

Telangana Board Class 10 General Science Part II 2015 Question Paper with Solutions

Section-I

4 X 4 =16

1. How can you say that Kidney is suitable for the filtration of biological waste from the blood in a man?

Answer: The [kidneys](#) filter nearly a quarter of the blood output by the heart daily. This blood is sent to the body's filter treatment plant, from where the kidneys purify it and then circulate it on to the rest of the body. Some blood flow becomes fluid waste and is sent into the bladder for storage till it can be conveniently expelled. This toxic waste is also known as urine.

Or

What is called the pumping station in the human body? Explain its structure with a suitable diagram.

Answer: [Heart](#) is called the pumping station of the human body.

2. Write the differences between:

(i) Mitosis- Meiosis

(ii) Photosynthesis- Respiration

Answer: (i) Learn here the [difference between mitosis and meiosis](#).
(ii) Find also, the [difference between photosynthesis and respiration](#).

Or

Explain the changes involved in the formation of seed from Ovule.

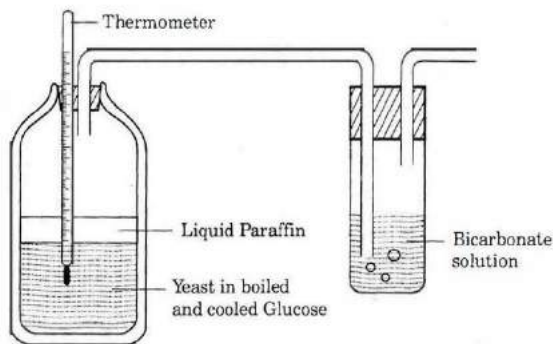
Answer: A seed is formed when a fertilised ovule divides by mitosis. It stores food and has the potential to develop into a new plant under optimal conditions. Fertilisation is the process of fusion of male gamete and female gamete to form a zygote. Pollen grains are transferred to stigma by various pollinating agents such as water, wind, butterflies, insects, animals, birds, etc. After reaching stigma, the male gametes fuses with the egg in the ovule and forms a zygote. Thus, fertilisation takes place, and so the formed zygote divides and develops into an embryo. Following the fertilisation, every part of the flower sheds off except the ovary. The ovary of the flower develops into the fruit while ovules develop into seeds. The formation of the seed completes the process of reproduction in plants. Within the seed, the growing embryo develops and matures.

3. What materials are required to prove that Oxygen is produced during Photosynthesis in the presence of light? What procedure do we need to follow to perform the above experiment?

Answer: For each molecule of carbohydrate formed, one molecule of water and one molecule of oxygen is produced. The materials required to prove that oxygen is produced during photosynthesis in the presence of light are test-tube, beaker, water, funnel and hydrilla plant.

Procedure: Take some hydrilla plant or Elodea in a short-stemmed funnel and keep it in a beaker. After that, pour some water into the beaker. Then, invert a test tube full of water over the stem of the funnel. Make sure that the level of water in the beaker is above the level of the stem of the inverted funnel. Now, place one such apparatus in the sun and the other in the dark. Look after two to three hours. You will find that in place of water, there is air filled in the one that was kept in the sun. This is a gas collected in a test tube. Observe the one kept in the dark. There will be a difference in the amount of gas collected. Now, insert a glowing matchstick or an incense stick and test the gas collected in the test tube. This will burst into flames, thus indicating the presence of Oxygen.

Or



Observe the following diagrams and answer the following questions:

1. What does the above setting(diagram) indicate?
2. Why is boiled and cooled Glucose covered with Paraffin?
3. What is the use of adding diazine green to Glucose solution ? What change do you notice in Glucose solution ?
4. Why is lime water used in this experiment?
5. Why is the bulb of a thermometer dipped in the Glucose water ?

Answer: (1) The above setting indicates that it is the arrangement to determine the anaerobic respiration experiment.

(2) Liquid paraffin is usually added to glucose with yeast in anaerobic respiration experiment. Here, the paraffin will act as a barrier between oxygen and the glucose solution with yeast, thus preventing any aerobic respiration from occurring. This gives the desired result to prove that anaerobic respiration takes place in yeast in the absence of oxygen. During this procedure, carbon dioxide is released. So, the boiled and cooled

glucose is covered with paraffin to prove that carbon dioxide is released during anaerobic respiration.

(3) Diazene green is used to remove the oxygen from glucose. It is said to turn the glucose solution into pink to show the absence of oxygen.

(4) Lime water is used to detect the presence of carbon dioxide.

(5) The bulb thermometer is dipped in the solution to check the temperature of the solution. The experiment requires us to use boiled and cooled glucose water.

4. Read the following table and answer the questions given below:

Sl. No.	Name of the Gland	Location	Hormone Secreted	Response of the body to hormone
1	Pituitary	Floor of brain	Somatotropin Gonadotropin	Growth of bone Activity of ovary and testis
2	Thyroid	Neck	Thyroxine	General growth rate and metabolic activity
3	Ovary	Lower abdomen	Estrogen	Growth of the uterus and skeleton of the pelvis
4	Testis	Scrotal Sac	Testosterone	Growth of male secondary sexual characters

1. Write the importance of glands and hormones
2. Which hormone is responsible for growth of bone?
3. What happens when testosterone is not secreted?
4. Where is the gland that secreted thyroxine located?
5. Which glands are common in male and female?

