BOARD OF SECONDARY EDUCATION (AP)

SUMMATIVE ASSESSMENT – I

TENTH BIOLOGY MODEL PAPER

PAPER – II (ENGLISH VERSION)

Time: 2 hrs. 45 mins. **PART – A & B** **Maximum Marks: 40**

INSTRUCTIONS:

i) 15 minutes allocated to read the question paper. 2.30 hours allocated to write answers.

ii) PART – A must be answered in a separate answer sheet.

iii) Students can take PART – A (Question paper) with them.

iv) PART – B (Bit Paper) should tag to the answer sheet and give them to Invigilator.

Time: 2 hrs. **PART – A** **Marks: 30**

SECTION – I

NOTE: i) Answer the following questions.

ii) Each question carries ONE Mark. **4 × 1 = 4**

1. How do you describe absorption when we are talking about human alimentary system?

2. Can you define single circulation and double circulation in simple form?

3. Observe the figure given below. This is one type of birth control method. Can you name it and explain it in a single sentence?

4. Meera was separating biodegradable and non – biodegradable wastes in her home. Can you give examples and define them?

SECTION – II

NOTE: i) Answer the following questions.

ii) Each question carries TWO Marks. **5 × 2 = 10**

5. Give reasons

i) If we press tongue against the palate we can recognise taste easily.

ii) We can't identify taste when food is very hot.

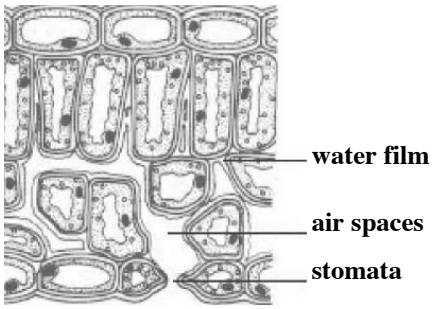
iii) If glucose level falls in blood we feel hungry.

iv) Urination increases when we take lot of fluids.

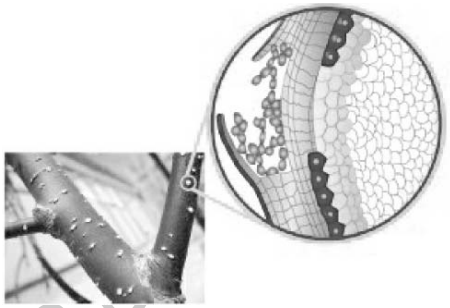
6. Take a small potted plant. Cover base portion of the plant tightly and hang the part upside down. Observe the plant for a week. Based on your observation how can you support phototropism?

7. To keep your kidneys healthy for long period, what questions will you ask a nephrologist / urologist?

8. Observe the following figures.



Leaf as a respiratory organ



Lenticells on stem

Arial roots

Now prepare flow chart relating to the given figures.

9. Write slogans on the conservation of natural resources.

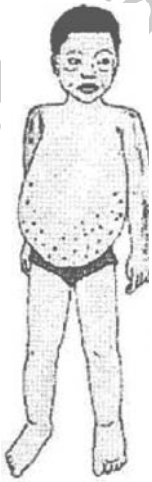
SECTION – III

NOTE: i) Answer the following questions.

ii) Each question carries FOUR Marks. **4 × 4 = 16**

10. **a)** Observe the following pictures and answer the questions given below.

Kwashiorkor



Marasmus

i) What is malnutrition?

ii) Which disease does the first picture indicate? What are it's symptoms?

iii) Which diseases does the second picture indicate? What are it's symptoms?

iv) Name two vitamin deficiency diseases.

(OR)

b) What experiment should you perform to understand action of saliva on flour? Explain its procedure and apparatus that you followed?

11. **a)** Give reasons.

i) Why does the rate of respiration (breathing) increase while walking uphill at a normal pace in the mountains?

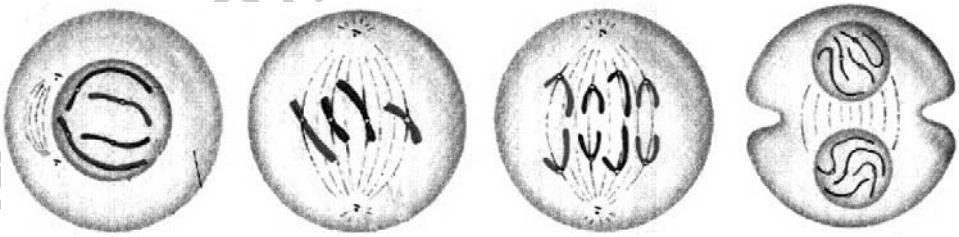
ii) Why does the amount of oxygen vary between exhaled and inhaled air?

iii) Why alveolus are so small and uncountable in number?

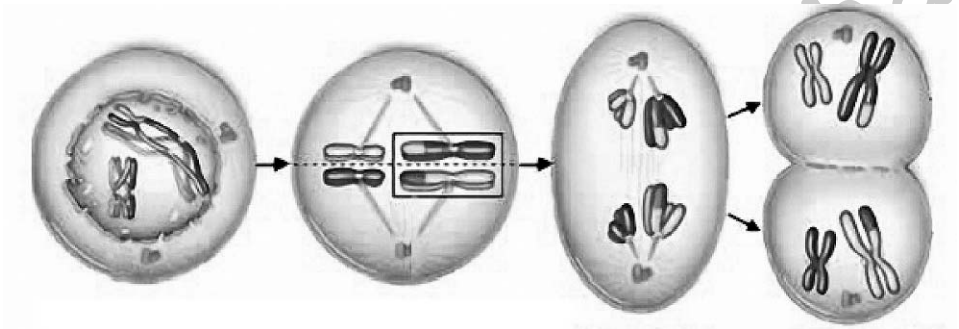
iv) Why are we advised not to talk while eating food?

