JSUNIL TUTORIAL
A CBSE Coaching for Mathematics and Science

Practice Question Paper -3
2020-21
Class X
Science (086)

Time: 3 Hours **Maximum Marks: 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 be in the range of 30 to 50 words.

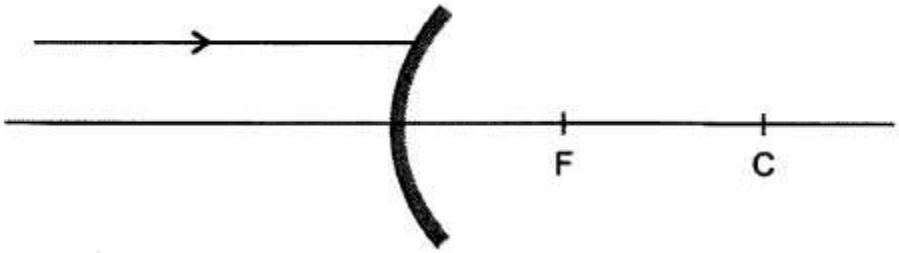
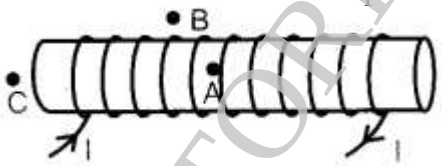
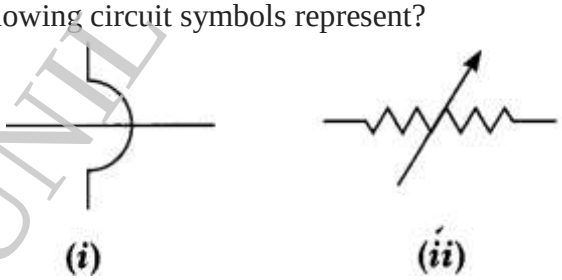
(iv) Section–C - question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should be in the range of 50 to 80 words.

(v) Section–D – question no. - 34 to 36 are long answer type questions carrying 5 marks each. Answers 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		
No.	Questions	Marks
1	Name the gas generally liberated when an acid reacts with a metal.	1
2	15 mL of water and 10 mL of sulphuric acid are to be mixed in a beaker. State the method that should be followed. **OR** Name the natural source of each of the following acids- (i) Lactic acid (ii) Tartaric acid.	1
3	What is Tyndall Effect?	1
4	How many covalent bonds are there in pentane(C_5H_{12})?	1

5	Give an example of optical phenomena which occurs in nature due to atmospheric refraction.	1
6	Redraw the diagram given below in your answer book and show the direction of the light ray after reflection from the mirror.  **OR** Why does a ray of light bend when it travels from one medium into another?	1
7	For the current carrying solenoid as shown below, draw magnetic field lines and giving reason explain that out of the three points A, B and C at which point the field strength is maximum and at which point it is minimum.  	1
8	Name the physical quantities which are indicated by the direction of thumb and forefinger in the Fleming's right hand rule?	1
9	What do the following circuit symbols represent?  (i) (ii) **OR** How is the direction of electric current related to the direction of flow of electrons in a wire?	1
10	Give one reason why multicellular organisms require special organs for exchange of gases between their body and their environment. :	1
11	Name the site of exchange of material between the blood and surrounding cells. **OR** Name the component of blood that helps in the formation of blood clot in the event of a cut.	1

12	How much percentage of solar energy is absorbed by the green plants? **OR** Name any two abiotic components of an environment.	1
13	Write the balanced chemical equation for the process of photosynthesis	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 the 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.

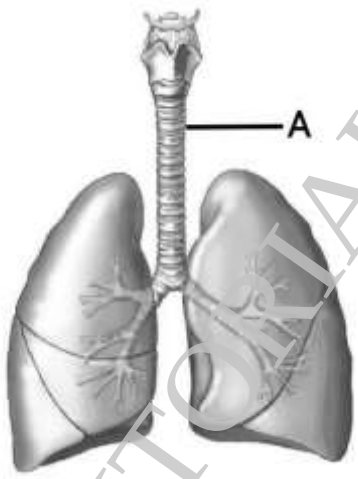
d) A is false, but R is true.