Answer: (1) Glands are an important part of the endocrine system, which produce, store and secrete the hormones.

(2) Pituitary gland secretes the hormone Somatotropin, which is responsible for the growth of hormone

(3) The male secondary sexual characters will not develop with testosterone

(4) Thyroid is the gland that secretes thyroxine and it is located on the neck

(5) Pituitary and Thyroid are the glands common in male and female

Or

Village	Type of Farmer	Income Per Acre on Crops			
		Paddy	Cotton	Mirchi	Maize
	Small	7,500	9,300	5,200	5000

A	Large	26,700	38,000	16,700	12,900
B	Small	7,200	8,750	4,900	5,100
	Large	32,900	42,000	18,400	13,700

Observe the above table and answer the following questions:

1. Which crop is most suitable to cultivate for smaller farmers in both the villages?
2. If you are a large farmer, which crop would you select to cultivate?
3. Which is the lowest income crop?
4. Is there any relationship between production of crops and income? How?

Answer: (1) Cotton is the most suitable crop to cultivate for smaller farmers in both the villages

(2) If I am a large farmer then I would choose Cotton to cultivate

(3) The lowest income crop for small and large farmer in village A is Maize, while for small farmer in the village B it is Mirchi and for large farmer in the same village it is maize again

(4) Yes, farmers tend to grow crops that are more profitable for them

Section-II

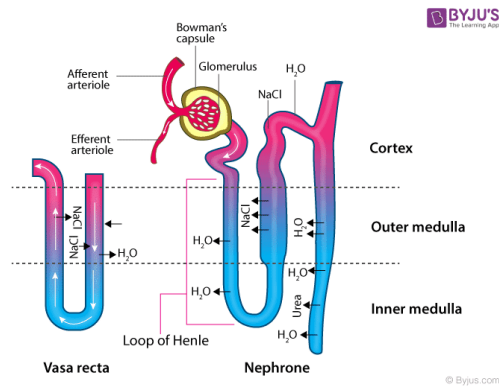
6 X 2 =12

5. "Forest is a renewable resource". Do you agree? Justify.

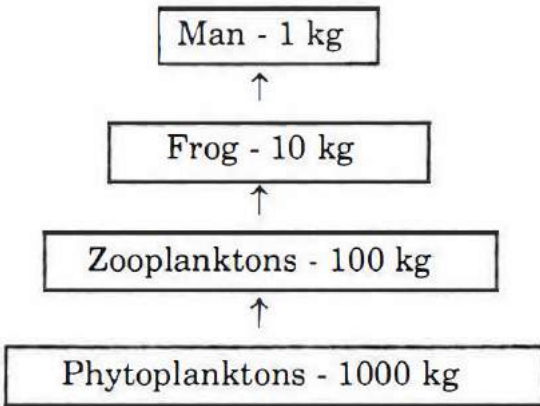
Answer: Forest can be considered as both renewable and non-renewable resource. While forests are renewable in the short term, in long-term they are not renewable, especially when the balance between renewal and loss is unbalanced. When we utilise, a land filled with forests, it may also take years to recover due to increasing demand of land.

6. Draw the structure of an excretory organ, which contains Bowman's Capsule and loop of Henle and label it.

Answer:



7. Explain the flow chart given below:



Answer: An ecological pyramid is a graphical representation of the relationship between the different living organisms at different trophic levels. Pyramid of energy is the only type of ecological pyramid, which is always upright because the energy flow in a food chain is always unidirectional. Also, with every increasing trophic level, some energy is lost into the environment and never goes back to the sun.

8. What questions do you pose to your teacher to understand “blood clotting”?

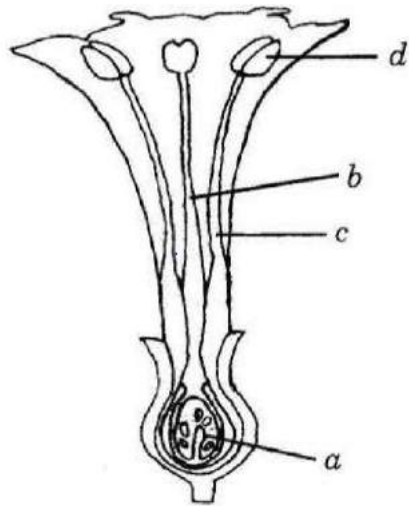
Answer: Some questions to ask about blood clotting are:

1. What is blood coagulation or blood clotting?
2. What is the cause of it?
3. What are the precautions to take?
4. How dangerous is it?
5. What are the methods of treatment?

9. What happens if meiosis does not take place in the reproductive cell?

Answer: If meiosis does not take place properly, then fusion of gametes would result in a doubling of the chromosomes for each successive reproduced generation. The egg or sperm could end up with more chromosomes, or not enough chromosomes.