(OR)

b) Observe the following figures, write the difference between mitosis and meiosis.



Prophase **Metaphase** **Anaphase** **Telophase**



Prophase 1 **Meiosis 1** **Anaphase 1** **Telophase 1**

12. **a)** Answer the following questions.

i) Is the structure of reason suitable for transmission of impulses? Analyse.

ii) What is a synapse? How is it useful in transferring information?

(OR)

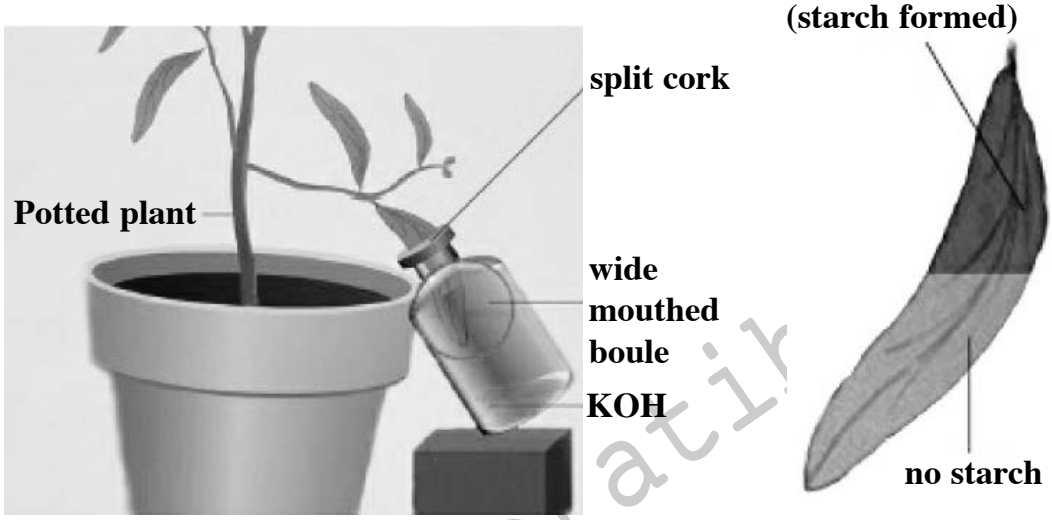
b) Write differences between:

i) Systole – diastole

ii) Veins – arteries

iii) Xylem – Phloem

13. **a)** Observe the diagram given below.



i) What is the name of the experiment?

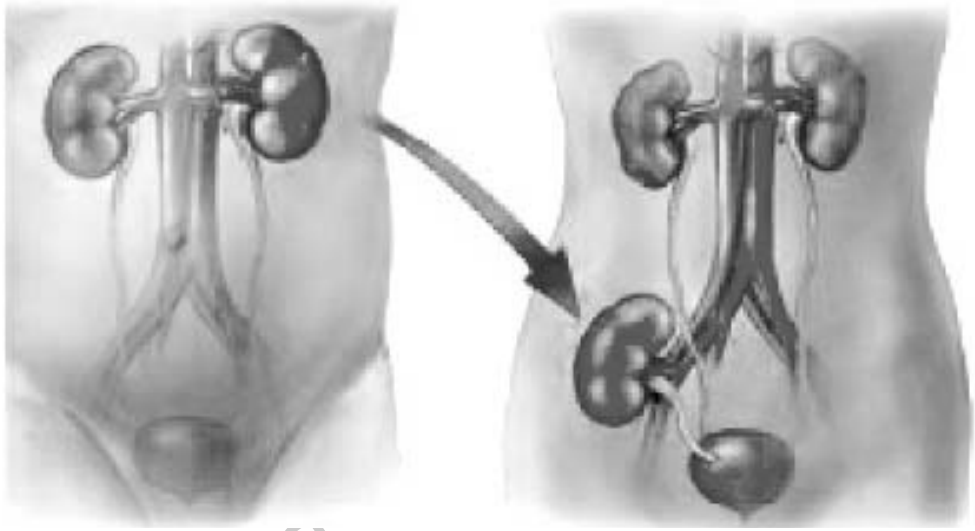
ii) What does this experiment prove?

iii) Why was the plant kept in dark and then in sunlight?

iv) Why did we study two leaves in this experiment?

(OR)

b) Observe the following diagram. Answer the questions given below.



kidney transplantation

i) What is kidney transplantation?

ii) Where is the transplanted kidney fixed in the body of a kidney failure patient?

iii) Can donor survive with single kidney without any complications?