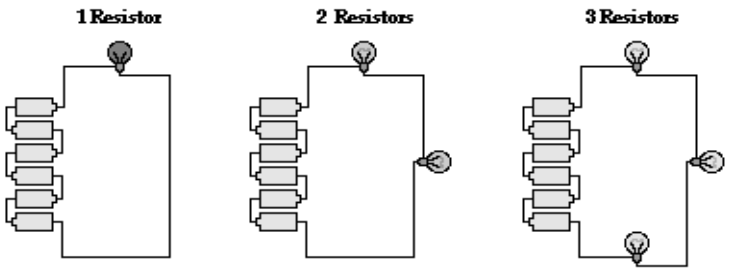
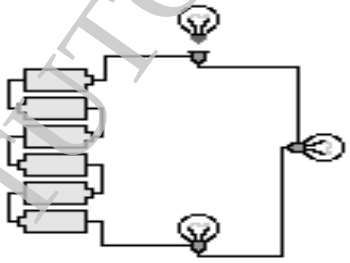
14	**Assertion**: Each step or level of the food chain forms a trophic level. **Reason**: The various components of the ecosystem are interdependent.	1
15	**Attempt any one from 15(I) and 15(II).** **(I)Assertion:** Variations arising during the process of reproduction cannot be inherited. **Reason:** Variations may lead to increased survival of the individual. **OR** **(II)Assertion:**In human beings, the sex of the child depends on whether the paternal chromosome is X (for girls) or Y (for boys) . **Reason:** In mammals primary sex determination is strictly chromosomal and is also influenced by the environment.	1
16	**Assertion:** A chemical reaction must always be balanced. **Reason:** Mass can neither be created nor destroyed in a chemical reaction.	1

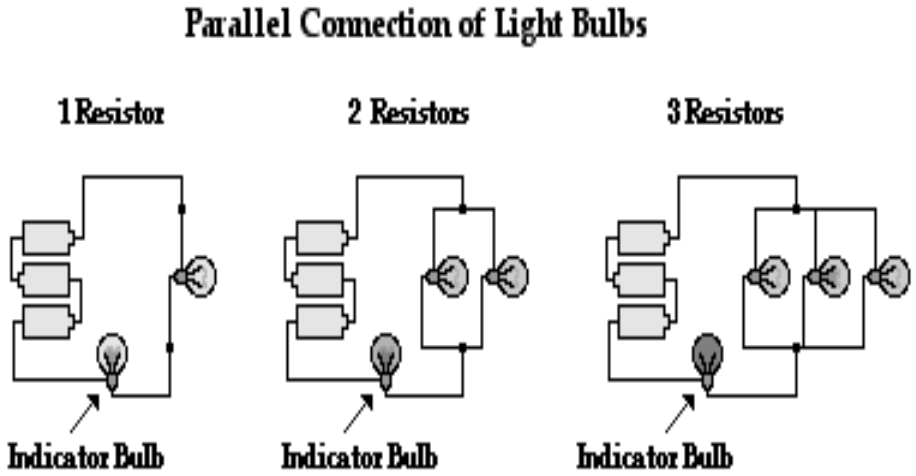
Answer Q. No 17 - 20 contain five sub-parts each. You are expected to answer any four sub parts in these questions.

