



B.KUMAR'S ACADEMY

Subject : Science -I

QUESTION PAPER

Total Marks : 20

Class : X

1. Gravitation

Time : 45 Min.

Q. 1 : A) Choose the correct alternatives.

(1+1=2)

- 1) Which of the following statement is correct?
 - a) Mass is constant and weight is variable.
 - b) Mass is variable and weight is constant
 - c) Both mass and weight are variable
 - d) Both mass and weight are constant.
- 2) Escape velocity for an object resting on earth is given by the formula.
 - a) $\sqrt{\frac{2GM}{R}}$
 - b) $\frac{2GM}{R}$
 - c) $\frac{GM}{R+h}$
 - d) $\sqrt{\frac{GMm}{(R+h)^2}}$

Q.1 : B) Solve the following questions (Any One).

(01)

- 1) State whether the following statement is true or false.
The value of g increases with altitude.
- 2) Define centripetal force.
- 3) Considering first correlation complete the second
Acceleration due to gravity : m/s^2 :: Gravitational constant : -----

Q.2 : A) Give scientific reason (Any One).

(02)

- 1) The weight of a body is different on different planets.
- 2) The value of g is zero at the centre of the earth.

Q. 2 : B) Solve the following questions (Any Two)

(2+2=4)

- 1) Distinguish between mass and weight.
- 2) Define: a) Freefall, b) Acceleration due to gravity.

3) Why does low and high tides occur?

Q. 3 : Answer the following questions (Any 2)

(3+3=6)

- 1) Why does the feather and the stone do not reach the ground at the same time?
- 2) Write a short note on Gravitational waves.
- 3) State and explain Newton's law of Gravitation.
- 4) If a person weight 750N on earth, how much would be his weight on the Moon given that Moon's mass is $1/81$ of that of the earth and its radius is $1/3.7$ of that of the earth?

Q. 4 : Attempt any one of the following.

5

1) In the following figure, an orbit of a planet around the Sun (S) has been shown. AB and CD are the distances covered by the planet in equal time. Lines AS and CS sweep equal areas in equal intervals of time. Hence, areas ASB and CSD are equal.

(a) Which laws do we understand from the above description?

1

(b) Write the law regarding the area swept.

2

(c) Write the law $T^2 \propto r^3$ in your words.

2

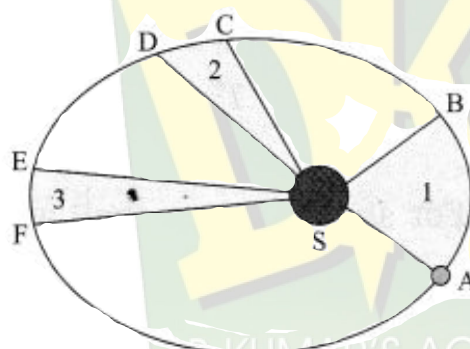


Fig. 1.7 (Schematic diagram)

OR

What happens to the magnitude of the force of gravitation between two objects if

(a) The distance between the object is tripled?

1

(b) Mass of both objects is doubled?

2

(c) Mass of both objects as well as distance between them is doubled?.

2



B.KUMAR'S ACADEMY

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2. Periodic Classification of Elements

Time : 45 Min.

Q. 1 : A) Choose the correct alternative.

(1+1=2)

- 1) Element X forms a chloride with the formula XCl_2 which is a solid with a high melting point. X would most likely be in the same group of the periodic table as :
a) Na b) Mg c) Al d) Si
- 2) Alkaline earth metal's valency is two, this means that their position in the modern periodic table is in _____.
a) Group 2 b) Group 16 c) Period 2 d) d-block

Q. 1 : B) Solve the following questions (Any One)

(01)

- 1) Match the following

'A'	'B'
a) Triad	a) Properties of eighth element similar to the first
b) Octave	b) Sequential change in molecular formulae
	c) Average of the first and the third atomic mass.

- 2) $_{13}\text{Al}$, $_{14}\text{Si}$, $_{11}\text{Na}$, $_{12}\text{Mg}$, $_{16}\text{S}$ Which of the following elements has the highest metallic character?
- 3) Write the name and symbol of the element from the description.

The most reactive non metal.

Q. 2 : A) Give scientific reason (Any One)

(02)

- 1) Elements belonging to the same group have the same valency
- 2) Fluorine is more electronegative than Iodine.

Q. 2 : B) Solve the following questions (Any Two)

(2+2=4)

- 1) State Mendeleev's periodic law.

- 2) Write the atomic numbers of two elements 'x' & 'y' having electronic configurations 2, 8, 2 & 2, 8, 6 respectively.
- 3) Name any two
 - i) elements having valency 4.
 - ii) non metals having valency 3
- 4) What is mean by dobereiner's triads? Explain with example.

Q. 3 : Solve the following questions (Any 2)

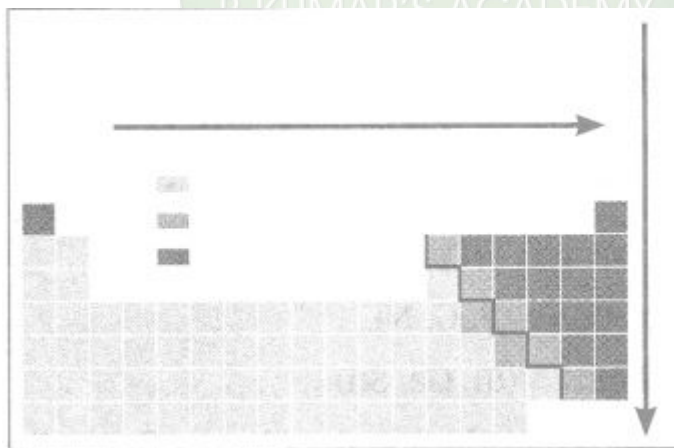
(3+3=6)

- 1) Distinguish between
Mendeleev's periodic table and modern periodic table (any three points)
- 2) An element has its electronic configuration as (2, 8, 2). Now answer the following questions.
 - a) What is the group of this element?
 - b) In which period does this element belong?
 - c) With which of the following elements would this element resemble
(N, Be, Ar, Cl)
- 3) Metallic character goes on decreasing while going from left to right in a period. Explain.
- 4) Distinguish between group 1 and group 2 elements.

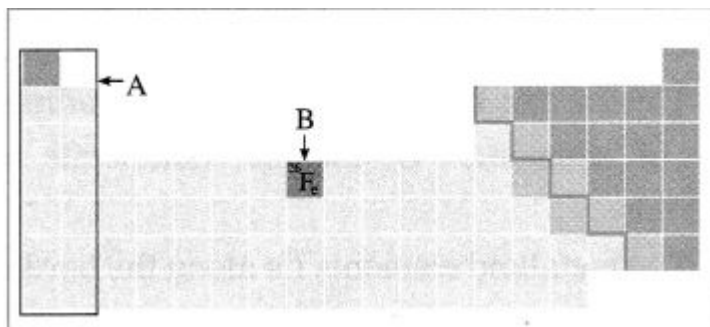
Q. 4 : Solve the following question (Any One)

(05)

- 1) write the answers to the questions with reference to the structure of the periodic table.



- (a) How many groups and periods are present in modern periodic table? 1
- (b) write the name of blocks indicated? 1
- (c) Which elements are present near the zig-zag line? 1
- (d) Draw the electronic configuration of the second-row elements of first group in the periodic table. 2
- 2) Observe the figure and answer the following questions.



- (a) Identify the block shown by box A
- (b) write an electronic configuration of any one element of box A
- (c) Identify the block of element denoted by letter B
- (d) write box B period number.
- (e) Which groups are present in d-block?

B.KUMAR'S ACADEMY



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Total Marks : 20

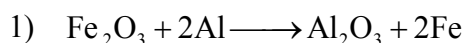
Class : X

3. Chemical Reactions and Equations

Time : 45 Min.

Q. 1 : A) Choose the correct alternatives :

(1+1=2)



The above reaction is an example of a

- a) Combination b) double displacement
c) decomposition d) displacement

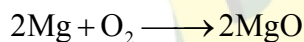
2) Which among the following changes are exothermic in nature?

- a) Formation of ice b) Dissolution of sodium hydroxide
c) Both a & b d) None of these

Q. 1 : B) Solve the following question (Any One)

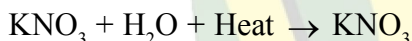
(01)

1) Identify from the following reactions that which element undergo oxidation and reduction.



2) Define corrosion.

3) Identify the type of reaction



Q. 2 : A) Give scientific reason(Any One)

(02)

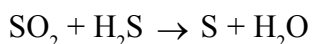
1) It takes time for pieces of shahabad tile to disappear in HCl but its powder disappears rapidly.

2) It is recommended to use air tight container for storing oil for long time.

Q. 2 : B) Solve the following equation (Any Two)

(2+2=4)

1) Balance the following equation stepwise



2) Explain the following term with example

- a) Combination reaction b) decomposition reaction

3) Write the difference between oxidation and reduction reaction.

4) Define rancidity.

Q. 3 : Solve the following questions (Any Two)

(3+3=6)

1) How can the rate of the chemical reaction, namely, decomposition of hydrogen peroxide be increased?

- Define displacement and double displacement reactions write equations for these reactions.
- Study the entries in the following table and rewrite them putting the connected items in a same row.

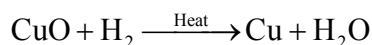
Reactant	Product	Types of chemical reaction
Fe + S	2CuO	Oxidation
CuSO ₄ + Zn	ZnSO ₄ + Cu	displacement
2Cu + O ₂	Fes	combination

- What is the reaction called when oxidation and reduction take place simulataneously? Explain with one example.

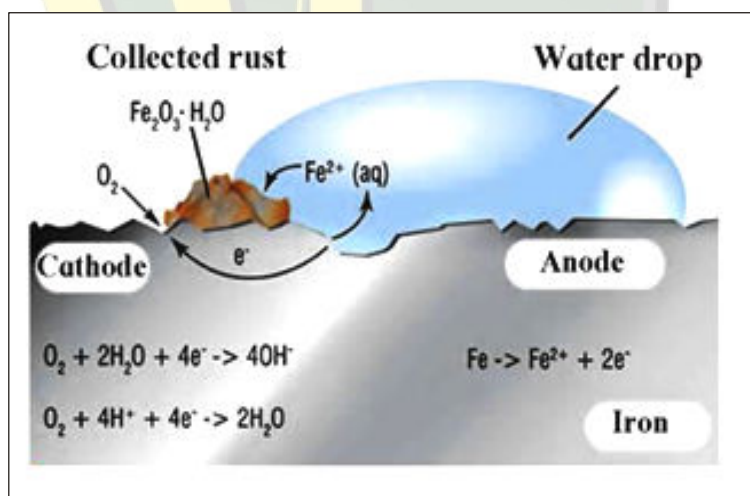
Q. 4 : Solve the following question (Any One).