Time: 30 Minutes **PART – B** **Marks: 10**

INSTRUCTIONS:

i) **Answer ALL the questions.**

ii) **Each question carries $\frac{1}{2}$ mark.**

iii) **Marks will not be awarded in any case of over–writing, rewritten or erased answers.**

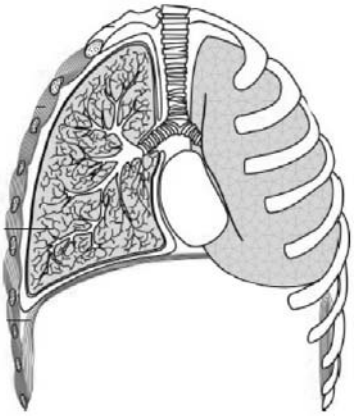
iv) **Write the CAPITAL LETTER (A, B, C, D) showing the correct answer for the following questions in the brackets provided against them.** **$20 \times \frac{1}{2} = 10$**

SECTION – IV

14. Which part of the plant takes in Carbondioxide from the air for photosynthesis? ( )

A) Root hair B) Stomata C) Leaf Veins D) Sepals

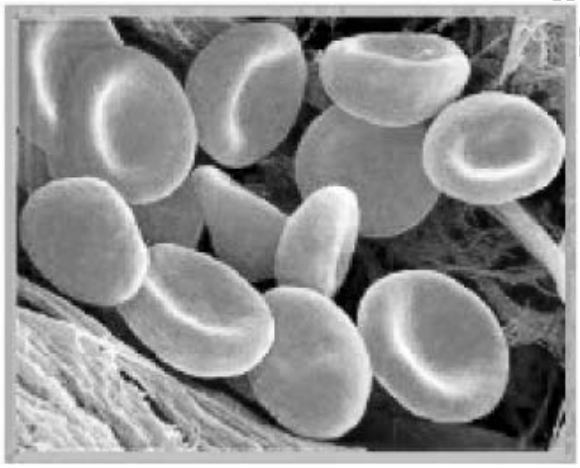
15. Observe the figure given below.

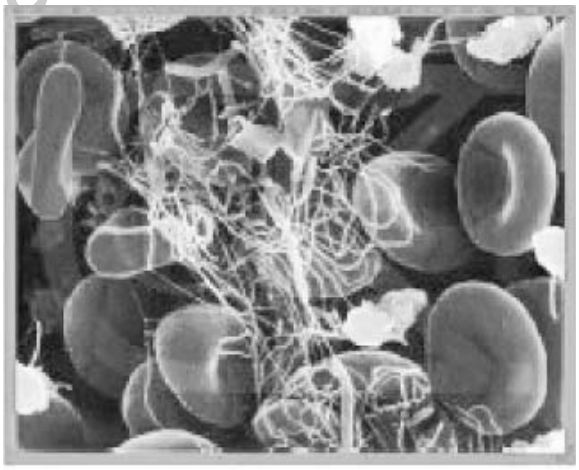


This is a flexible, flattened muscle in human body that helps the lungs in moving air in and out of them – What is this? ( )

A) Lung B) Blood Vessel C) Diaphragm D) Pharynx.

16. Observe the figures given below.





What does the second figure indicate? ( )

A) Formation of blood B) Formation of Urine

C) Blood Pressure D) Clot formation

17. Antimalarial drug is prepared from the alkaloid quinine of cinchona officinalis plant. From which part of the plant is the alkaloid extracted? ( )

A) Bark B) Root C) Leaves D) Flowers

18. If a person has loss of control on emotions. Which part of brain stops its function? ( )

A) Cerebrum B) Diencephalon C) Mid Brain D) Cerebellum

19. Which of the following is correct sequences of steps in the human life cycle? Choose the right option. ( )

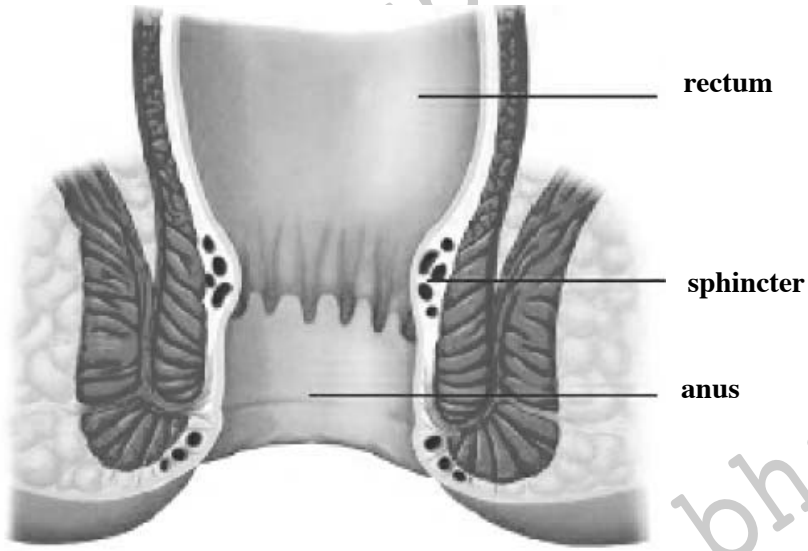
A) Babyhood, Childhood, Adolescence, Adulthood

B) Childhood, Babyhood, Adulthood, Adolescence

C) Adolescence, Babyhood, Adulthood, Childhood

D) None of these

20. Observe the figure given below.



These muscular layers control the exit of stools from the body, can you name them? ( )

A) Villi B) Anal sphincter

C) Pyloric value D) Small intestine

21. Excess presence of which gases in the atmosphere causes excess global warming? ( )

A) Hydrogen B) Argon and Oxygen

C) Water Vapour D) Green house gases

22. What are 3R's? ( )

A) Reuse, Recycle, Refuse B) Recycle, Reduce, Return

C) Reuse, Reduce, Recycle D) Reunion, Reverse, Return

23. The materials required for photosynthesis are ( )

A) Light, CO_2, Water, Chlorophyll

B) Xanthophyll, Light, CO_2, N_2O

C) Light, CO_2, Oxygen, Chlorophyll

D) Carotene, Water, O_2, Light

24. .....is a stiff box like structure containing our vocal cards. When air passes out of the lungs and over the vocal cards, it causes them to vibrate. This produces sounds on the basis of our speech, song etc., ( )

A) Nasal cavity B) Lung C) Nostril D) Larynx

25. Which of the following opinion is correct? ( )

A) Ravi said, xylem and phloem cells are arranged one upon the other to form a tube like structure.