17	Read the following and answer any **four** questions from 17 (i) to 17 (v) COVID-19 is a respiratory disease, one that especially reaches into your respiratory tract, which includes your lungs.Now,think of your respiratory tract as an upside-down tree. The trunk is your trachea, or windpipe. It splits into smaller and smaller branches in your lungs. At the end of each branch are tiny air sacs called alveoli.The new coronavirus travels down your airways. The lining can become irritated and inflamed. In some cases, the infection can reach all the way down into your alveoli.	1x4

17(i)	What is the function of alveoli? a. This is where SARS-CoV-2, the virus that causes COVID-19 finally affects. b.This is where plasma, proteins and blood cells escapes in the tissues c. This is where oxygen goes into your blood and carbon dioxide comes out. d. Alveoli carries fat and drains excessive fluid back into the blood.	
17(ii)	Your blood oxygen level indicates how much oxygen your red blood cells are carrying. High blood oxygenation plays an essential role in ensuring that your muscles, brain and other organs receive the energy they need to function properly. That's why it is so important to measure your current level and determine whether it is within an acceptable range. Why is it important to measure your current oxygen level? a. To know how much blood is flowing b. To know how much oxygen is flowing in the blood. c. To know how your brain is working d.To know the heart rate	
17(iii)	The lungs are the organ most commonly affected by COVID-19. If large parts of the lungs are affected, people struggle to absorb enough oxygen and are admitted to hospital. Another severe effect is acute respiratory distress syndrome (ARDS) – also known as "wet lung". This sees severe inflammation spread quickly throughout the lungs. People who develop this may need mechanical ventilation in an intensive care unit, sometimes for a prolonged period. COVID-19 has a further, unusual effect on the body. Compared to other respiratory viruses, it causes marked clotting in the small blood vessels of the lungs and other organs. How are the lungs affected by COVID-19? A. blood clotting B. Lack of oxygen C. Severe inflammation Now choose the correct option- a. A and B only b. B and C only c. None of these d. A, B and C or either of these	

17(iv)	Haemoglobin is an iron containing respiratory pigment that carries oxygen through red blood cells. Presence of haemoglobin gives metallic taste to the blood. Haemoglobin is an intracellular protein which acts as a primary vehicle for transporting 97% of oxygen in the blood. Which is not true about Haemoglobin- a) It is a respiratory pigment. b) It has a high affinity for oxygen and carbon dioxide. c) It is present in RBCs. d) Its deficiency causes anaemia.	
17(v)	 In the given picture, '**A**' represents a. Rings of cartilage which ensure that the air passage does not collapse while going into the lungs. b. Diaphragm which contracts and flattens upon inhalation . c. Alveoli where the exchange of gases can take place. d. Fine hairs for air filtration.	
18	Read the following and answer any **four** questions from 18 (i) to 18 (v). A series circuit can be constructed by connecting light bulbs in such a manner that there is a single pathway for charge flow; the bulbs are added to the same line with no branching point. As more and more light bulbs are added, the brightness of each bulb gradually decreases. This observation is an indicator that the current within the circuit is decreasing.	1x4

18 (i)	**Series Connection of Light Bulbs**  In a series combination , resistance of the circuit can be calculated by- a) multiplying all resistors together b) dividing all resistors c) adding all resistors d) Subtracting lower values from the highest value of resistor in connection.	
18 (ii)	A final observation that is unique to series circuits is the effect of removing a bulb from a socket. If one of three bulbs in a series circuit is unscrewed from its socket, then it is observed that the other bulbs immediately go out. Suppose that all the appliances like the refrigerator, the toaster, oven, and overhead light in a household kitchen were all connected in series. If current is *cut* from any one of them, it is cut from all of them.  **When one bulb is removed from its socket, the other bulbs in series "go out."** Quite obviously, the appliances in the kitchen are a) connected in series. b) not connected in series. c) not connected in parallel.. d) can not comment	
18(iii)	A study of the overall current for parallel connections requires the addition of an *indicator bulb*. The indicator bulb is placed outside of the branches and allows one to observe the effect of additional resistors upon the overall current. The bulbs that are placed in the parallel branches only provide an indicator of the current through that particular branch. So if investigating the effect of the number of resistors upon the overall current and resistance, one must make careful observations of the indicator bulb, not the bulbs that are placed in the branches. The diagram below depicts the typical observations.	



