MODEL EXAMINATION (2020-'21)

Time: 3hrs

CLASS: X **SCIENCE (086)** **Mark:80**

General Instructions:

(i) The question paper comprises four sections A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.

(ii) Section–A - question no. 1 to 20 - all questions and parts thereof are of one mark each. These questions contain multiple choice questions (MCQs), very short answer questions and assertion - reason type questions. Answers to these should be given in one word or one sentence.

(iii) Section–B - question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should in the range of 30 to 50 words.

(iv) Section–C - question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should in the range of 50 to 80 words.

(v) Section–D – question no. - 34 to 36 are long answer type questions carrying 5 marks each. Answer to these questions should be in the range of 80 to 120 words.

(vi) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.

(vii) Wherever necessary, neat and properly labeled diagrams should be drawn.

SECTION A

1. Name the brown-coloured gas evolved when lead nitrate crystals are heated in dry test tube. (1)

OR

What changes do you observe in the iron nails and the colour of copper sulphate solution, if iron nails are dipped in $CuSO_4$ solution for 15 minutes?

2. Dry HCl gas does not change the colour of dry blue litmus paper why? (1)
3. The functional group present in propanal is (1)

a) -OH b) -COOH c) -CO- d) -CHO

4. Write down four important characteristics of image formed by a plane mirror. (1)
5. Define 1 dioptre of power of a lens. (1)

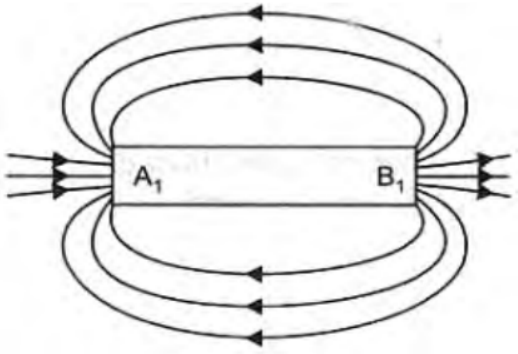
6. Name a mirror that can give an erect and enlarged image of an object. (1)

OR

Why do we prefer a convex mirror as a rear-view mirror in vehicles?

7. Explain why the planets do not twinkle. (1)

8. Identify the poles of the magnet in the given figure. (1)



9. Draw a schematic diagram of an electric circuit consisting of a battery of two cells each of 1.5 V, 5 Ω, 10 Ω and 15Ω resistors and a plug key, all are connected in series. (1)

OR

Draw a schematic diagram of a circuit consisting of a cell of 1.5 V, 10 Ω resistor and 15 Ω resistor and a plug key all connected in series.

10. Draw the various stages of reproduction in amoeba in a proper sequence. (1)

11. In the following food chain, 100 J of energy is available to the lion. How much energy was available to the producer? Plant → Dear → Lion (1)

12. What is the function of ozone in the upper stratosphere? (1)

OR

Name the group of chemical compounds which adversely affect the ozone layer.

13. What is micro propagation? State two advantages and two disadvantages of this method. (1)

For question numbers 14, 15 and 16, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

a) Both A and R are true, and R is correct explanation of the assertion.

b) Both A and R are true, but R is not the correct explanation of the assertion.

c) A is true, but R is false.

d) A is false, but R is true.

14. **Assertion:** Ethylene is an unsaturated hydrocarbon. (1)

Reason: Ethylene contains carbon-carbon triple covalent bond.

15. **Assertion:** Thin branched filaments of fungi are called hyphae.

Reason: Fungi are also known as decomposers. (1)

OR

Assertion: Flowers are the organs of sexual reproduction in plants.

Reason: Flowers are always bisexual.

16**. Assertion:** Genes are the stretch of DNA and determine genetic characters.

Reason: Functional unit of DNA is called genes. (1)

17**.** Read the following passage and answer **any four** questions from 17 (i) to 17 (v). **(4X1=4)**

Chronic kidney disease, or CKD, causes more deaths than breast cancer or prostate cancer. It is the under-recognized public health crisis. It affects an estimated 37 million people in the U.S. and approximately 90% of those with CKD don't even know they have it. 1 in 3 American adults is at risk for CKD. CKD is more common in women (15%) than men (12%). CKD is the 9th leading cause of death in the U.S. Chronic kidney disease (CKD) means kidneys are damaged and losing their ability to keep you healthy. In the early stages of the disease, most people do not have symptoms. But as CKD gets worse, wastes can build up in blood and one gets sick. One may develop other problems like high blood pressure, anemia, weak bones, poor nutritional health, and nerve damage. Because kidneys are vital to so many of the body's functions, CKD also increases risk of having heart and blood vessel disease. While these problems may happen slowly and without symptoms, they can lead to kidneys failure, which can appear without warning. Once kidneys fail, dialysis or a kidney transplant is needed to stay alive. This stage of CKD is known as kidney failure, end-stage kidney disease (ESKD). The two main causes of CKD are diabetes and high blood pressure. These two conditions were responsible for nearly 75% of kidney failure cases between 2014–2016: 45% of new ESKD patients had a primary diagnosis of diabetes, the leading cause of ESKD, while 29% of new ESKD patients had a primary diagnosis of hypertension, the second leading cause of ESKD.