B) John said, xylem and phloem are not separate tube like structures.

C) Salma said, xylem and phloem cells connect together to form a tube like structure.

D) Hari said, because of its shape they said to be tube like structures.

26. Sequence of urine formation in nephron is ( )

A) Glomerular filtration, tubular reabsorption, tubular secretion

B) Tubular reabsorption, tubular secretion, Glomerular filtration.

C) Tubular secretion, Glomerular filtration, Tubular reabsorption

D) Tubular reabsorption, concentration of urine, tubular secretion

27. Leaf movement in mimosa helps to ( )

A) reduce photosynthesis B) protect from greazers

C) releasing phytohormones D) regulate its growth

28. Why egg cells are larger than sperm cells? Choose the option you think is right. ( )

A) Egg cells have more cells in them

B) Have food store to help growth after fertilization

C) Have thicker cell membranes

D) Have larger nuclei

29. Peristalsis is because of ( )

A) contraction of longitudinal muscles

B) contraction of circular muscles

C) under control of autonomous nervous system

D) digestive secretions

30. Observe the picture given below. What is the situation seen? ( )

A) Drought B) Flood C) lightning D) Wind

31. Which one of the goods would you prefer buying? ( )

A) Costly but durable B) Cheap but less durable

C) Costly but less durable D) Economical and durable

32. Ptyalin is secreted by ( )

A) Stomach B) Pancreas C) Liver D) Salivary glands

33. This part of the brain maintains posture, equilibrium and muscletone and Co–ordinates voluntary movements initiated by cerebrum. ( )

A) Diencephalon B) Medulla oblongata

C) Cerebellum D) Midbrain

ANSWERS

PART – A

SECTION – I

1. How do you describe absorption when we are talking about human alimentary system?

A: **Absorption:** The passage of digested food through the walls of alimentary tract (particulars in small intestine) into circulatory system.

2. Can you define single circulation and double circulation in simple form?

A: If the blood goes to heart only once before it reaches all the body parts called single circulation. If it go twice it is called double circulation.

3. Observe the figure given below. This is one type of birth control method. Can you name it and explain it in a single sentence?

A: This is vasectomy. The cut ends of the vas difference are sealed.

4. Meera was separating biodegradable and non – biodegradable wastes in her home. Can you give examples and define them?

A: **Bio-degradable wastes:** Bio-degradable wastes are the things that can be easily decomposed by natural agents like water, oxygen, sunrays, microorganisms etc.,

e.g.: Vegetable/ fruit peels, Dead plants, Animals, Paper, Garden waste etc.,

Non-biodegradable wastes: Non-biodegradable wastes are the things that cannot be broken down or decomposed by natural agents or environmental factors.

e.g.: Plastics, Polystyrene, Metals, Plastic and Aluminium cans, Toxic chemicals, Paints, Tyres, etc.

SECTION – II

5. Give reasons

i) If we press tongue against the palate we can recognise taste easily.

A: When the tongue is pressed against the palate, the food substance is pressed against the opening of the taste bud and lets the taste bud to reach the taste cells, triggering taste signals. So, the taste is recognized by the brain.

ii) We can't identify taste when food is very hot.

A: ★ Most of the taste buds on the tongue are killed when the food is hot. They become non-functional preventing the person identifying the taste.

★ The perception of taste decreases when the temperature of the food rises beyond 35°C.

★ But we don't pay attention to it because we become worried about the burning feeling.

We feel the taste only when the temperature of the food is below 35°C.

iii) If glucose level falls in blood we feel hungry.

A: When glucose levels in the blood fall, we get hunger pangs in stomach. These pangs are generated by the brain when the hunger generating signals reach the brain from the stomach. These hunger pangs are generated due to the secretion of the hormone "Ghrelin".

iv) Urination increases when we take lot of fluids.

A: ★ When we take lot of fluids, the kidneys will efficiently throw that water out by forming more urine than usual.

★ When there is excess water in the body, the brain usually produces less of a hormone called vasopressin, which in turn causes the kidneys to produce a lot of dilute urine, until excess water is removed. Removing of excess water is good for the body.

6. Take a small potted plant. Cover base portion of the plant tightly and hang the part upside down. Observe the plant for a week. Based on your observation how can you support phototropism?

A: (photo means light, tropism means movement).

In this instance, when we take a small potted plant and cover its base portion tightly and hang the part upside down, within a week time we can observe that the plant starts inclining towards the light.

We covered the base portion of the plant tightly so that the plant along with the soil do not fell down.

After a week, we can observe that the end of the stem which is upside down takes "U" turn and growing towards light.

We can conclude that it is phototropism exhibited by the plant. Phototropism is a response towards light of plants that the stem grows towards light that is negatively to gravitation. Auxins are responsible for phototropism.

7. To keep your kidneys healthy for long period, what questions will you ask a nephrologist / urologist?

A: The questions I am going to ask a Nephrologist/Urologist to keep my kidneys healthy for long period are

1) How can I prevent formation of stones in kidney ?

2) What are the dietary measures to be taken for normal functioning of kidney ?

