

   (C) Magnesium hydroxide   (D) Magnesium chloride

12. Name the metalloid placed in the middle of the periodic table.

   (A) Sodium   (B) Silicon

   (C)Iron   (D) Aluminum

<div align="center">OR</div>

 B, Be, O, N, Li, C are of same periodic table. Arrange them According to the trends of atomic size in modern periodic table,
   (A) Li,Be,B,C,N,O   (B) O,N,C,B,Be,Lo
   (C) N,O,B,Li,C,Be   (D) O,Li,Be,N,B,C

For question numbers 13 and 14, two statements are given- one labeled Assertion (A) and the other labeled Reason (R).
Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below
       i) Both A and R are true and R is correct explanation of the assertion.
       ii) Both A and R are true but R is not the correct explanation of the assertion.
       iii) A is true but R is false.
       iv)) A is false but R is true.
13. **Assertion: ethanoic acid is commonly called acetic acid.**
   Reason. : 5%-8% of acetic acid in water is called vinegar.

14. **Assertion: tungsten is widely used in making bulb filaments.**
   Reason.   : Tungsten is the strong metal with high melting point of 3380°c

SECTION B

15. i) Which compound gives shiny finish to walls after white washing?

   ii) Write the balanced equation for its formation.

   iii) Name some allotropes of compound in (i)

16. . A Gas 'X' produces brisk effervescence when metal compound 'A' reacts with dil. HCL.

   i) Name the gas 'X'.

   ii) Write a balanced Chemical equation when 'X' is passed through lime water.

   iii) Note major application of 'X' in our daily life.

<div align="center">OR</div>

   You have three solutions A, B, C. The color of pH paper in A, B, C are Red, Green, yellow.
   i) Arrange A,B & C solutions ascendingly according to the their hydrogen ion concentration.
   ii) Hydrogen ions are represented as H_3O^+ ions. Why?

17.Which element has 2 shells, both of which are completely filled with electrons?why their presence in atmosphere is extremely slow? Under which group did these elements are placed on modern periodic   table?

18. a) Briefly explain the flow of energy through each trophic level.
    b) Why the flow of energy is uni-directional?

OR

   Explicate biological Magnification &prove with the circumstances showing how it enters the food web.

19. Describe how do single-celled organisms obtain their nutrition with illustrations? Why simple diffusion is insufficient to meet the requirements of multicellular organisms?

20. "Two areas of study namely 'Evolution' and 'Classification' are interlinked." Justify the statement.

21. Illustrate the movements of pants which is independent of growth? How is plant movements different from animals?

22. The size of image of an object by a convex lens of focal length 20 cm is observed to be reduced to 1/3 rd of its size. find the distance from the optical center of the lens.

23. Two identical resistors of 12 ohm each are connected to a battery of 3V. calculate the ratio of the power consumed by the resulting combination with minimum resistance and maximum resistance.

24. Observe the diagram
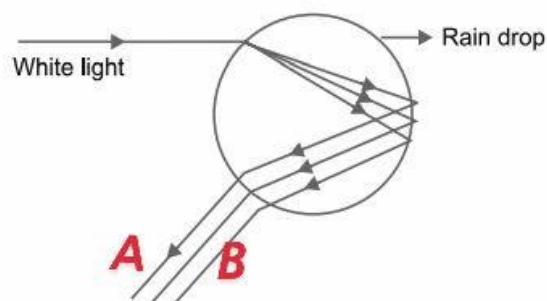
I)Name the phenomenon for the formation of rainbow after rain shower.

II) State the colors at A and B.

III) Brierley explain how rainbow is visible in the sky?

OR

I) Why the sky appears dark to the passengers flying at high altitudes?

II) Demonstrate an activity to show the bluish color of the sky and reddish appearance of the sun at the sunrise and sunset.

III) Sun appears white at noon. Why?

IV) Define the phenomenon of Tyndall effect?

SECTION C

25. Brass is the alloy of metal X and Y. Identify X and Y & their extraction with balanced chemical equation. When do we get stainless steel?

OR

State the reason for the following:

   i.   Carbon can't reduce the oxides of Na.

   ii.   Metals produced by displacement reaction is in molten state.

   iii.   Calcium floats in water after reacting with water.

   iv.   Ionic compounds in solid state do not conduct electricity.

   v.   Ionic compound have high melting and boiling point.

26. Two compounds 'X' & 'Y' have the same molecular formula, C_6H_{12} , compound 'X' is saturated while compound 'Y' . Draw their structures. what type of reactions, compounds'X' and'Y' are expected to undergo?

27.
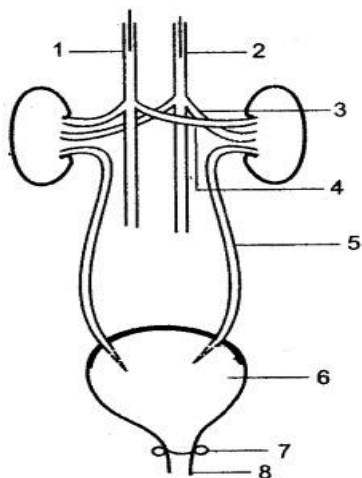
a). Identify: 1, 2, 5 & 6 .

b). E l u c i d a t e the function of nephron with diagram.

28. . I) what is germination? Interpret with its diagram.

   II) Give examples for each mode of reproduction used by single celled organisms.

   III) Expound on the advantages of sexual reproduction.

OR

   I) Briefly analyze the use of IUCD? Will it help in protecting from STDs?

   II) Why prenatal sex determination has been prohibited by law?

   III) Why the use of contraceptive measures are encouraged?

29. a) An electric heater is rated at 100 V-50 W. What is its resistance?

   b) When the five heaters in (a) used for four hours, what is the electric energy consumed?

   c) Calculate the cost if the rate is Rs.1 per unit.

30. i) A concave mirror produces three times magnified image on a screen, if the object is placed 20 cm in front of the mirror, he fat is the screen from the object?

   ii) State four rules for drawing ray diagram in convex mirrors.

   iii) Draw out the uses of concave and convex mirrors.

OR

i) Draw refraction of light through a rectangular glass slab & mark the following:

   a) lateral shift

   b) Angle of emergence

   c) Angle of incidence

   d) Refracted ray

ii) Why the phenomenon of refraction takes place?

iii) State Snell's law of refraction.