(05)

- Consider the chemical equation given below and answer the question that follow.



- Name the substance which is getting oxidised.
 - Name the oxidising agent.
 - Name the substance which is getting reduced.
 - Name the reducing agent.
 - What type of a reaction does this equation represent?
- Observe the following picture and write down the answer of the following questions.



- Which process is shown in the figure?
- Explain the chemical reaction shown in the figure.
- Write the reactions on anode and cathode



B.KUMAR'S ACADEMY

Subject : Science-I

Class : X

QUESTION PAPER

4. Effects of electric current

Total Marks : 20

Time : 45 Min.

Q. 1 A) Choose the correct alternative :

(1+1=2)

- 1) The phenomenon of electromagnetic induction is :
 - a) The process of changing a body.
 - b) the process of generating magnetic field due to a current passing through a coil.
 - c) Producing induced current in a coil due to relative motion between a magnet and the coil.
 - d) The process of rotating a coil of an electric motor.
- 2) The essential difference between an AC generator & a DC generator is that.
 - a) AC generator has an electromagnet while a DC generator has permanent magnet.
 - b) DC generator will generate a higher voltage.
 - c) AC generator will generate a higher voltage
 - d) AC generator has split rings while DC generator has a commutator.

Q. 1 B) Solve the following questions (Any One).

(01)

- 1) Find the odd one out
Fuse wire, bad conductor, rubber gloves, generator.
- 2) Why does two magnetic field of lines never intersect?
- 3) Match the following

'A'	'B'
i) Electric current	i) ohm
ii) Electric power	ii) Ampere
	iii) watt

Q. 2 : A) Give scientific reason (Any One)

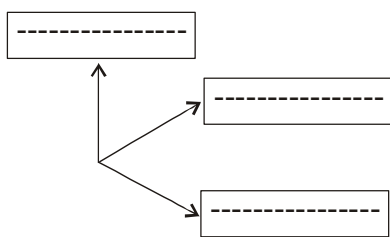
(02)

- 1) For electric power transmission, copper or aluminium wire is used.
- 2) In the electric equipment producing heat e.g. iron, electric heater, boiler, toaster etc an alloy such as Nichrome is used not pure metal.

Q. 2 : B) Solve the following questions (Any Two)

(2 +2=4)

- 1) State right hand thumb rule.
- 2) Which appliance will consume more electrical energy, 500 W TV set in 30mins or 600 W heater in 20 mins?
- 3) State Fleming's left hand rule and label the following diagram.

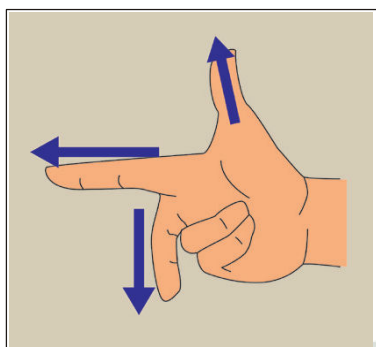


- 4) State Joule's law of heating.

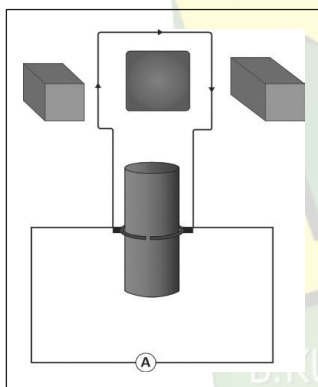
Q. 3 : Solve the following questions (Any Two).

(3+3=6)

- 1) Name the following diagram and explain



- 2) How does the short circuit occur? What is its effect?
 3) Heat energy is being produced in a resistance in a circuit at the rate of 100 W. The current of 3A is flowing in the circuit. What must be the value of the resistance?
 4) Observe the figure and answer the following questions.



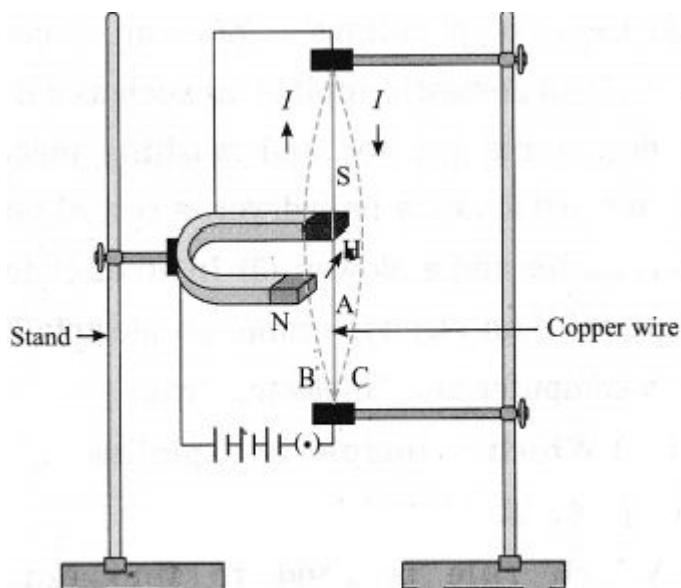
- a) Identify the machine shown in figure
 b) Write a use of this machine
 c) How transformation of energy takes place in this machine?

Q. 4 : Solve the following question (Any One)

(05)

- 1) (i) Which principle is explained in this figure?

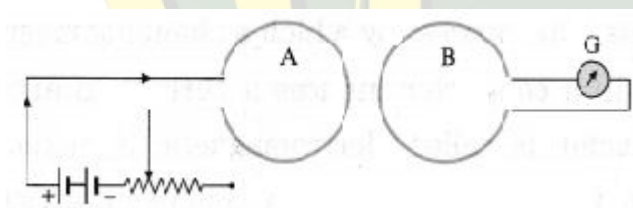
1



(ii) Which rule is used to find out the direction of force in this principle? 1

(iii) In which machine is this principle used? Draw a diagram showing the working of that machine. 2

2) Observe the following figure and answer the following questions.



a) If the current in the coil A is changed, will some current be induced in the coil B? 1

b) Which phenomenon is used in this experiment? 1

c) What is electromagnetic induction? 2

B.KUMAR'S ACADEMY



B.KUMAR'S ACADEMY

Subject : Science -I

Question Paper

Total Marks : 20

Class : X

5. Heat

Time : 1 Hour

Q.1 A : Choose the correct alternative :

2

- 1) The amount of water vapour in air is determined in terms of its
 - a) Humidity
 - b) Rancidity
 - c) Fluidity
 - d) None of the above.
- 2) During transformation of liquid phase to solid phase the latent heat is
 - a) Solidification
 - b) Fusion.
 - c) Vaporization
 - d) None of the above

B. Solve the following question. (Any One).

1

- 1) State whether the following statement is true or false
During transition of solid phase to liquid temperature of object increases.
- 2) Complete the analogy
SI unit of heat : _____ : : CGS unit of heat : _____
- 3) Define one cal heat.

Q. 2 : A) Give scientific reason. (Any One)

2

- 1) Aquatic plants and animals can survive even when atmospheric temperature goes below 0°C .
- 2) During winter season a white trail at back of flying plane is observed in a clear sky.

Q. 2 : B) Solve the following questions. (Any Two)

4

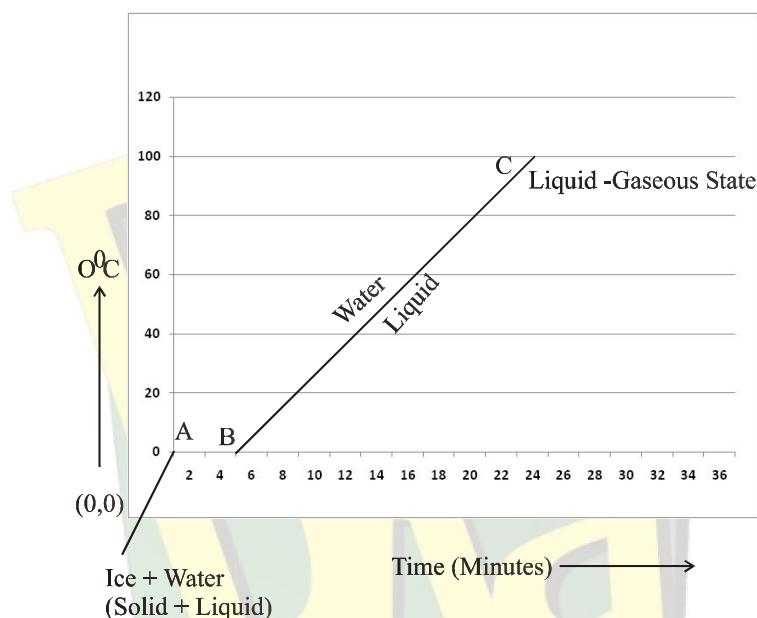
- 1) How much heat energy is necessary to raise the temperature of 5kg of water from 20°C to 100°C ?
- 2) Write down the units of specific heat capacity.
- 3) What is relative humidity & % relative humidity?
- 4) What is the dew point temperature?

Q. 3 : Solve the following questions. (Any Two)**6**

- 1) Explain regelation.
- 2) Explain the role of latent heat in change of state of a substance.
- 3) A Calorimeter has mass 100 g and specific heat $0.1 \text{ kcal/kg}^\circ\text{C}$. It contains 250 g of liquid at 30°C having specific heat of $0.4 \text{ kcal/kg}^\circ\text{C}$. If we drop a piece of ice of mass 10g at 0°C what will be the temperature of mixture?
- 4) Which principle is used to measure specific heat capacity of a substance?