3) How does diabetes harm kidneys ?

4) What are the factors responsible for kidney failure ?

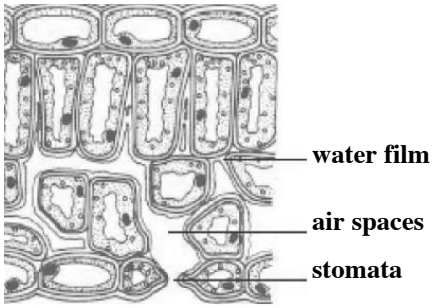
5) What are the kidney function tests ?

6) What kind of medications should I avoid to keep my kidneys healthy?

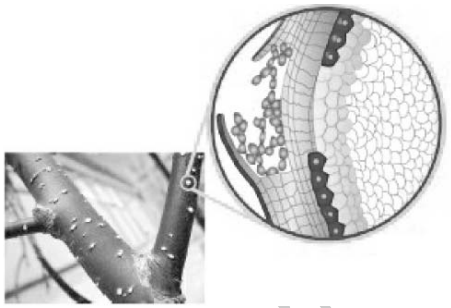
7) Which habits can cause kidney diseases?

8) How much water should I drink per a day ?

8. Observe the following figures.



Leaf as a respiratory organ



Lenticells on stem

Arial roots

Now prepare flow chart relating to the given figures.

Flow Chart

Respiratory organs in plants

Leaves

↓

On the branches of the plant/tree

↓

Acts as the organ for gaseous exchange with the help of stomata

e.g.: Most of the plants

Lenticells

↓

Openings on the stem of plants

↓

On the bark of the stems & shrubs

↓

Allows movement of O_2 into and CO_2 and water out of the tress or shrubs

e.g.: Woody trees

Aerial roots

↓

Adventitious roots above the ground

↓

Used for water, nutrients or aeration

e.g.: orchids epiphytesmangroves

9. Writer slogans on the conservation of natural resources.

A: 1. Plant more trees and water them everyday

Our planet needs a clean environment in everyway!

2. Do you know that our soil is precious?

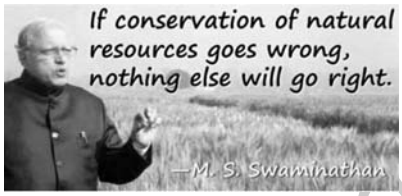
Protect it from erosion and let it function marvellous!

3. Save energy, save resources

We will be empty if we waste the vital sources!

4. Trees stay for long

And lets the life sing its song!

5. 

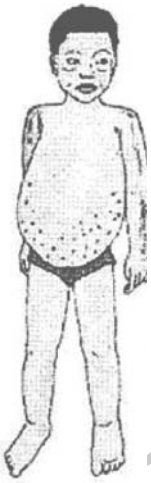
6. Forests are the lungs of our planet

Save them!

SECTION – III

10. a) Observe the following pictures and Answer the questions given below.

Kwashiorkor



Marasmus

i) What is malnutrition?

A: Malnutrition: lack of proper nutrition, caused by not having enough to eat, not eating enough of the right things, or being unable to use the food that one does eat. Faulty nutrition due to inadequate or unbalanced intake of nutrients or their impaired assimilation

ii) Which disease does the first picture indicate? What are it's symptoms?

A: The first picture indicates the disease- Kwashiorkor

Symptoms of the disease:

1. **Kwashiorkor disease:** This is due to protein deficiency in diet. Body parts become swollen due to accumulation of water in the intercellular spaces. Very poor muscle development, swollen legs, fluffy face difficult to eat, diarrhea, dry skin are the symptoms of this disease.

iii) Which diseases does the second picture indicate? What are it's symptoms?

A: The second disease indicates the disease- Marasmus

Symptoms of the disease:

2. Marasmus: This is due to deficiency of both proteins and calories. Generally this disease occur when there is an immediate second pregnancy or repeated child births. Lean and week, swelling limbs, less developed muscles, dry skin, diarrhea, etc., are the symptoms of this disease.

iv) Name two vitamin deficiency diseases.

A: Vitamin deficiency diseases: Vitamin deficiency occurs when there is insufficient or poor dietary intake of essential vitamins. Inadequate levels of vitamins may result in an array of miserable conditions and make the body feeble and vulnerable to many diseases.

Scurvy – vitamin C deficiency

Rickets – vitamin D deficiency

Beri–beri – vitamin B1 deficiency

(OR)

b) What experiment should you perform to understand action of saliva on flour? Explain its procedure and apparatus that you followed?

A: Action of saliva on flour (ata)

A. Experiment to understand action of saliva on flour.

Aim: To demonstrate the action of saliva on flour.

Apparatus: Test tubes (2), flour, watch glass, dilute tincture iodine, saliva (1 teaspoonful)

Procedure:

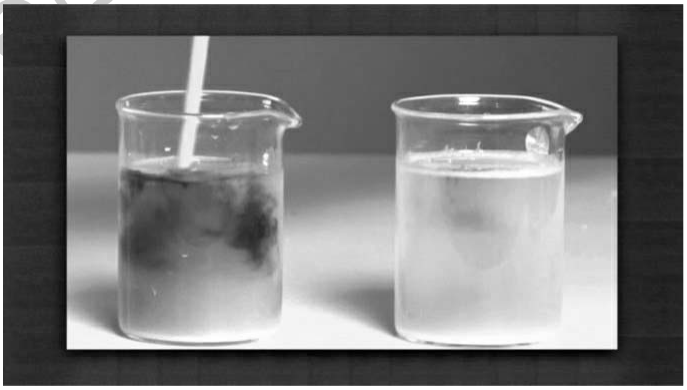
Take a test tube half filled with water and add a pinch of flour to it. Shake the test tube well till the flour gets mixed. Take a few drops of this in a watch glass and test for the presence of starch by putting a drop of diluted tincture iodine in it. A blue black colour confirms the presence of starch. Now divide the mixture into two equal halves by transferring it to another test tube. Note that both the test tubes have the same amount of solution. Add a teaspoon of saliva to one of the test tube and mark it. Do not add anything in the other test tube. After some time (45 mts) add a drop of dil. Tincture Iodine solution to test tubes containing the solution.