(a) What are the functions of kidneys in human being? Give any two functions.

(b) State two main causes of Chronic Kidney diseases.

(c) What is artificial kidney?

(d) Name the basic filtration unit of kidneys.

(e) What do you understand by reabsorption?

18. Read the following and answer **any four** questions from 18 (i) to 18 (v). **(4X1=4)**

Atoms of eight elements A, B, C, D, E, F, G and H-have the same number of electrons in their outermost shell. Elements A and G combine to form an ionic compound. This ionic compound is added to a small amount of almost all vegetables and dishes during cooking. Oxides of elements A and B are basic in nature, while those of elements E and F are acidic. However, the oxides of element D are almost neutral. Based on the above information, answer the following questions.

(i) To which period of the periodic table do these elements belong?
   a) The element belongs to second period
   b) The element belongs to first period
   c) The element belongs to third period
   d) The element belongs to fourth period.

(ii) What would be the nature of the compound formed by a combination of elements B and F?

   a) Ionic in nature
   b) Covalent in nature
   c) Neutral in nature
   d) None of these

(iii) Which two of these elements could definitely be metals?

   a) G and H
   b) E and F
   c) C and D
   d) A and B

(iv) Which one of the eight elements is most likely to be found in the gaseous state at room temperature?
   a) Element E
   b) Element H
   c) Element F
   d) Element G

(v) If the number of electrons in the outermost shell of elements C and G are 3 and 7 respectively, write the formula of the compound formed by the combination of C and G.
   a) CG
   b) CG_2
   c) CG_3
   d) CG_4

19. Read the following and answer **any four** questions from 19 (i) to 19 (v) **(4X1=4)**

Shyam participated in a group discussion in his interschool competition on the practical application of light and was very happy to won the award for his school. On that very evening, his father celebrated the day with a family dinner. At a particular moment, Shyam observed in a curve plate, the image of a person's mobile sitting on his back side. Person's mobile was fell off which the person didn't know about it. Shyam went to the person and informed about this. The person was thankful to Shyam.

(i) From which one of the following sides of the plate Shyam observed this incident?

(a) North (b) South

(c) Outward curve (d) Inward curve

(ii) The part of the curve plate was acting like which of the following type of mirror?

(a) Convex (b) Concave

(c) Plane (d) None of these

(iii) Which of the following nature and size of image formed by this mirror?

(a) Virtual, erect, diminished (b) Real, erect, diminished

(c) Inverted, erect, diminished (d) None of these

(iv) An object is placed at a large distance in front of a convex mirror of radius of curvature 40 cm. How far is the image behind the mirror?

(a) 20 cm (b) 40 cm

(c) 60 cm (d) 80 cm

(v) An object at a distance of +15 cm is slowly moved towards the pole of a convex mirror. The image will get

(a) Shortened and real (b) enlarged and real

(c) enlarge and virtual (d) diminished and virtual

20. Read the following and answer **any four** questions from 20 (i) to 20 (v) **(4X1=4)**

A student fixes a sheet of white paper on a drawing board. He places a bar magnet at the centre of it. He sprinkles some iron fillings uniformly around the bar magnet. Then he taps the board gently and observes that the iron fillings arrange themselves in a particular pattern.

(i) Inside the magnet, the field lines move

(a) from north to south (b) from south to north

(c) away from the south pole (d) away from the north pole

(ii) Which of the following statement is not correct about the magnetic field?

(a) Magnetic field lines form a continuous closed curve.

(b) Magnetic field line does not intersect each other.

(c) Direction of tangent at any point on the magnetic field line curve gives the direction of magnetic field at that point.,

(d) Outside the magnet, magnetic field lines go from South to North pole of the magnet.

(iii) A current through a horizontal power line flows from South to North direction. The direction of magnetic field line 0.5 m above it is

(a) North (b) South

(c) West (d) East

(iv) Which of the following method is applied to produce magnetic field?

(a) Bar magnet (b) Straight wire carrying current

(c) Circular coil carrying current (d) All of these

(v) Which of the following is correct property of magnetic field lines?