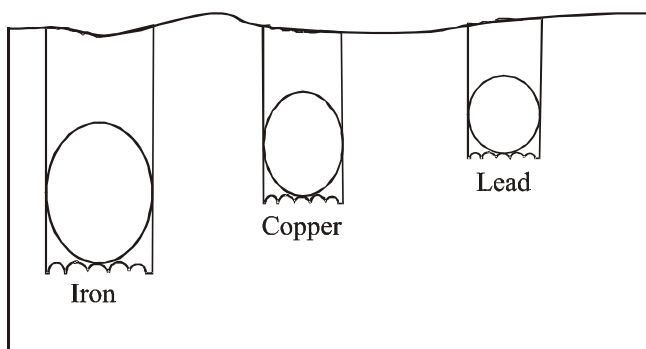
Q. 4 : Solve the following question. (Any One)**5**

- 1) Observe the following temperature v/s time graph.and answer the following question



- a) What is represented by line AB? 1
- b) Why the temperature remains constant when ice is converted into liquid? 2
- c) What is the temperature represented by line BC? 1
- d) What is represented by line CD? 1

2) Observe the following diagram and answer the following question



- | | |
|---|---|
| a) What is meant by specific heat capacity? | 2 |
| b) Which sphere absorb more heat? | 1 |
| c) Which sphere is having more specific heat? | 1 |
| d) Upto what depth the copper sphere goes inside the wax? | 1 |





B.K.KUMAR'S ACADEMY

Subject : Science -I

Class : X

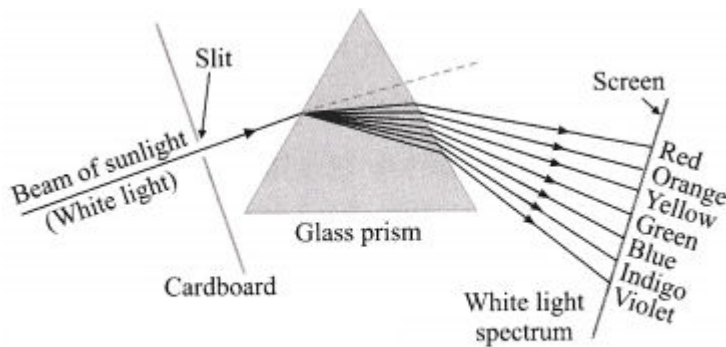
Question Paper

6. Refraction of Light

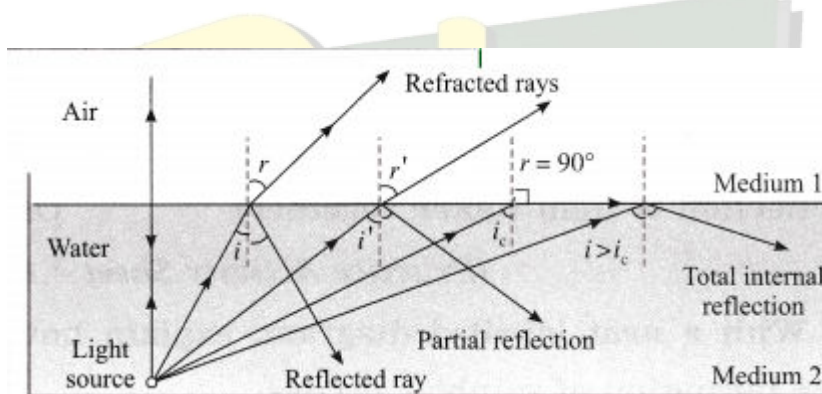
Total Marks : 20

Time : 1 Hour

- Q.1: A) Choose the correct alternative :** **2**
- 1) When white sunlight passes through a glass prism ----- ray deviates the most.
a) Red b) Blue c) Violet d) Green
 - 2) When ray of light are incident on glass slab then incident ray and emergent ray are ----- to each other.
a) Perpendicular b) Parallel c) Opposite d) Concurrent
- B) Solve the following question. (Any One)** **1**
- 1) Give the corelation.
Refractive index of air : _____ : Refractive index of glass : 1.52
 - 2) State whether the following statement is true or false.
The wavelength of light depends on velocity of light in that medium.
 - 3) Define - Refraction of light.
- Q.2: A) Give scientific reason. (Any Two)** **2**
- 1) Stars twinkle at night.
 - 2) The sun is seen on the horizon a little before sunrise and even after sunset for same time.
- B) Solve the following question. (Any One)** **4**
- 1) The absolute refractive index of water is 1.36. What is the velocity of light in water?
(velocity of light in vacuum 3×10^8 m/s)
 - 2) Define: a) Dispersion of light
b) Absolute refractive index.
 - 3) State the laws of refraction.
 - 4) Explain the concept of mirage.
- Q.3: Solve the following questions. (Any Two)** **6**
- 1) With neat diagram explain the dispersion of light
 - 2) Explain - A rainbow is the combined effect of refraction, dispersion and total internal reflection of light.
 - 3) Will the light travels through glass slab with same velocity as it travels in air? Why?
 - 4) What is refractive index of second medium wrt first medium, if light moves through first medium with a velocity 2×10^8 m/s which changes to 1.25×10^8 m/s in second medium?
- Q. 4: Solve the following question. (Any One)** **5**
- 1) **Observe the following diagram and answer the following question**



- a) What is spectrum? 2
 - b) Which colour of light is deviate most? 1
 - c) Which colour of light is deviate least? 1
 - d) Which colour is having more wavelength? 1
- 2) **Observe the following diagram and answer the following question**



- a) Define total internal reflection. 2
- b) Define critical angle. 1
- c) In the above light is going from which medium? 1
- d) Define partial reflection. 1



B.KUMAR'S ACADEMY

Subject : Science -I

Question Paper

Total Marks : 20

Class : X

7. Lenses

Time : 1 Hour

Q.1: A) Choose the correct alternative :

2

- 1) A small aperture in iris which controls intensity of light is called -----.
a) Eye lens b) Eye ball c) Pupil d) Cornea
- 2) The lens which is thin at centre and thick at edges is ----
a) Convex lens b) Cancave lens c) Biconvex d) Both b and c

B) Solve the following question. (Any One)

1

- 1) Find the odd man out
Medical equipment, torch, scanner, spectograph
- 2) Complete the analogy
Convex lens : Converging lens : : Cancave lens : -----
- 3) Write true or false
The power of lens depends on its focal length

Q.2: A) Give scientific reason. (Any One)

2

- 1) A concave lens is used to correct myopia.
- 2) In old age bifocal lens is necessary for some person.

B) Solve the following question. (Any Two)

4

- 1) Explain the terms a) centre of curvature b) Optical centre
- 2) What is lens formula?
- 3) What is persistence of vision? Why one can sense color only in bright light?
- 4) A concave lens of focal length 12 cm and convex lens of focal length 20 cm are kept in contact with each other. Find the focal length of their combination and its power.

Q.3: Solve the following questions. (Any Two)

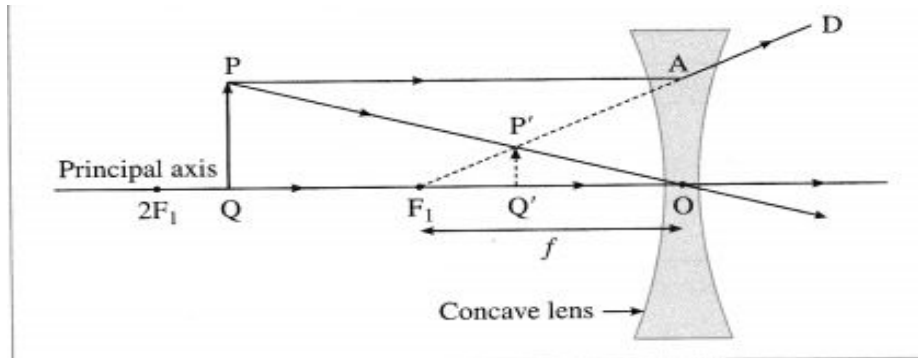
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- 1) At which position will you keep an object in front of a convex lens so as to get a real image of the same size as the object? Draw a figure.
- 2) What is the Cartesian sign convention used for lens?
- 3) At what distance from a convex lens of focal length 2.5 m should a boy stand so that his image is half of his height?
- 4) What is the function of iris and the muscles connected to the lens in the human eye.

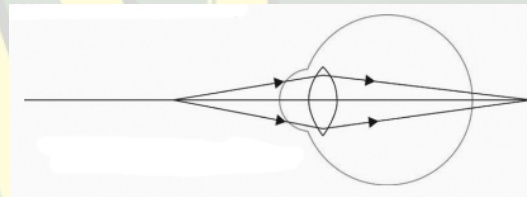
Q. 4: Solve the following question. (Any One)

5

1) Observe the following diagram and answer the following question



- i) Write the position of the object.
 - ii) Write the position of the image.
 - iii) What is the nature of the image?
 - iv) What is the size of the image?
 - v) What is the sign of focal length in a concave lens?
- 2) Given below is a diagram showing a defect of human eye. Study it and answer the following question.



- i) Name and define the defect shown in the figure.
- ii) Give two possible reasons for this defect of the eye in a human being.
- iii) Name the type of lens used to correct the defect.
- iv) Draw a well-labelled diagram to show how the defect is rectified by using the lens.

B.KUMAR'S ACADEMY



B.KUMAR'S ACADEMY

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Class : X

Question Paper

Topic : 8. Metallurgy

Total Marks : 20

Time : 1 Hour

Q. 1 : A) Choose the correct alternative :

2

1) The earthy impurities associated with mineral used in metallurgy are called.

- a) Slag b) Flux
- c) Gangue d) Mineral

2) A process employed for the concentration of sulphide ore is.

- a) Froth flotation b) Roasting
- c) Electrolysis d) Bessemerisation

B) Solve the following question. (Any One)

1

1) Write name and molecular formula of the common ore of aluminium.

2) Give correlation

Bronze : Copper and Tin :: Stainless steel : _____

3) State true or false.

The melting and boiling points of ionic compounds are low.

Q. 2 : A) Give scientific reason. (Any One)

2

1) Cryolite is added to alumina in the electrolysis.

2) Calcium floats over water during the reaction with water.

B) Solve the following question. (Any Two)

4

1) State four properties of ionic compounds.

2) Write and explain the reaction when steam is passed over aluminium.

3) Define : i) Calcination ii) Galvanising

4) Why sodium is always kept in Kerosene?

Q. 3 : Solve the following questions. (Any Two)

6

1) Divide the metals Cu, Zn, Ca, Mg, Fe, Na, Li into three groups namely reactive metals, moderately reactive metals and less reactive metals.

2) The electronic configuration of metal 'A' is 2, 8, 1 that of metal 'B' is 2, 8, 2 which of the two metals is more reactive? write their reaction with dilute hydrochloric acid.