Observation:

1) The solution of the test tube to which saliva is added shows colour change as starch is converted to sugar.

2) There is no colour change in the other test tube to which saliva is not added. Inference

Result: The enzyme amylase in the saliva breaks down the starch molecules into smaller subunits usually into sugars.



11. a) Give reasons.

i) Why does the rate of respiration (breathing) increase while walking uphill at a normal pace in the mountains?

A: ★ The rate of breathing increases because the higher we go, the lesser the oxygen we get. Thus, our rate of breathing increases as our body tries to take more oxygen to fulfill the demand of oxygen in our body.

★ We walk against gravity as we climb uphill. Thus, our body requires more energy and energy in our body is supplied by breaking down of oxygen molecules hence, to supply more oxygen to our body our breathing rate increases.

ii) Why does the amount of oxygen vary between exhaled and inhaled air?

A: ★ When we breathe in, the lungs absorb the oxygen and sends it to the bloodstream and leaves the rest of the oxygen along with the carbon dioxide. So, the amount of oxygen is decreased compared to the oxygen in the inhaled air.

iii) Why alveolus are so small and uncountable in number?

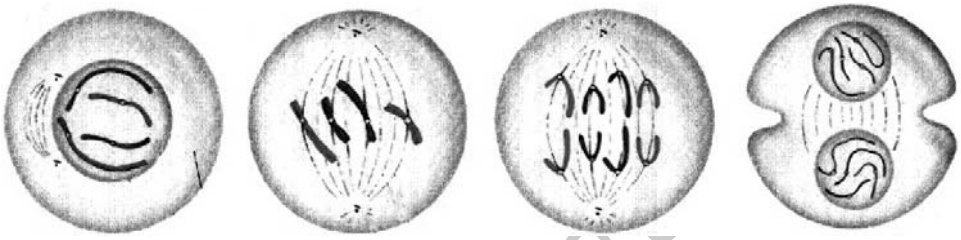
A: ★ Alveolus are small in size because they help in filtering of the de oxygenated blood to oxygenated blood. It is a very important process so they are uncountable in number. Its small size helps in filtering of the blood.

iv) Why are we advised not to talk while eating food?

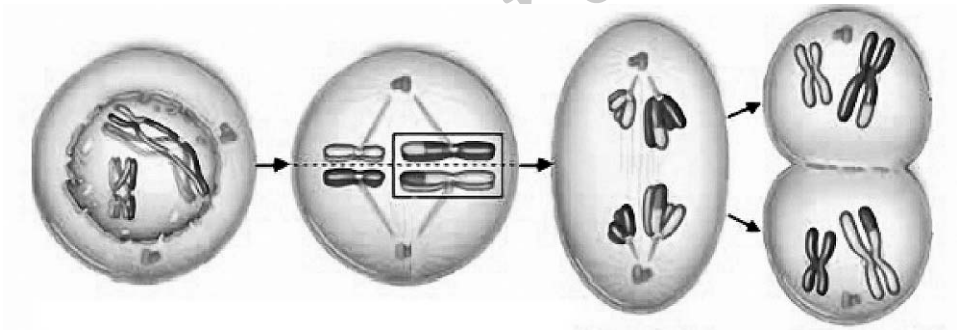
A: ★ We are advised not to talk while eating because, while eating, some food particles might enter the wind–pipe which can lead to choking.

(OR)

b) Observe the following figures, write the difference between mitosis and meiosis.



Prophase **Metaphase** **Anaphase** **Telophase**



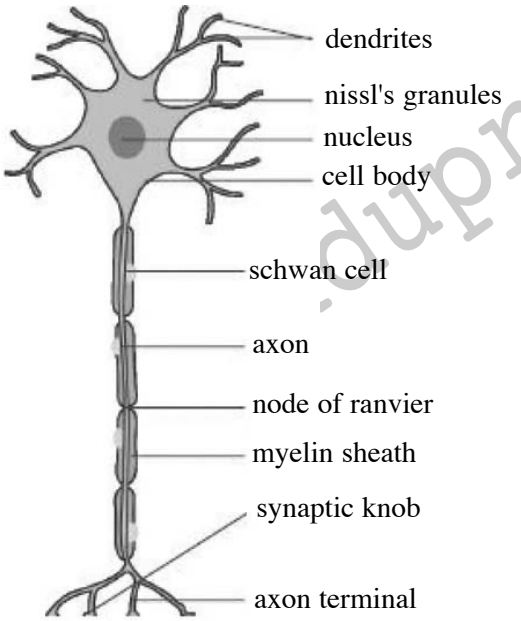
Prophase 1 **Meiosis 1** **Anaphase 1** **Telophase 1**