(a) The magnetic field lines never intersect each other

(b) Magnetic field lines are closed curve

(c) Magnetic field lines have both direction and magnitude

(d) All of these

SECTION B

21. List any two techniques that have been developed to prevent pregnancy. Which one of these techniques are not meant for males? (2)

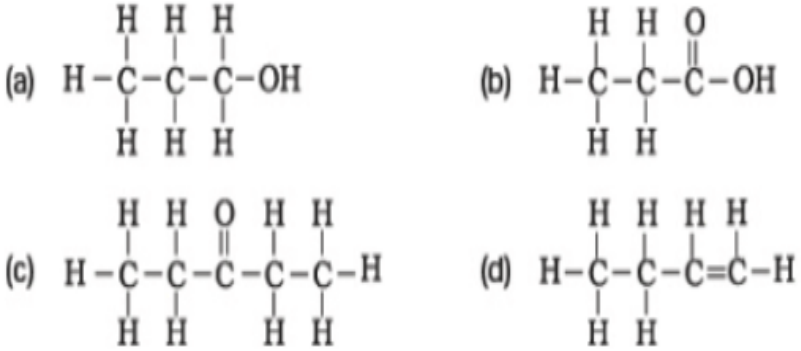
OR

How does the use of contraceptive techniques have a direct impact on the health and prosperity of a family?

22. How did Mendel explain that it is possible that a trait is inherited but not expressed in an organism? (2)

23.

Identify and name the functional groups present in the following compounds.

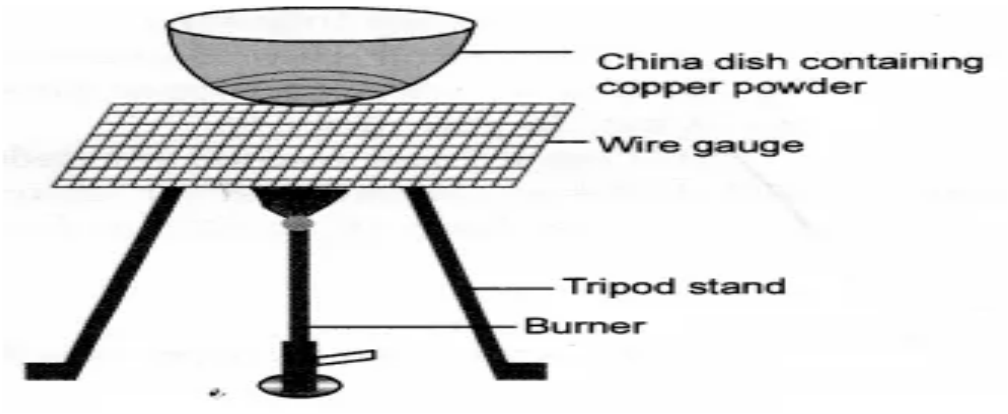


OR

Draw the electron dot structures for:

(a) Ethanoic acid
(b) Propanone

24. Study the given diagram and answer the following questions: (2)



(a) Write the chemical reaction involved in the process. Mention the colour of:

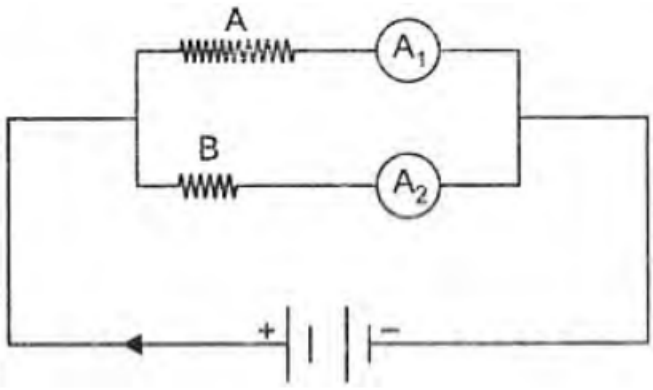
(i) Copper powder and

(ii) the substance formed after heating it.

(b) How can we reverse the above reaction? Write the equation for the reverse reaction and state the substance that undergoes oxidation and the substance that undergoes reduction.

25. Draw a neat diagram to show the refraction of a light ray through a glass prism and label on it the angle of incidence and angle of deviation. (2)

26. In the circuit diagram shown, the two resistance wires A and B are of same area of cross – section and same material, but A is longer than B, which ammeter A_1 or A_2 will indicate higher reading for current? Give reason. (2)



SECTION C

27. What are the different ways in which glucose is oxidized to provide energy in various organisms? (3)

OR

How are the lungs designed in human beings to maximize the area for exchange of gases?

28. You being an environmentalist are interested in contributing towards the conservation of natural resources. List four activities that you can do on your own. (3)

29. Describe double circulation in human beings. Why is it necessary? (3)

30. When potassium Iodide solution is added to a solution of lead nitrate in test tube, a precipitate is formed. (3)

i) State the colour precipitate

ii) Name the compound precipitated.

iii) Write balanced equation for chemical reaction.