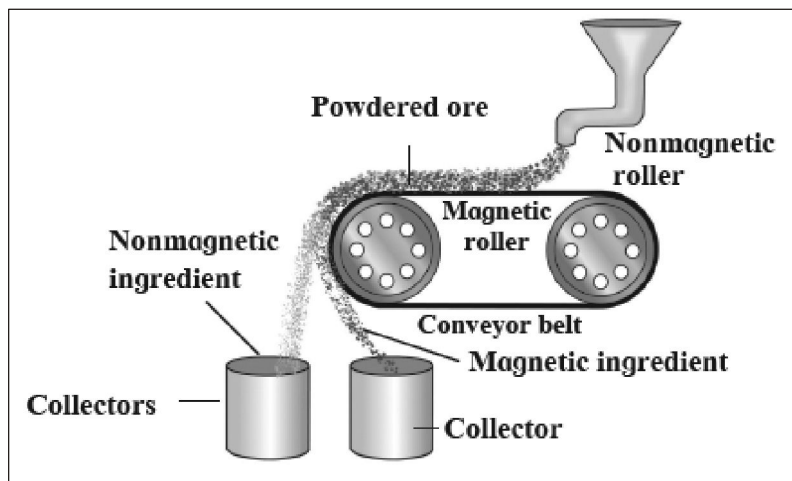
3) Explain any three chemical properties of metals with examples and reaction.

4) Explain Corrosion of metals and methods of preventing corrosion.

Q. 4 : Solve the following questions. (Any One)

5

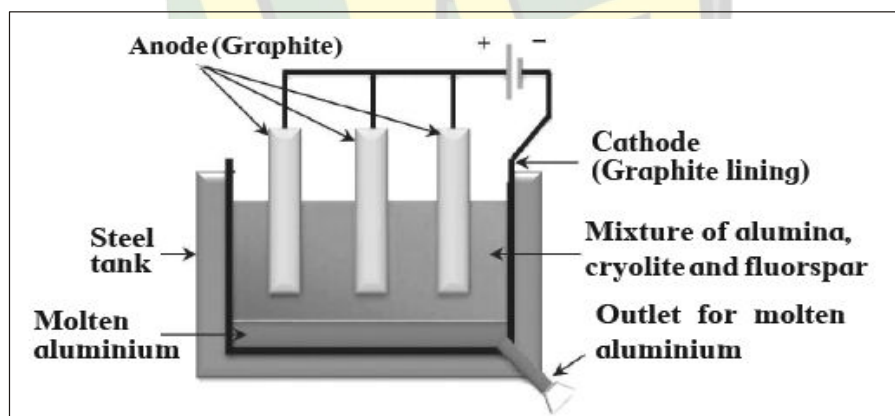
1) Answer the following question with reference to diagram.



Magnetic Separation

- Which machine is used in the magnetic separation method?
- Name the two parts of electromagnetic machine.
- Name the magnetic and nonmagnetic ingredients of tin ore.
- From which conveyor belt is made up of?
- Name of ore of tin.

2) Answer the following question with reference to diagram.



- Which process of extraction shown in figure?
- Write cathode reaction.
- Why cryolite is mixed with molten alumina?
- Write the molecular formula of cryolite and fluorspar.
- Which gas is liberated at anode?

* * *



B.KUMAR'S ACADEMY

Subject : Science -I

Question Paper

Total Marks : 20

Class : X

9. Carbon Compounds

Time : 1 Hour

Q. 1 : A) Choose the correct alternative :

2

1) The first compound to be prepared in the laboratory was -----.

- a) Methane b) Ethyl alcohol
- c) Acetic acid d) Urea.

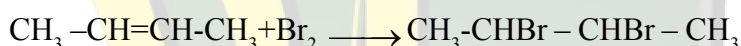
2) The number of C-H bonds in ethane C_2H_6 molecule are -----.

- a) 4 b) 6
- c) 8 d) 10

B) Solve the following questions. (Any One)

1

1) Identify the type of reaction :



2) Write the structural formula for :

1 – bromopropane.

3) Find the odd one out :

Polysaccharide, Teflon, Polyvinylchloride, PET.

Q. 2 : A) Give scientific reason. (Any One)

2

- 1) Iodine test is used for detection of a multiple bond in a carbon compound.
- 2) In hydrogenation of vegetable oil nickel catalyst is used.

B) Solve the following questions. (Any Two)

4

- 1) What cause the existence of very large number of carbon compound?
- 2) Define structural isomerism.
- 3) Saturated hydrocarbons are classified into three types. Write these names by giving one example each.
- 4) Draw the structural formula for the followig IUPAC name.
 - (i) 2 bromo-butene (ii) Butanoic acid

Q. 3 : Solve the following questions. (Any Two)

6

- 1) Write the difference between saturated hydrocarbon and unsaturated hydrocarbon.
- 2) What is combustion of carbon compounds? Explain with example.
- 3) What is meant by vinegar and gasohol? What are their uses?
- 4) Write the IUPAC names of the following structural formulae.

- (i) $\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_3 \\ | \\ \text{Br} \end{array}$
- (ii) $\text{CH}_3 - \text{CO} - \text{CH}_2 - \text{CH}_3$
- (iii) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{OH}$

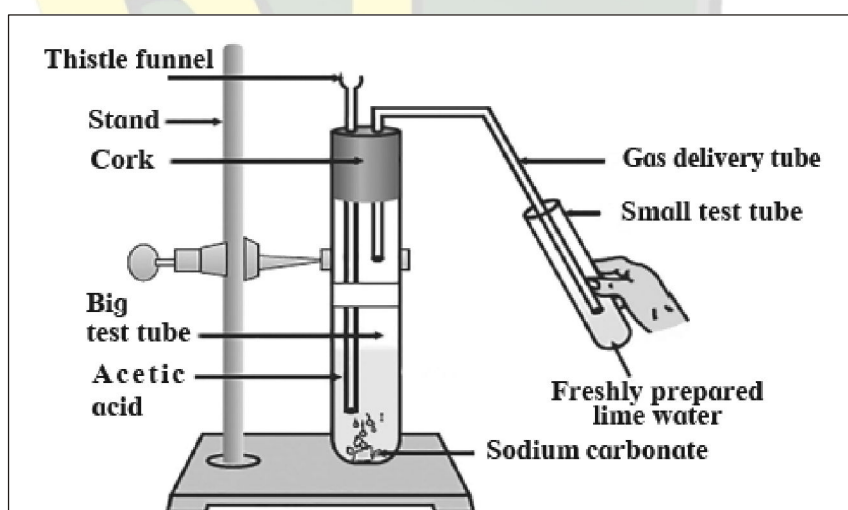
Q. 4 : Solve the following questions. (Any One)

5

1) Consider the relation between Column I and II. Fill in Column IV to match Column III.

Column I	Column II	Column III	Column IV
(1) Ethylene	Polyethylene	Tetrafluoroethylene	_____
(2) Poly-propylene	Propylene	Polystyrene	_____
(3) Poly-saccharide	Glucose	Proteins	_____
(4) Rubber	Isoprene	D.N.A.	_____
(5) Wood	Cellulose	Chromosomes of plants	_____

2) With reference to given diagram answer the following question.



- Which gas does come out as effervescence in the big test tube?
- Which reaction shown in the given diagram?
- Why are bubbles seen in the small test tube?
- What is the colour change in the lime water? Write the related equation.
- Write the balanced chemical reaction of acetic acid and sodium carbonate.

* * *



B.KUMAR'S ACADEMY

Subject : Science -I

Question Paper

Total Marks : 20

Class : X

10. Space mission

Time : 1 Hour

Q. 1 A) Choose the correct alternative :

2

1) The first person to go into the space in a spacecraft was.

- a) Anatoly Zhuravlev
- b) Yuri Gagarin
- c) Slanislow hyubava
- d) Avangard Era.

2) A group of students from COEP made a small satellite namely.

- a) Satyam
- b) Mangalam
- c) Ratnam
- d) Swayam

B) Solve the following questions. (Any One)

1

1) Write true or false.

The escape velocity on moon is less than that on earth.

2) Name the first artificial satellite.

3) Complete the analogy.

INSAT : Communication satellite : : _____ : Earth observational satellite

Q 2 : A) Give scientific reason. (Any One)

2

- 1) Geosynchronous satellite appears to be stationary with respect to earth.
- 2) It is very essential to manage the space debris.

B) Solve the following questions. (Any Two)

4

- 1) What is the need of space mission?
- 2) Why it is beneficial to use satellite launch vehicles made of more than one stage?
- 3) Write the difference between HEO and MEO.
- 4) If mass of a planet is eight times the mass of the earth and its radius is twice the radius of the earth. What will be the escape velocity for that planet?

Q. 3 : Solve the following question. (Any Two)

6

- 1) Write a short note on India and space technology.
- 2) Explain Mars Missions in brief.
- 3) Why are geostationary satellites not useful for the studies of polar regions?
- 4) Derive the equation of critical velocity of a satellite. What do you conclude from the equation?

Q. 4 : Solve the following question. (Any One)

5

- 1) Match the column:

Column A	Column B
(1) Clouds over India	(a) Low Earth Orbit
(2) Global communication	(b) PSLV
(3) Launch vehicle made by ISRO	(c) Communication satellite
(4) International Space Station	(d) EDUSAT
(5) Navigational satellite	(e) Weather satellite
	(f) Medium Earth Orbit

2) Complete the following table:

IRNSS		
	Weather study & predict	
		Earth's observation

* * *

B.KUMAR'S ACADEMY



B.K.KUMAR'S ACADEMY

Subject : Science-II

Question Paper

Total Marks : 20

Class : X

1. Heredity and Evolution

Time : 45 Min.

Q. 1 A) Choose the correct alternative.

(02)

- 1) The process by which nucleotide in the gene suddenly changes its position called -----
a) Translation b) Translocation c) Mutation d) Transcription.
- 2) ----- is not the vestigial organ in the human body.
a) Appendix b) Coccyx c) Canine d) Wisdom tooth

Q. 1 B) Solve the following question (Any One)

(01)

- 1) Identify the correlation between the first two words and suggest the suitable word in fourth survival of fittest : Darwin : : Acquired Character : -----.
- 2) What is evolution?
- 3) Which animal is called a connecting link between reptiles and mammals?

Q. 2 A) Give scientific reason (Any One)

(02)

- 1) Peripatus is said to be connecting link between Annelida and Arthropoda.
- 2) Natural selection plays important role in survival.

Q. 2 B) Solve the following question (Any Two)

(04)

- 1) What is embryological and anatomical evidences.
- 2) Explain the theory of evolution.
- 3) What is the use of science of heredity?
- 4) Explain with suitable examples importance of anatomical evidences in evolution.

Q.3 Solve the following question (Any Two)

(06)

- 1) What is carbon dating?
- 2) Explain Darwin's theory of natural selection.
- 3) Write four difference between Transcription and Translation.
- 4) Define fossil. Explain importance of fossils as proof of evolution.