Differences between Mitosis and Meiosis

Mitosis	Meiosis
The process of asexual reproduction in which the cell divides into two producing a replica with an equal number of chromosomes in each resulting diploid cell. It was discovered by Walther Fleming.	This is a type of cellular reproduction in which the number of chromosomes are reduced by half producing two haploid cells. It was discovered by Oscar Hertwig.
It occurs in all organisms.	It occurs in reproductive cells of humans, animals, plants and fungi.
It produces identical organisms or cells.	It produces different cells or organisms.
There is no pairing of homologous chromosomes.	There is pairing of homologous chromosomes.
Only one division occurs. Number of daughter cells produced are 2 diploid cells.	Two divisions occur. Number of daughter cells produced are 4 haploid cells.
Chromosome number remains the same.	Chromosome number is reduced by half.
Steps-Interphase, Metaphase, Anaphase, Telophase and cytokinesis.	Steps-Interphase, Prophase-I, Metaphase-I, Anaphase-I, Telophase-I, Prophase-II, Metaphase-II, Anaphase-II, Telophase-II.
Karyokinesis occurs in interphase, cytokinesis occurs in Telophase and the centromere sprils during Anaphase.	Karyokinesis occurs in Interphase-I, cytokinesis occurs in Telophase-I and Telophase-II and the centromeres do not separate during Anaphase-I but during Anaphase-II.
It creates everything other than sex cells.	It creates sex cells only. Female egg cells or male sperm cells.

12. a) Answer the following questions.

i) Is the structure of reason suitable for transmission of impulses? Analyse.



Nerve cell

1) Nerve cell is a very special cell in our body.

2) Its structure and nature are most suitable for its function.

3) The function of the nerve cell is to transmit the impulses.

4) To perform this function properly it has several adoptions.

5) The length of the nerve cell is extremely long to transmit the impulses.

6) It has a myelin sheath to help the electric impulses to pass along the cell.

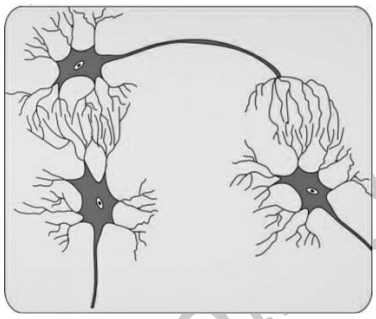
7) Nerve cell ends with dendrites that enter into the receptor Organ and serve the commands.

8) Cyton has lot of projections to receive the impulses.

9) The nerve cells are billions in number to pass the message speedily and form new pathways.

10) End of nerve cells form 'synapses'.

ii) What is a synapse? How is it useful in transferring information?



Synapse: Dendrites of one nerve cell connect to the other or to the axons of the other nerve cell through connections called as a 'synapse'.

Synapse is the connections between neurons. Synapse is a functional region between two neurons where information from one neuron is transmitted or relayed to another neuron. Though these are regions of minute gaps and essentially neurons do not have any protoplasmic connection between them yet information is passed from one nerve cell to the other through these gaps either in the form chemical or electrical signals or both. These synapses are mainly found on the brain, spinal cord and around the spinal cord. Beyond these areas the axon carries the signals to respective areas in our body.

(OR)

b) Write differences between

i) Systole – diastole

Systole	Diastole
The contraction phase of the heart is called systole.	The relaxation phase of the heart is called diastole.
It occurs in two phases.	When it occurs no more blood is pumped into the blood vessels.
Both the auricles contract and pump blood into the ventricles. This is called auricular systole. Both the ventricles contract and pump blood into the aortae. This is called ventricular systole.	The blood vessels return to their normal position and maintain blood pressure at lower level.
The normal systolic pressure shown in the sphygmomanometer is 120.	This is described as diastole. the normal diastolic pressure shown in the sphygmomanometer is 80.

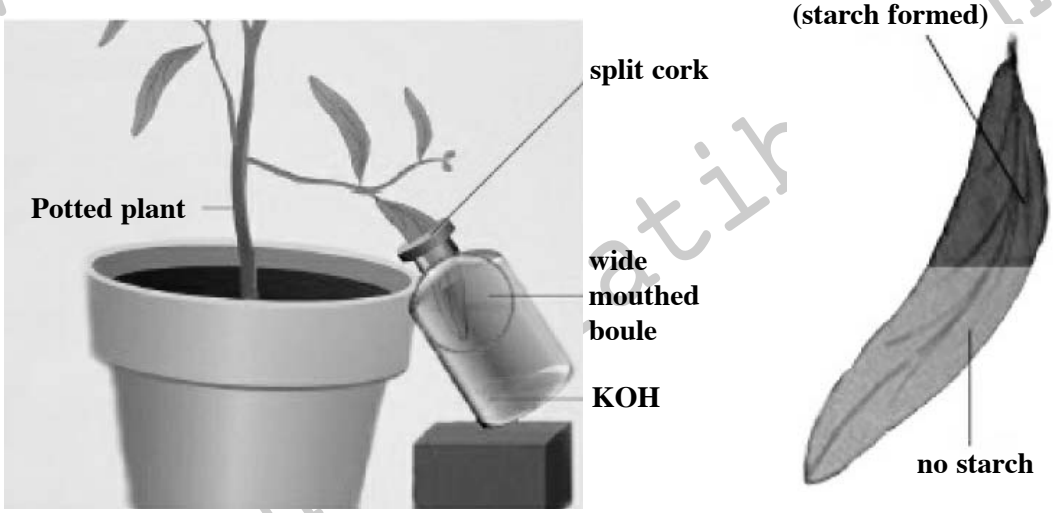
ii) Veins – arteries

Veins	Arteries
These are the blood vessels that carry blood from various body parts to the heart.	These are the blood vessels that carry blood from the heart to various body parts.
They carry deoxygenated blood from various body parts except pulmonary vein.	They carry oxygenated blood from the heart except pulmonary artery.
They have thin non elastic walls.	They have thick elastic muscular walls.
The blood flows under low pressure in them.	The blood flows under high pressure in them.