31. (3)

Complete the following chemical reactions :

(a) $3Fe + 4H_2O \rightarrow$

(b) $Ca + H_2O \rightarrow$

(c) $K + H_2O \rightarrow$

32. The following table shows the position of six elements A, B, C, D, E and F in the Periodic table. (3)

Groups→ Periods ⬇	1	2	3to 12	13	14	15	16	17	18
2	A					B			C
3		D			E				F

Using the above table answer the following questions:

(a) Which element will form only covalent compounds?
(b) Which element is a metal with valency 2?
(c) Which element is a non-metal with valency 3?
(d) Write a common name for the family of elements C and F.
(e) Out of D and E, which one has a bigger atomic radius and why?

33. A 4.5 cm needle is placed 12 cm away from a convex mirror of focal length 15 cm. Give the location of image and magnification. Describe what happens to the image as the needle is moved farther from the mirror. (3)

SECTION D

34. (i) Indicate with the help of a diagram the variation of pH with change in concentration of $H^+(aq)$ and $OH^-(aq)$ ions. (5)

(ii) Fill the missing data in following table

	Name of salt		Salt obtained from	
	Formula		Base	Acid
1	Ammonium chloride	NH_4Cl	NH_4OH	_____
2	Copper sulphate	$CuSO_4$	_____	H_2SO_4
3	Sodium Chlorede	NaCl	NaOH	_____
4	Magnesium Nitrate	$Mg(NO_3)_2$	_____	HNO_3

(iii) Define chlor – alkali process.

OR

(i) A compound 'x' on heating with excess of conc. H_2SO_4 also react with Na metal to give colourless gas 'z' Identify 'x' 'y' and 'z' and also write the equation for formation of 'y' and also write the equation for formation of 'y' and also write the role of conc. H_2SO_4 in the reaction.

(ii) How washing soda is prepared from baking soda?

(iii) Mention any other use of washing soda.

35. (a) Write the function of each of the following parts in a human female reproductive system.

(i) Ovary (ii) Uterus (iii) Fallopian tube

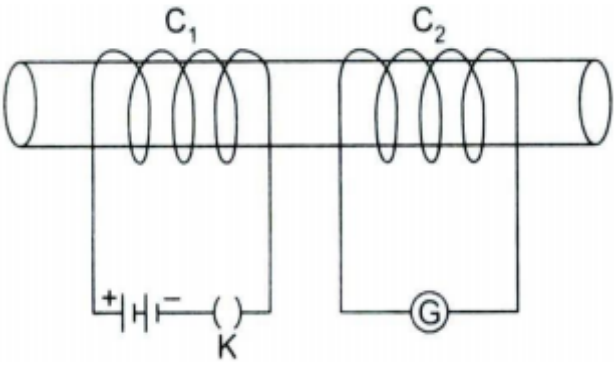
(b) Write the structure and function of the placenta in the human female.

(c) Write the name of the human male reproductive organ that produces sperm and secretes a hormone. Name the hormone secreted and state its function.

(d)Write the site of fertilisation and the part where the zygote gets implanted in the human female.

(e) State in brief, how an embryo gets its nourishment inside the mother's body. (5)

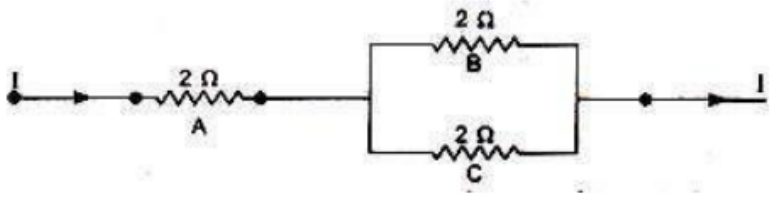
36. Two coils C_1 and $C_2$are wrapped around a non-conducting cylinder. Coil C_1 is connected to a battery and key and C_2 with galvanometer G. On pressing the key (K), current starts flowing in the coil C_1 State your observation in the galvanometer:



(i) When key K is pressed.
(ii) When current in the coil C_1 is switched off.
(iii) When the current is passed continuously through coil C_1 .
(iv) Name and state the phenomenon responsible for the above observation.
(v) Write the name of the rule that is used to determine the direction of current produced in the phenomena. (5)

OR

a) Three 2 Ω resistors A, B and C, are connected as shown in figure. Each of them dissipates energy and can withstand a maximum power of 18 W without melting. Find the maximum current that flow through the three resistors.



b) A potential difference V is applied across a conductor of length Land diameter d. How is the resistance R of the conductor affected, when in turn (i) V is halved (ii) L is halved and (iii) D is doubled? Justify your answer in each case.