The glow of the indicator bulb indicates in the given circuits-

a. that the resistors are in series

b. the effect of additional resistors upon the overall current

c. the number of bulbs in connection

d. the presence of current in the circuit

18(iv) For parallel circuits, as the number of resistors increases, the overall current-

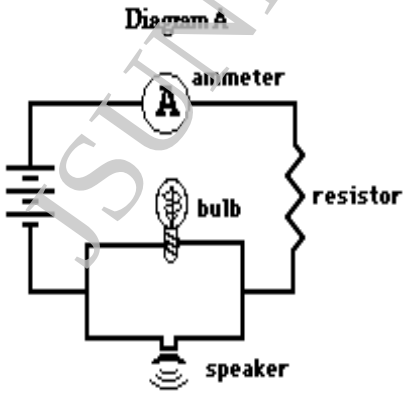
a. remains same

b.increases

c. decreases

d. Sometimes decreases, sometimes increases

18 (v) An electric circuits is diagrammed below. Indicate which two devices are connected in series and which two devices are connected in parallel respectively-



a. Bulb and resistor ; Ammeter and speaker

b. Bulb and ammeter ;Resistor and speaker

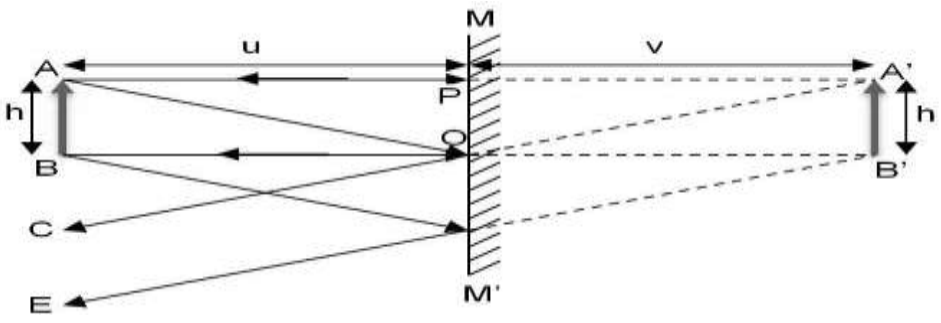
c. Bulb and speaker ; Ammeter and resistor

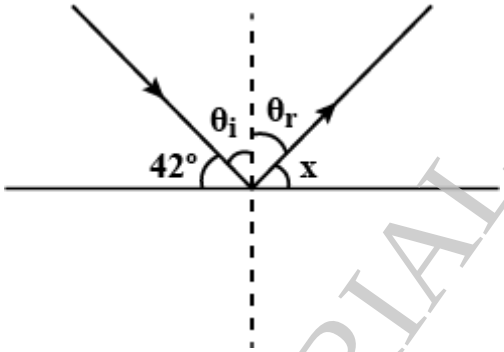
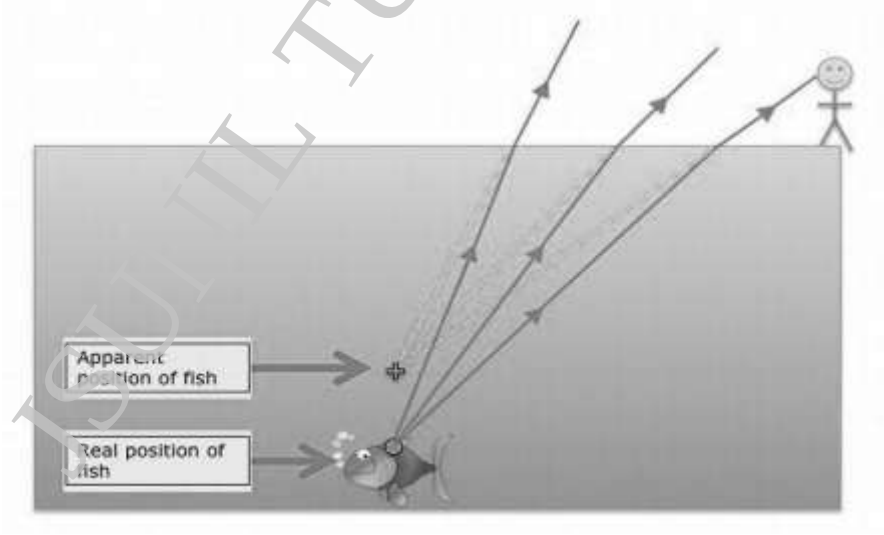
d. Ammeter and resistor ; Bulb and speaker