iii) Xylem – Phloem

Xylem	Phloem
Xylem consists of tracheids and vessels.	Phloem consists of sieve tubes and companion cells.
It transports minerals and water from root to leaves.	It transports food from leaves to root and storage organs.
Transport is unidirectional.	Transport is bidirectional.
It is located at the centre of the vascular bundle.	It is located on the outer side of the vascular bundle.

13. a) Observe the diagram given below.



i) What is the name of the experiment?

A: Name of this experiment: Mohl's leaf experiment

Aim: To prove that Carbon dioxide is necessary for Photosynthesis

Apparatus required: Wide mouthed transparent bottle, destarched plant, potassium hydroxide pellets / potassium hydroxide solution, split cork.

Procedure: Arrange the apparatus as shown in the figure. Take the wide mouthed transparent bottle. Put potassium hydroxide pellets / potassium hydroxide solution in the bottle. (Potassium hydroxide absorbs carbon dioxide). Insert split cork in the mouth of the bottle.

Insert one of the leaves of de starched plant (through a split cork) into transparent bottle containing potassium hydroxide dioxide pellets/potassium hydroxide solution. Leave the plant in sunlight. After a few hours, test this leaf and any other leaf of this plant for starch.

Observation: The leaf that was exposed to the atmospheric air becomes bluish black, and the one inside the flask containing potassium hydroxide that absorbs carbon dioxide in the bottle does not become blue-black.

Inference: This shows that carbon dioxide is necessary for photosynthesis.

ii) What does this experiment prove?

A: This experiment proves that Carbon dioxide is necessary for photosynthesis.

iii) Why was the plant kept in dark and then in sunlight?

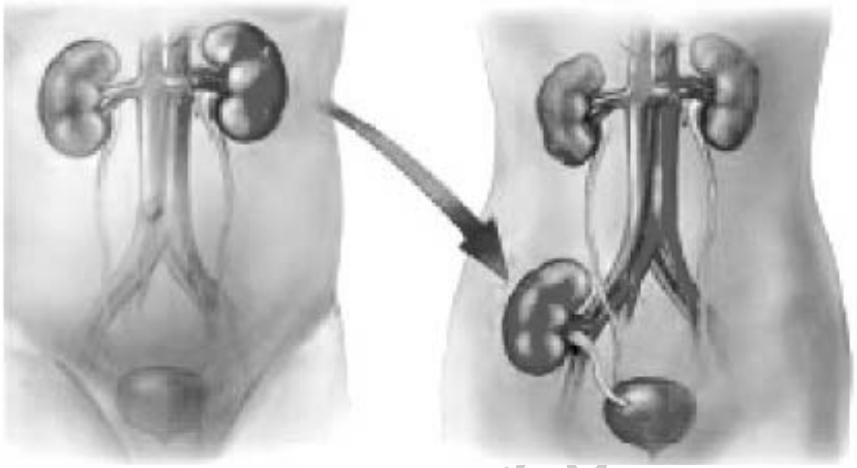
A: The plant was kept first in dark and then in sunlight because to de-starch a plant, we should keep it in dark for a week.

iv) Why did we study two leaves in this experiment?

A: This experiment is called as Mohl's half leaf experiment because the scientist who invented this experiment is "Mohl".

(OR)

b) Observe the following diagram. Answer the questions given below.



kidney transplantation

i) What is kidney transplantation?

A: The best long-term solution for kidney failure (acute renal failure) is Kidney transplantation. A functioning kidney is used in transplantation from a donor preferably a close relative. The kidney that you receive must be a good match to your body, to minimize the chances of rejection of transplanted kidney by the immune system of the host. Modern clinical procedures have increased the success rate of such complicated technique.

ii) Where is the transplanted kidney fixed in the body of a kidney failure patient?

A: Kidney transplantation involves placing a healthy kidney into the body where it can perform all of the functions that a failing kidney cannot.

The new kidney is placed on the lower right or left side of your abdomen where it is surgically connected to nearby blood vessels. Placing the kidney in this position allows it to be easily connected to blood vessels and the bladder. The vein and artery of your new kidney are attached to your vein and artery. The new kidney's ureter is attached to your bladder to allow urine to pass out of your body.

iii) Can donor survive with single kidney without any complications?

A: Once a living donor candidate has been completely evaluated and cleared, the chance of the donation affecting his or her life span or life style is extremely low with any surgery and anaesthesia, however, there are risks. Nationally the risk of having a life threatening problem with donating a kidney is one in three thousand.

The risk of minor complications such as a minor wound infection is about 2 to 4%.

Because the kidney donor operation is a major surgical procedure; donors find they have less energy and need about 4 to 6 weeks to return to their full resurgical activity level.

PART - B ANSWERS

14-B; 15-C; 16-D; 17-A; 18-B; 19-A; 20-B; 21-D; 22-C; 23-A; 24-D; 25-C; 26-A; 27-D; 28-B; 29-C; 30-B; 31-D; 32-D; 33-C.

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