Q. 4 : Solve the following question (Any One).

(05)

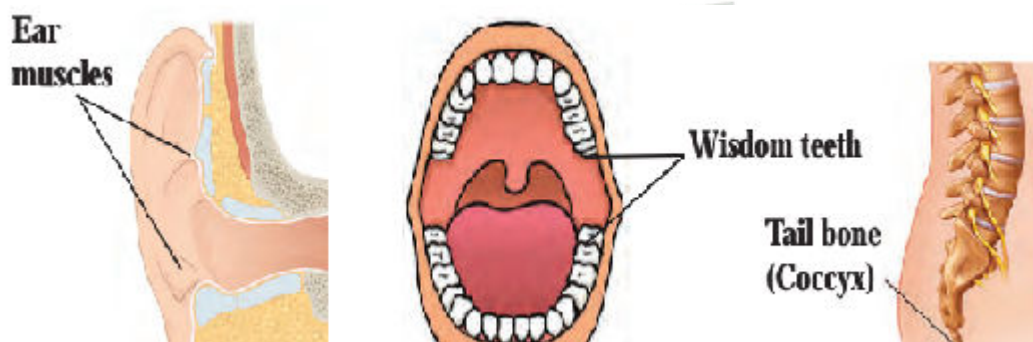
1) Read the paragraph and answer the questions given below:

With the help of RNA, the genes present in the form of DNA participate in the functioning of cell and thereby control the structure and functioning of the body. Information about protein synthesis is stored in the DNA and synthesis of appropriate proteins as per

requirement is necessary for body. These proteins are synthesized by DNA through the RNA. This is called 'Central Dogma'. mRNA is produced as per the sequence of nucleotides on DNA. Only one of the two strands of DNA is used in this process. The sequence of nucleotides in mRNA being produced is always complementary to the DNA strand used for synthesis. Besides, there is uracil in RNA instead of thymine of DNA. This process of RNA synthesis is called 'transcription'.

- Which part of the cell control the structure and functioning of the body?
- How is a specific protein synthesised in the cell?
- What is the similarity between mRNA and DNA?
- Give one difference between RNA and DNA.
- Define central dogma.

2) **Observe the folloeing question and answer the following question**



- Identify the organ which is shown in the figure. 1
- write the defination of the organ which is identified in question (a) 2
- Write names of some vestigial organs in human body and write the names of those animals in whom same organs are functional. 2

B.KUMAR'S ACADEMY



B.K. KUMAR'S ACADEMY

Subject : Science-II

QUESTION PAPER

Total Marks : 20

Class : X

2. Life processes in living organisms part – 1

Time : 45 Min.

Q. 1 A) Choose the correct alternative.

(02)

- Which one of the following vitamins is necessary any for the synthesis of NADH_2 ?
a) Vitamin B_2 b) Vitamin B_5 c) Vitamin C d) Vitamin K
- Somatic and stem cells undergo ----- type of division.
a) meiosis b) mitosis c) budding d) cloning

Q. 1 B) Solve the following question (Any One)

(01)

- Write name of the following
i) NADH_2 ii) FADH_2
- Find the odd man out
TCA cycle, citric acid cycle, krebcycle, EMP pathway.
- Write about vitamins.

Q. 2 A) Give scientific reason (Any One)

(02)

- Fibers are one of the important nutrients.
- Kreb's cycle is also known as citric acid cycle.

Q. 2 B) Solve the following question (Any Two)

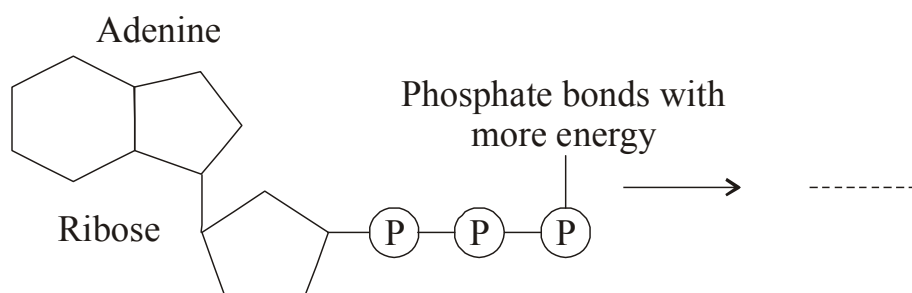
(04)

- Define - Anaerobic respiration. Give two examples of an aerobic respiration.
- Distinguish between Glycolysis and TCA cycle.
- Explain water is an essential nutrient.
- Explain the glycolysis in detail.

Q.3 Solve the following question (Any Two)

(06)

- Write a note on proteins and different amino acids obtained.
- Complete the following figure.



3) Draw the diagram

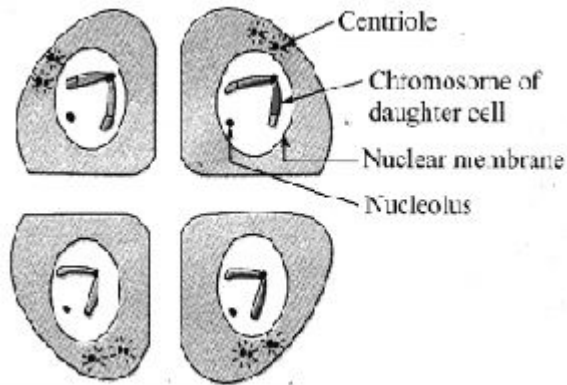
Mitochondria and tricarboxylic acid cycle.

4) How all the life processes contribute to the growth and development of the body?

Q. 4 : Solve the following question (Any One).

(05)

1) Observe the figure and answer the following question



a) Identify the figure.

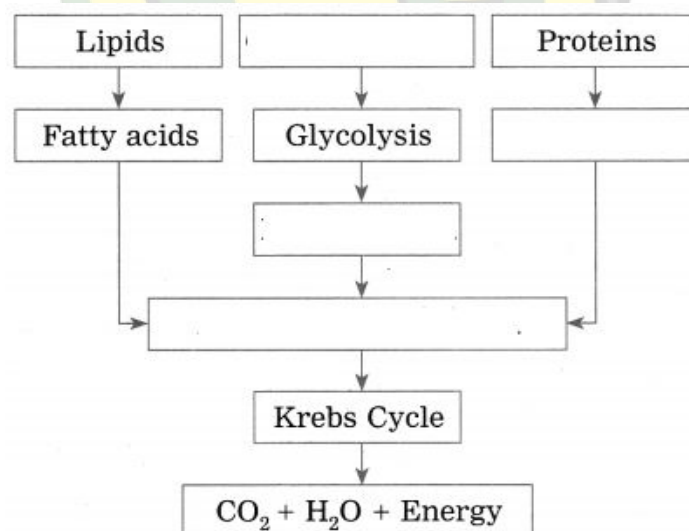
b) In which cell the meiosis occur?

c) How many daughter cells are seen?

d) Haploid or diploid chromosomes are seen in the figure?

e) Is this figure is of meiosis I or meiosis II

2) Complete the following chart and state which process of energy production it represents:





B.KUMAR'S ACADEMY

Subject : Science-II

QUESTION PAPER

Total Marks : 20

Class : X

3. Life process in living organisms (Part – 2)

Time : 45 Min.

Q. 1 A) Choose the correct alternative.

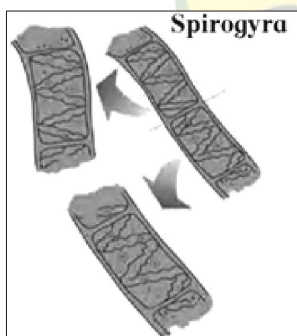
(02)

- 1) Vegetative propagation in potatoes is preformed with the help of ----- present on tuber.
a) Eyes b) Leaf c) Root d) Buds present on nodes.
- 2) Sperms and oocytes are produced by -----
a) Mitosis b) Meiosis c) Cloning d) None of the above

Q. 1 B) Solve the following question (Any One)

(01)

- 1) What is vitrofertilration?
- 2) What is the type of a sextual reproduction shown in the diagram below?



- 3) Find out the correlation

FSH : Development of oocytes : : LH : -----

Q. 2 A) Give scientific reason (Any One)

(02)

- 1) Floower is the structural unit of sextual reproduction in plant.
- 2) In sextual reproduction newborn show similarities about characters.

Q. 2 B) Solve the following question (Any Two)

(04)

- 1) What is asexual reproduction? Write one good and one bad point about it.

- 2) Is it right to consider the mother responsible for a girl child? Explain.
- 3) Draw the diagram of male reproductive system of human.
- 4) Write the difference between sexual and asexual reproduction.

Q.3 Solve the following question (Any Two)

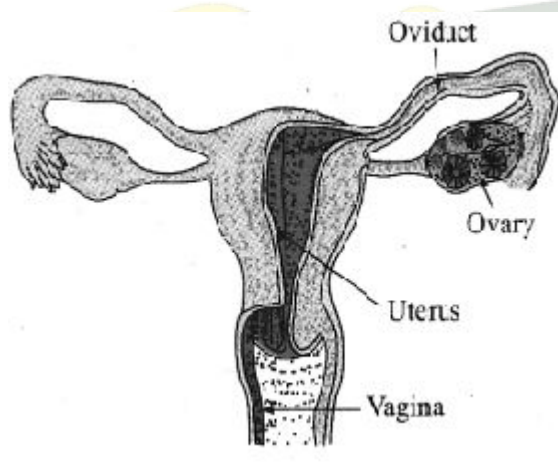
(06)

- 1) Explain the terms related to reproduction in amoeba (a) Binary fission (b) Multiple fission
- 2) Write the names of any three organs of female reproductive system of human and give their functions.
- 3) Explain sexual reproduction in plant.
- 4) Which precautions will you follow to maintain the reproductive health?

Q. 4 : Solve the following question (Any One).

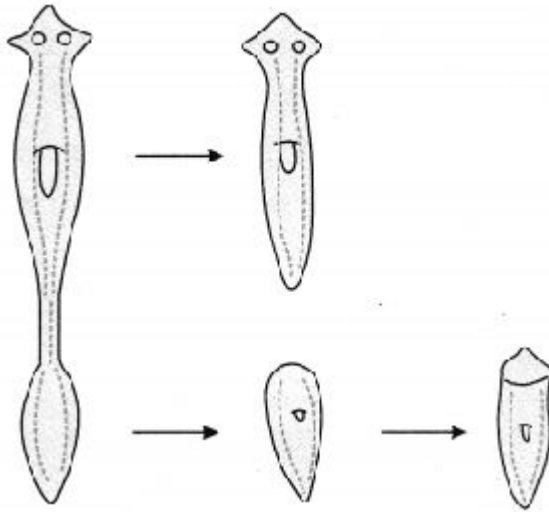
(05)

1) Observe the figure and answer the questions below:



- a) What does the figure indicate?
- b) Which human organs are involved in this process?
- c) Which hormones take part in this process?
- d) What is the periodicity for these changes?
- e) The body of woman undergoing this process is impure, she should remain away from other people. What is your opinion about this statement? Give justification for your opinion.