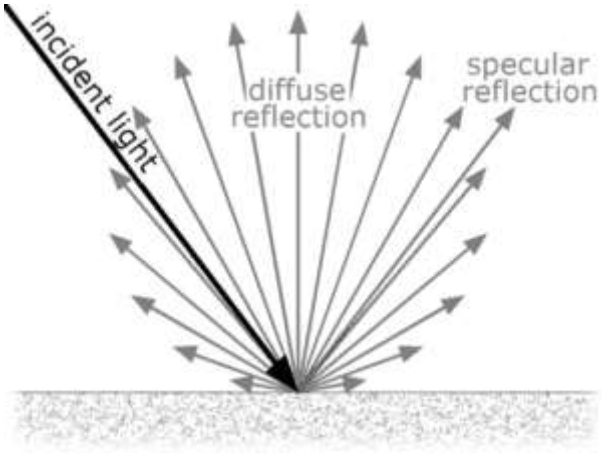
<table>
<tr><td>19</td><td>Read the following and answer any four questions from 19 (i) to 19 (v)
The technical definition of pH is that it is a measure of the concentration of the hydrogen ion (H+)
The pH scale ranges from 0 to 14.
<table>
<tr><td>0-< 7</td><td>7</td><td>> 7-14</td></tr>
<tr><td>acidic</td><td>neutral</td><td>basic</td></tr>
</table>
In general, a water with a pH < 7 is considered acidic and with a pH > 7 is considered basic. The normal range for pH in surface water systems is 6.5 to 8.5 and for groundwater systems 6 to 8.5.
The pH of pure water (H_20) is 7 at 25°C, but when exposed to the carbon dioxide in the atmosphere this equilibrium results in a pH of approximately 5.2. Because of the association of pH with atmospheric gasses and temperature, it is strongly recommended that the water be tested as soon as possible.
In general, a water with a low pH (< 6.5) could be acidic, soft, and corrosive, which could cause premature damage to metal piping, and have associated aesthetic problems such as a metallic or sour taste, staining of laundry, and the characteristic "blue-green" staining of sinks and drains . The primary way to treat the problem of low pH water is with the use of a neutralizer.

Water with a pH > 8.5 could indicate that the water is hard. Hard water does not pose a health risk, but can also cause aesthetic problems as mentioned earlier.</td><td>1x 4</td></tr>
<tr><td>19 (i)</td><td>The pH scale indicates-
a. concentration of halogen
b. concentration of hydroxide
c. concentration of hydrogen
d. concentration of helium</td><td></td></tr>
<tr><td>19 (ii)</td><td>The substance is acidic when kits pH lies between the range-
a. 0-14
b. 0-7
c. 1-7
d. 7-14</td><td></td></tr>
<tr><td>19(iii)</td><td>What is the pH value of Rainwater?
a. approx. 5.2
b. >8.5
c. 7
d. approx. 6.5</td><td></td></tr>
</table>

19 (iv)	pH of Hard water can be- a. <7 b. >7 c. >8.5 d. <6.5	
19 (v)	pH of some Common Liquids Vinegar: 3.0 Coffee: 5.0 Milk: 6.3-6.6 Pure Water: 7.0 Seawater: 8.3 Among these liquids which is the most acidic- a. Vinegar b. Seawater c. Milk d. Pure water	

20	Read the following and answer any 4 questions from 20 (i) to 20 (v). When a ray of light falls on any object (polished, smooth, shiny object), light from the object bounces back those rays of light to our eyes.	1x4
20 (i)	What is this phenomenon known as- a. Reflection of light b. Refraction of light c. Dispersion of light d. Scattering of light	
20 (ii)	**Image Formation by a Plane Mirror**  	