2) Observe the figure and answer the questions below:



i) Which process is shown in this figure?

1

ii) Define the process.

2

iii) In which organism this type of reproduction takes place?

1

iv) Whether the lizard shows such type of regeneration?

1

B.KUMAR'S ACADEMY



B.K.KUMAR'S ACADEMY

Subject : Science-II

Class : X

QUESTION PAPER

4. Environmental Management

Total Marks : 20

Time : 45 Min.

Q. 1 A) Choose the correct alternative.

(02)

- 1) ----- from manas sanctuary in Assam is under threat.
 - a) one horned rhino
 - b) Lion
 - c) Musk deer
 - d) Giant Indian squirrel/shekru.
- 2) Lion is ----- type of species
 - a) Endangered
 - b) Rare
 - c) Vulnerable
 - d) Indeterminate.

Q. 1 B) Solve the following question (Any One)

(01)

1. Reorganize the following food chain
Grasshopper → snake → paddy field → Eagle → frog
- 2) Find the odd man out
Lion tailed monkey, white rats, musk deer, tiger
- 3) Give one word for "The forest conserved in the name of god".

Q. 2 A) Give scientific reason (Any One)

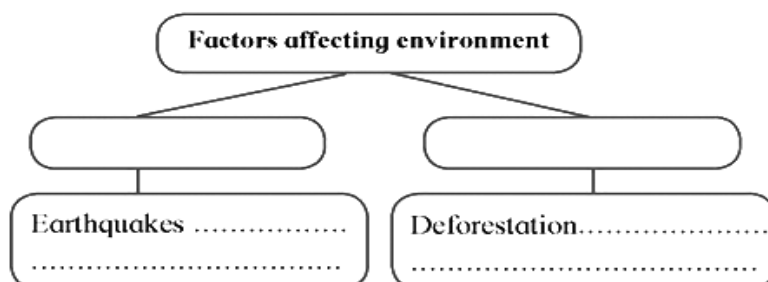
(02)

- 1) The human being have important place in environment.
- 2) Chipko movement was started by Bishnoi Samaj of Rajasthan.

Q. 2 B) Solve the following question (Any Two)

(04)

- 1) What is ecology and ecosystem?
- 2) Complete the following flow chart.



3) What is biodiversity? which are the different levels at which it occurs?

4) Write short note on sacred groves.

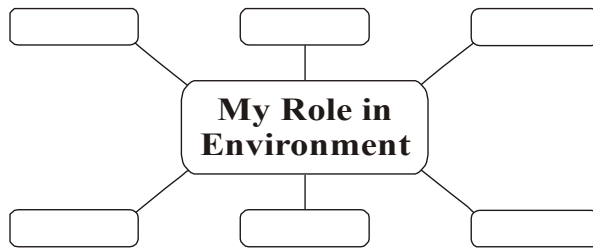
Q.3 Solve the following question (Any Two)

(06)

1) Classify the threatened species.

2) How the biodiversity can be conserved.

3) Complete the following flow chart

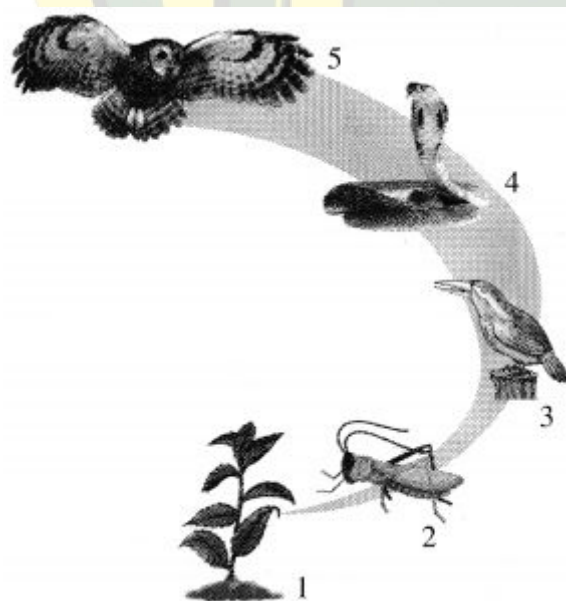


4) What are the components, source and effects of air pollution

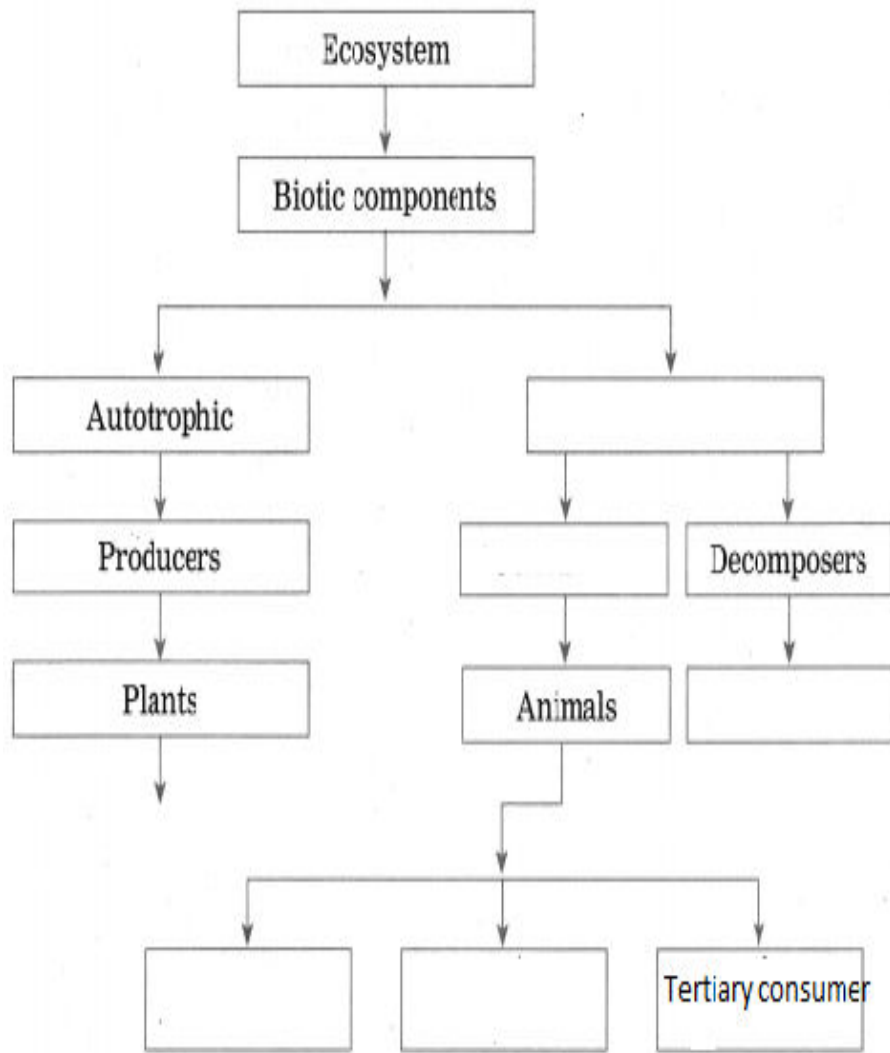
Q. 4 : Solve the following question (Any One).

(05)

1)What is shown in the picture? Write name and trophic level of each component.



2) Complete the flow chart:



B.KUMAR'S ACADEMY



B.KUMAR'S ACADEMY

Subject : Science - II

Question Paper

Total Marks :20

Class : X

5. Towards Green Energy

Time : 1 Hour.

Q.1: A) Choose the correct alternative :

2

- 1) Thermal energy is used to generate ----- energy.
a) Electrical b) Chemical c) Nuclear d) None of the above
- 2) ----- energy of water in dams is used for generation of electricity.
a) Kinetic b) Potential c) Heat d) None

B) Solve the following question. (Any One)

1

- 1) Find the correlation
Biofuels : Nonconventional energy source : : coal : _____
- 2) Diagrammatically show energy transformation in thermal power plant.
- 3) Name the principle on which most of the electric power plants are based.

Q.2: A) Give scientific reason. (Any One)

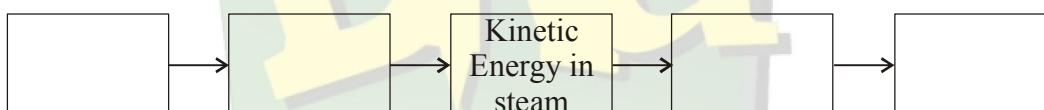
2

- 1) Steam is used to rotate the turbine
- 2) The energy in the coal is called as chemical energy.

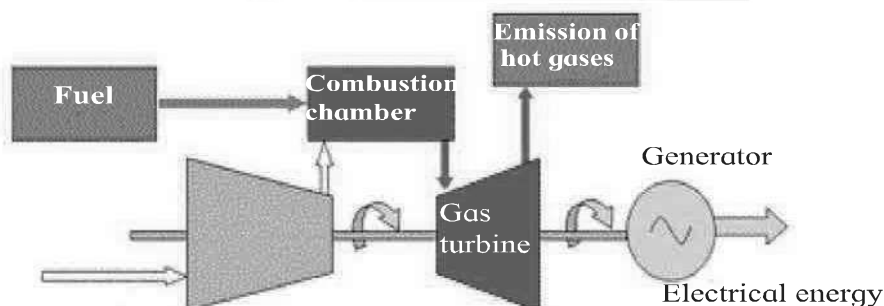
B) Solve the following question. (Any Two)

4

- 1) Write the advantages of nuclear power plant.
- 2) Complete the flow chart of step by step transformation of energy in thermal power plant.



- 3) Observe the given diagram and answer the following question.



- i) Which fuel is used for this power plants?
- ii) Is this power plant is environment friendly? Why?

- 4) What are the limitation of solar energy?

Q.3: Solve the following questions. (Any Two)

6

- 1) What are the problems related to thermal power generation?
- 2) How does nuclear fission take place?
- 3) Explain the advantages of hydroelectric power plant using a block diagram.
- 4) How can we get the required amount of energy by connecting solar panels.

Q. 4: Solve the following question. (Any One).

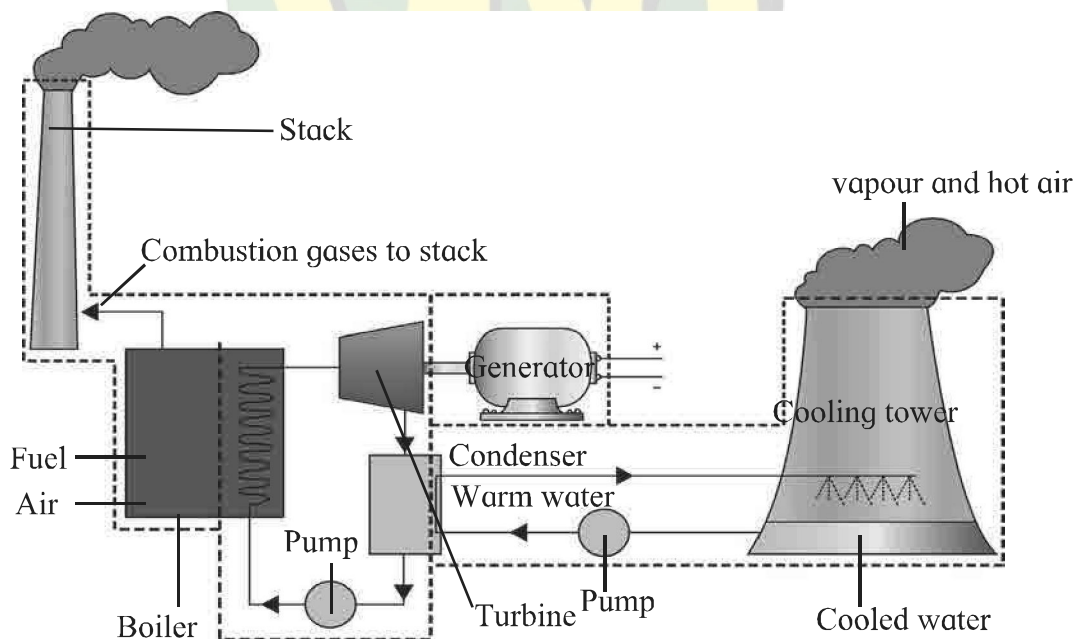
5

1) Read the paragraph and answer the questions given below:

Renewable energy is, energy produced from sources that do not deplete or can be replenished within a human's life time. The most common examples include wind, solar, geothermal, biorhass, and hydroelectric power. This is in contrast to non-renewable sources such as fossil fuels. Most renewable energy is derived directly or indirectly from the sun. Sunlight can be captured directly using solar technologies. The sun's heat drives winds, whose energy is captured with turbines. Plants also rely on the sun to grow and their stored energy can be utilized for bioenergy. Not all renewable energy sources rely on the sun. For example, geothermal energy utilizes the Earth's internal heat, tidal energy relies on the gravitational pull of the moon, and hydroelectric power relies on the flow of water.

- a) What is renewable energy?
- b) Give the examples of renewable energy.
- c) Why will energy from fossil fuel be over soon?
- d) Name the renewable sources of energy which are not dependent on sun. What are they dependent upon?
- e) Which type of energy do we mostly use in India?

2) Observe the given diagram and answer the following questions.



- i) Name the power plant shown in the figure.

- ii) How turbine is rotated in this plant?
- iii) Name the two towers seen in given diagram.
- iv) What is the function of condenser?
- v) Name the fuel used in this plant.





B.K.KUMAR'S ACADEMY

Subject : Science - II

Class : X

Question Paper

6. Animal Classification

Total Marks : 20

Time : 1 Hour.

- Q.1: A) Choose the correct alternative :** **2**
- 1) The body wall of Hydra is -----
a) Monoblastic b) Triploblastic c) Diploblastic d) Polyblastic
 - 2) Spicules are made up of -----
a) Sodium carbonate b) Potassium sulphate
c) Sodium bicarbonate d) Calcium carbonate.
- B) Solve the following questions : (Any One)** **1**
- 1) Match the following

A	B
a) Hydra	a) Axial symmetry
b) Planaria	b) Radial symmetry
	c) Bilateral symmetry
 - 2) Complete the analogy
Coelenterata : _____ : : platyhelminth : triploblastic
 - 3) Write true or False
Amphibians have a two habitat life cycle.
- Q.2: A) Give scientific reason. (Any One)** **2**
- 1) Bat is included in mammalia class.
 - 2) Our body irritates if it comes in contact with jelly fish.
- B) Solve the following questions. (Any Two)** **4**
- 1) What is notochord?
 - 2) Write about phylum Annelida.
 - 3) Write about hydrocarbonclastic bacteria.
 - 4) Draw a well labeled diagram of Hydra.
- Q.3: Solve the following questions. (Any Two)** **6**
- 1) Explain body symmetry and its types.
 - 2) Write difference between non chordates and chordates.
 - 3) Write in detail about class cyclostomata of phylum Echinodermata.
 - 4) Write short note on Bath sponge.
- Q. 4: Solve the following question. (Any One)** **5**
- 1) Identify the class of given animals and write one characteristic of each animal:
(1) Kangaroo (2) Penguin (3) Crocodile (4) Frog (5) Sea-horse.
 - 2) I) Write the classification of the following according to given points
i) Shark ii) Frog
a) Kingdom b) Phylum c) Subphylum d) Class
II) Write two character of shark and frog.



B.K. KUMAR'S ACADEMY

Subject : Science - II

Question Paper

Total Marks : 20

Class : X

7. Introduction to Microbiology

Time : 1 Hour.

Q.1: A) Choose the correct alternative : 2

- 1) ----- impacts the characteristic taste to yoghurt.
a) Diacetyl b) Citrate c) Lactate d) Acetaldehyde
- 2) ----- imparts thickness to icecreams and pudding.
a) Lactic acid b) Lactose c) Xanthan gum d) Gluconic acid.

B) Solve the following questions. (Any One) 1

- 1) Complete the analogy
Candida : _____ : : Lactobacillus brevis : coffee
- 2) Find odd one out
Methane, ethanol, Hydrogen gas, petroleum
- 3) Give one word for the following
An example of compound used as emulsifier.

Q.2: A) Give scientific reason. (Any One) 2

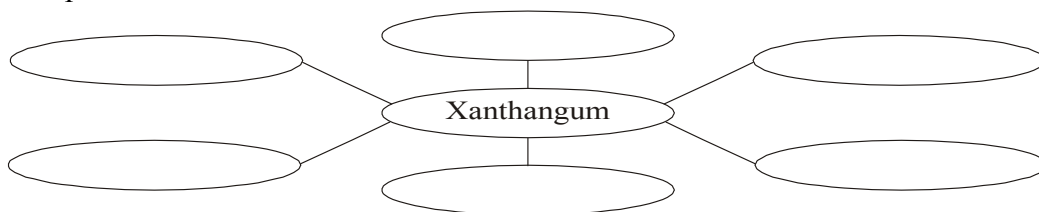
- 1) The probiotics have developed much importance in recent days.
- 2) Compressed yeast is used in commercial bakery industry.

B) Solve the following questions. (Any Two) 4

- 1) What are hermaphrodite?
- 2) How can bacteria control the soil pollution occurring due to acid rain?
- 3) Write about hydrocarbonclastic bacteria.
- 4) Distinguish between Applied microbiology and Industrial microbiology.

Q.3: Solve the following questions. (Any Two) 6

- 1) Write a note on biofuel.
- 2) Write about microbes and fuels.
- 3) Why is it necessary to ban the use of plastic?
- 4) Complete the chart



Q. 4: Solve the following question. (Any One) 5

- 1) **Read the paragraph and answer the questions given below:**

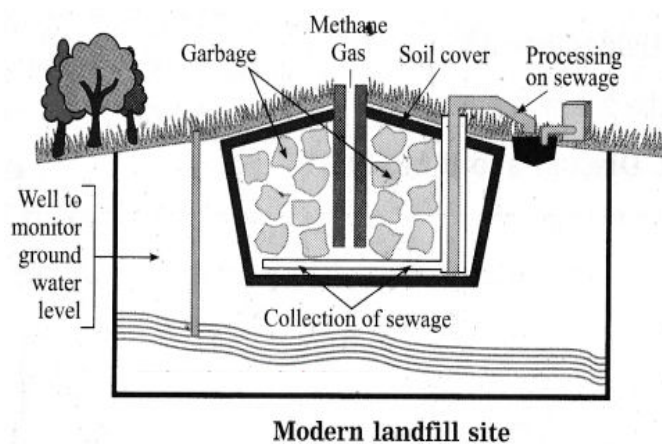
Remediation is the process of removing dangerous or poisonous substances from the environment, or limiting the effect that they have on it. When any biological organism is

used for remediation, it is called bioremediation. When plant species are used for the purpose of remediation, it is called phytoremediation. When any microbes are used then it is named as

microbial remediation. The methods of such remediation have helped to clean the environment from toxic effluents, especially sewage and crude oil. Dr. Anand Chakraborty, a scientist of Indian origin, has worked on *Pseudomonas aeruginosa* which have reduced the crude oil films into carbon dioxide and water.

- a) What is the meaning of remediation?
- b) What is the difference between phytoremediation and microbial remediation?
- c) Which environmental pollutant is mainly removed through bioremediation processes?
- d) What is the role of *Pseudomonas aeruginosa*?
- e) Why Dr. Anand Chakraborty's work phenomenal?

2) **Observe the diagram and answer the following questions:**



- (a) Name the following method of solid waste management.
- (b) What type of waste is used in this method?
- (c) What kind of useful substances can be obtained from such methods?

1
2
2

B.KUMAR'S ACADEMY



B.KUMAR'S ACADEMY

Subject : Science-II

Question Paper

Total Marks : 20

Class : X

8. Cell biology and Biotechnology

Time : 1 Hour

Q. 1 A) Choose the correct alternative :

2

1. A person with symptoms of fatigue, non healing wounds, constant thirst and urge to urination and high blood sugar should be treated with

- (a) Insulin (b) Factor VIII (c) Interferon (d) Interleukin

2. _____ among the following organisms are useful in clearing oil spills.

- (a) Pteris vitata (b) Deinococcus (c) Pseudomonas (d) Alfalfa

B) Solve the following question. (Any One)

1

1) Complete the analogy :

Insulin : Diabetes :: Interleukin : _____

2) Find odd one out :

BT cotton, Golden rice, BT brinjal, Anabaena

3) Give answer in one or two words :

The ability of stem cells to self multiply and differentiate into any type of cell.

Q. 2 A) Give scientific reason. (Any One)

2

- 1) DNA finger printing can be done in order to resolve a paternity dispute regarding a child.
2) Organic farming is considered to be the future of agriculture sector.