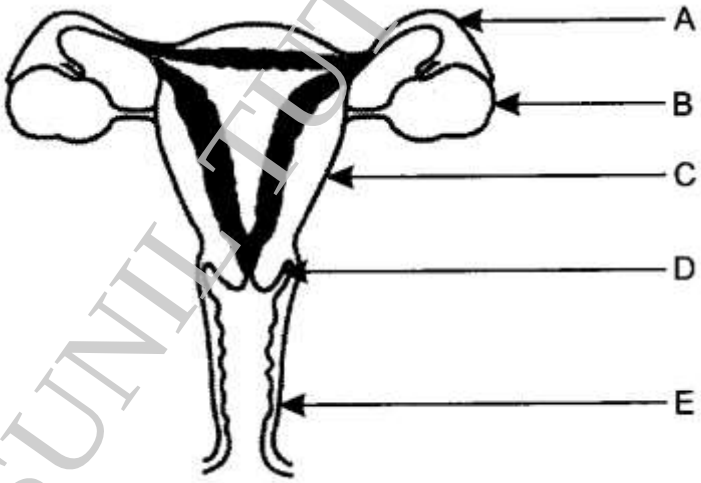
	Which is not true about the Characteristics of Images formed by Plane Mirror a. Images formed by a plane mirror are "Always Real andVirtual". b. Images formed by a plane mirror are "Erect/Upright". c. Images formed by a plane mirror are of "same shape and size" as that of an object. d. Images formed by a plane mirror are always at the same distance from the mirror.	
20 (iii)	In the diagram given below, find the angle of incidence:  a. 42^o b. 90^o c. 48^o d. 58^o	
20 (iv)	 A person above the water sees- a. The real position of the fish closer to the surface than the apparent position of the fish. b. the apparent position of the fish closer to the surface than the real position of the fish. c. Both the positions- real position and apparent position of the fish are one and the same. d. Cannot say anything about the position of the fish.	

20 (v)	 Two types of reflection are shown in the given picture. Which type of reflection doesn't form an image. a. Regular reflection b. Diffused reflection c. Regular refraction d. Diffused refraction	
	SECTION B	
21	State the role of the following in human digestive system : (i) Digestive enzymes (ii) Hydrochloric acid **OR** Why do the walls of the trachea not collapse when there is less air in it?	2
22	State any two differences between autotrophic nutrition and heterotrophic nutrition.	2
23	What is a homologous series? Which two of the following organic compounds belong to the same homologous? CH_3 ,C_2H_6, C_2H_6O, $C_2H_6O_2$,CH_4O **OR** Give reasons for the following: (a)Diamond has a high melting point. (b)Graphite is a good conductor of electricity.	2

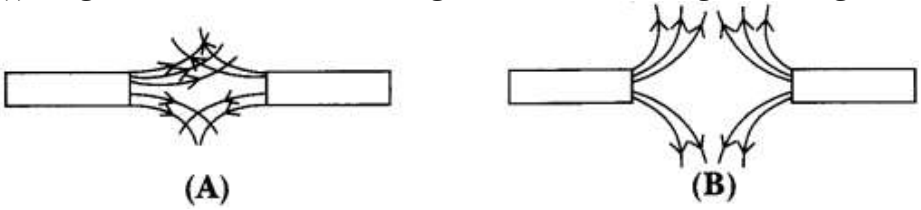
24	(i) Why do calcium found in the form of its compounds and gold in its free state? (ii) Name one lustrous non-metal.	2
25	Give reasons: (i) The extent of deviation of a ray of light on passing through a glass prism depends on its colour. (ii) Lights of red colour are used for danger signals.	2
26	How much current will an electric bulb draw from 220 V source if the resistance of the bulb is 1200Ω? If in place of bulb, a heater of resistance 100 Ω is connected to the sources, calculate the current drawn by it.	2

	Section C	
27	A blue colour flower plant denoted by BB is crossbred with that of white colour flower plant denoted by bb. (a) State the colour of flowers you would expect in their F1 generation plants. (b) What must be the percentage of white flower plants in F2 generation if flowers of F1 plants are self-pollinated? (c) State the expected ratio of the genotypes BB and Bb in the F2 progeny. **OR** State the meaning of inherited traits and acquired traits. Which of the two is not passed on to the next generation? Explain with the help of an example.	3
28	Why bacteria and fungi are called decomposers? List any two advantages of decomposers to the environment.	3
29	(a) Draw a diagram to show the nutrition in Amoeba and label the parts used for this purpose. Mention any other purpose served by this part other than nutrition. (b) Name the glands associated with digestion of starch in the human digestive tract and mention their role. (c) How is required pH maintained in the stomach and small intestine?	3

30	A Name the type of chemical reaction represented by the following equation: (i) $CaO + H_2O \longrightarrow Ca(OH)_2$ (ii) $3BaCl_2 + Al_2(SO_4)_3 \longrightarrow 3BaSO_4 + 2AlCl_3$ (iii) $2FeSO_4 \xrightarrow{heat} Fe_2O_3 + SO_2 + SO_3$	3
31	The position of three elements A, B and C in the Periodic Table is shown below: **Group 16** | **Group 17** - | - - | A - | - **B** | **C** Giving reasons, explain the following: (a) Element A is a non-metal. (b) Element B has a larger atomic size than element C. (c) Element C has a valency of 1	3
32	State three reasons for the following facts (i) Sulphur is a non-metal (ii)Magnesium is a metal One of the reasons must be supported with a chemical equation.	3
33	The formation of rainbow in the sky happens because of which phenomenon of the light? Explain with the help of a diagram.	3
	Section D	
34	State reason for the following statements: (i) Tap water conducts electricity whereas distilled water does not. (ii) Dry hydrogen chloride gas does not turn blue litmus red whereas dilute hydrochloric acid does. (iii) During the summer season, a milkman usually adds a very small amount of baking soda to fresh milk. (iv) For a dilution of acid, acid is added into water and not water into acid. (v) Ammonia is a base but does not contain hydroxyl group.	5

	OR Equal length of magnesium ribbon are taken in two test tubes 'A' and 'B\ H_2SO_4 is added to test tube 'A' and H_2CO_3 in the test tube 'B' in equal amounts: (a) Identify the test tube showing vigorous reaction. (b) Give reason to support your answer. (c) Name the gas liberated in both the tubes. How will you prove its liberation? (d) Write chemical equations for both reactions. (e) Out of the two acids taken above which one will have (i) lower pH value (ii) lower H^+ concentration respectively.	
35	(a) Name the parts labelled A, B, C, D and E.  (b) Where do the following functions occur? (i) Production of an egg (ii) Fertilisation (iii) Implantation of zygote. (c) What happens to the lining of uterus: (i) before release of a fertilised egg? (ii) if no fertilisation occurs?	5

36	(i) Magnetic field lines of two magnets are shown in fig. A and fig. B.	5



(A) (B)

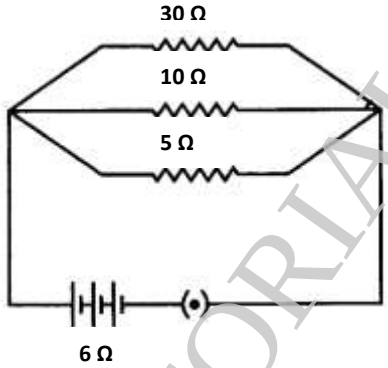
Select the figure that represents the correct pattern of field lines. Give reasons for your answer. Also name the poles of the magnets facing each other.

(ii)Draw the pattern of magnetic field lines due to current carrying straight conductor.

OR

Two wires A and B are of equal length and have equal resistance. If the resistivity of A is more than that of B which wire is thicker and why?

For the electric circuit given below calculate:



(i) Current in each resistor,

(ii) Total current drawn from the battery, and

(iii) Equivalent resistance of the Circuit