B) Solve the following question. (Any Two)

4

- 1) What is white revolution?
2) Define : (i) Bioremediation (ii) Cloning
3) What are the uses of stem cells?
4) Which precaution will you take during spraying of pesticides?

Q. 3 : Solve the following question. (Any Two)

6

- 1) Write short note on edible vaccines.
2) Complete the chart :



- 3) Write the importance of medicinal plants.
4) Write the commercial application of biotechnology.

Q. 4 : Solve the following question. (Any One)

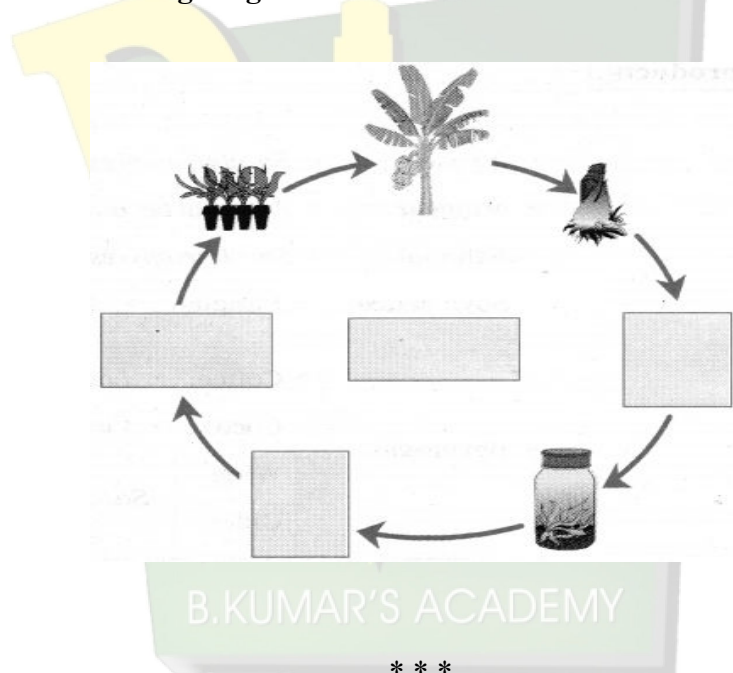
5

- 1) Read the paragraph and answer the following question.

Green corridor refers to a special road route that enables harvested organs meant for transplants to reach the destined hospital. A 45-year-old woman, a victim of a railway accident, was declared brain dead, her husband and children agreed to donate her kidneys, liver and heart. One of her kidneys was transplanted to a patient in MGM Hospital and the second kidney helped a patient in Jaslok hospital. Her liver helped the transplant of a patient in Wockhardt Hospital. And her heart was sent to Fortis to the patient on a super urgent priority list, transported via a green corridor covering 18km in less than 16 minutes. This was possible due to Green corridor.

- a) What is Green corridor?
- b) Which organs of brain-dead lady were transplanted?
- c) How many lives were saved from organs of one lady?
- d) How was distance of 18km covered in 16 minutes? Why?
- e) Who takes the decision to donate the organs?

2) Assign names in the figure given below . Define tissue culture.





B.KUMAR'S ACADEMY

Subject : Science-II

Class : X

Question Paper

9. Social Health

Total Marks : 20

Time : 1 Hour

Q. 1 A) Choose the correct alternative.

2

1. Laughter club is a remedy to drive away

- (a) Mental stress (b) Loneliness
(c) Addiction (d) None of the above

2. Carcinogenic effect of tobacco containing substances on mouth and _____

- (a) Lungs (b) Throat (c) Liver (d) Heart

B) Solve the following question. (Any One)

1

1) Write true or false :

Addictive person can not think rationally.

2) Find the correlation :

Laughter club : Relieve mental stress : : Meditation : _____

3) Name the NGO which provide helping hand to depression.

Q. 2 A) Give scientific reason. (Any One)

2

- 1) Children are facing loneliness and mental stress.
2) Nature plays an important role in relieving stress.

B) Solve the following questions. (Any Two)

4

- 1) Give the examples of diseases endangering the social health.
2) What is stress management?
3) Define social health.
4) Write the various physical problems arises due to radiation of cell phones.

Q. 3 : Solve the following question. (Any Two).

6

- 1) Explain the importance of good communication with others.
2) Write note on working of Salaam Mumbai Foundation.
3) Give three examples of hobbies to reduce stress.
4) What are the change occur in children due to continuously using mobile phones?

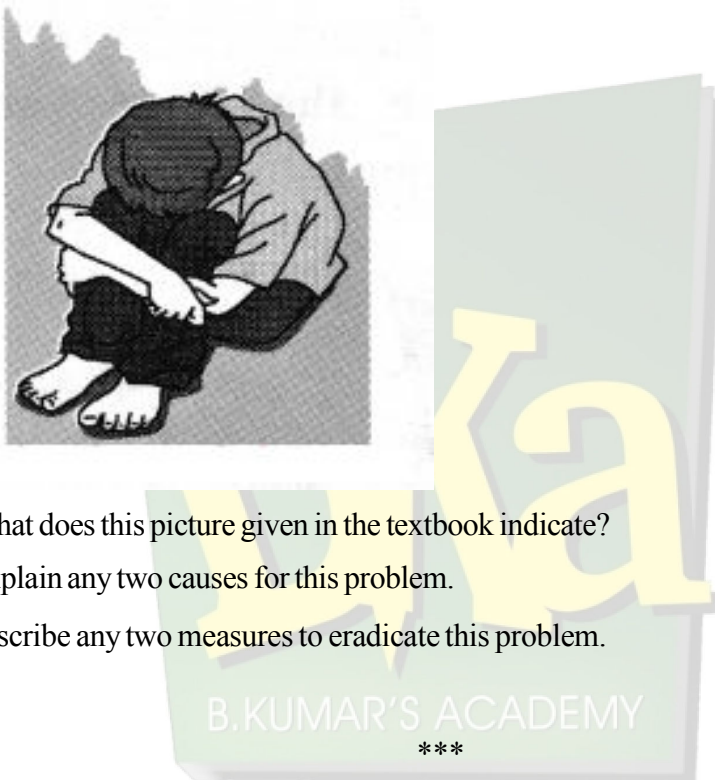
Q. 4 : Solve the following question. (Any One)

5

- 1) **Observe the figure and answer the questions given below.**



- (a) What do these figures indicate?
 - (b) Which gadgets can be misused for these?
 - (c) Give two examples of such events.
 - (d) Name the act amended by Government of Maharashtra to control such events.
 - (e) What care should be taken by a person to avoid such events?
- 2) **Observe the following figure and answer the given questions:**



- (a) What does this picture given in the textbook indicate? 1
- (b) Explain any two causes for this problem. 2
- (c) Describe any two measures to eradicate this problem. 2



B.KUMAR'S ACADEMY

Subject : Science-II

Class : X

Question Paper

10. Disaster Management

Total Marks : 20

Time : 1 Hour

Q. 1 : A) Choose the correct alternative.

2

1) Disaster definitely affect the economy of _____.

- (a) Country (b) State (c) Nation (d) District

2) Tsunami is a _____ disaster.

- (a) Geophysical (b) Manmade (c) Biological (d) Catastrophic

B) Solve the following question. (Any One)

1

1) Identify the correlation :

Drought : _____ : Fungal disease spreading : Biological disaster

2) Write true or false :

At the district level Tahsildar is responsible for disaster management and implementation of rehabilitation schemes.

3) Name the catastrophic disaster.

Q. 2 A) Give scientific reason. (Any One)

2

1) Human disasters are increase after the world war-II.

2) It is essential to get the training of first aid.

B) Solve the following questions. (Any Two)

4

1) What is disaster management?

2) What is mock drill? explain.

3) Name any ten necessary materials in first aid box.

4) What is districtwise disaster control unit?

Q. 3 : Solve the following question. (Any Two)

6

1) Which are the 3 aspects of disaster important for common citizens?

2) Which different methods are used for transportation of patients? Why?

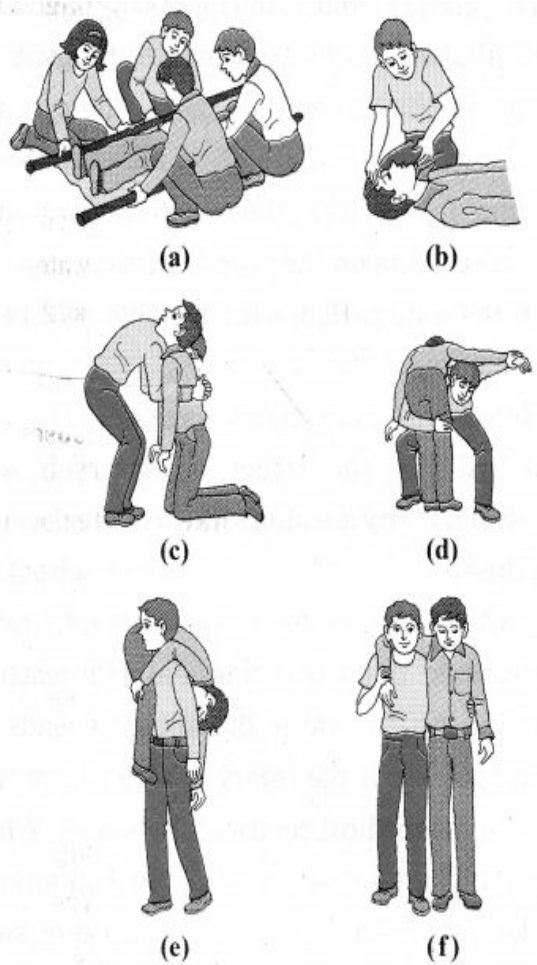
3) Which are the destructive effects of flood?

4) Write short note on disaster management.

Q. 4 : Solve the following question. (Any One)

5

1) Give the reference of following pictures and explain importance of each of those in disaster management. .



2) Read the paragraph and answer the questions given below:

Disasters can be properly classified into three categories, viz. natural disasters, technological disasters and man-made disasters. The forces that cause natural disasters cannot be controlled. Moreover, they are becoming more frequent in the current years due to phenomena of climate change. On and off incidences of cyclones, cloud bursting, floods, etc. are creating havoc in the lives of people. Technological disasters are due to improper and callous behaviour at the different processes carried out in technical establishments. Man-made disasters are conflicts arising due to different religions, regions and terrorism.

- What are three broad areas of disasters?
- Which disasters cannot be controlled? Why?
- Which type of disasters were very common in Western Maharashtra in recent times? Why?
- Give any one example of technological disaster that shook the entire India.
- Which types of disasters can be controlled in order to lead happy, peaceful and secured life? How?

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