10. Identify the flower parts a,b,c,d and write their main function.



Answer: Part (a) is the Ovary. Ovule is located in the ovary, a ductless reproductive gland, which is the part of the plant where the seed formation takes place.
Part (b) is the style, a long tube-like slender stalk that connects stigma and the ovary
Part (c) is the filament, a slender, threadlike object, which functions by supporting the anther.
Part (d) is the anther, a yellowish, sac-like structure, involved in producing and storing the pollens.

Section-III

7 X 1 = 7

11. To create awareness on "Water conservation" in your locality, what slogan will you suggest.

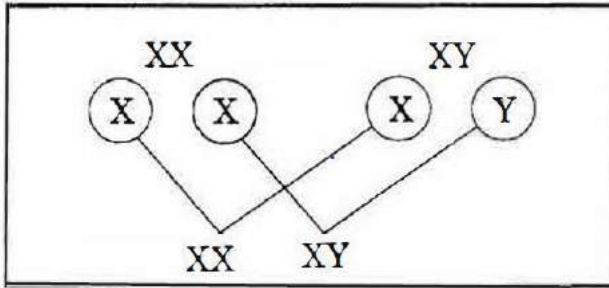
Answer: Some slogans to create awareness on "water conservation" are:

- Ask the worth of water to a thirsty man.
- Conserve water, conserve life!

12. Why is the stomach structured like a bag rather than like a tube?

Answer: The stomach is structured like a bag as it helps keep the food stored in the stomach for some time. The food needs to be mixed with digestive juices and enzymes in the stomach so that the enzymes can act on the food. This needs time and will take place if the food is kept stored for some duration. If the stomach had been tube shaped, like the oesophagus, this would not have been possible. The food would have passed directly into the intestine and digestion would not have taken place completely.

13 . Observe the following flow-chart and answer the following questions:



Who determines the sex of the baby- mother or father? How?

Answer: In humans, the male individual has a sex chromosome (XY) as well as their normal autosome, while the female individual contains XX chromosome as a sex chromosome along with their number of autosomes. The presence of the Y chromosome is necessary for the determination of sex of the male child. During fertilisation, a sperm carrying the X chromosome and an egg cell with the X chromosome comes together resulting in a zygote, which will contain an XX combination of chromosomes. At the same time, if a sperm carrying Y chromosome fertilises with an egg cell containing the X chromosome then the zygote will carry both XY chromosomes. Female zygote will have XX chromosomes and the male zygote will carry XY chromosomes. Thus, we can conclude that the sex of the baby is determined by the father.

14. Why is KOH used in Moll's half- leaf experiment?

Answer: KOH is used as it absorbs the carbon dioxide. This helps to also determine the presence of the gas. It ensures that it is released during the experiment.

15. A plant, which grows near a window bends towards sunlight. Write a reason for it.

Answer: As per phototropism, the phytohormone auxin, which is accumulated on the shady side of the stem stimulates its growth. This also results in the plant stem growing towards the light (positive phototropism).

16. Prepare your own tabular column to get information about food deficiency diseases from a doctor.

Answer:

Diseases	Vitamin Deficiency	Symptoms
Rickets		
Scurvy		
Night Blindness		

Beri Beri		
Goitre		
Pellagra		

17. What examples will you give to prove that Lamarckism is not correct?

Answer: The “first theory of evolution” as proposed by Lamarck , states that the “Organisms undergo changes for adapting themselves to the environment and characters”, which is passed on to the next generation. Change through use and disuse, Effect of environment and new needs, Inheritance of acquired characters and Organisms driven to greater complexity are some characteristics of Lamarckism. Here, find some examples to prove that Lamarckism is not correct. If the new organs were likely to develop, in response to a new need, then the human being would have developed wings. Also, all the changes acquired during the lifetime of an organism cannot be inherited by the child. For example, if a man was to lose an arm in an accident, he would not give birth to a child without an arm.

Section-IV

10 X 1/2 = 5

18. Deficiency of folic acid causes _____

- A. Anaemia
- B. Pellagra
- C. Glossitis
- D. Rickets

Answer: (A) Anaemia

19. Acid present in the gastric juice _____

- A. Sulphuric acid
- B. Hydrochloric acid
- C. Nitrous acid
- D. Phosphoric acid

Answer: (B) Hydrochloric acid

20. Identify the mismatched pair:

- A. Haustoria- Cuscuta
- B. Testosterone- Ovary
- C. Granum- Chloroplast
- D. Epiglottis-Mouth

Answer: (B) Testosterone- Ovary

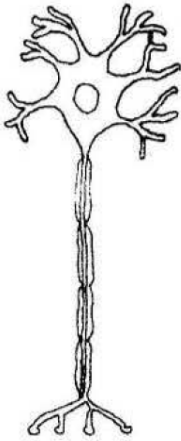
21. How do the sperm enter the egg-cell?

- A. Tears a hole in membrane

- B. Dissolves the membrane with chemicals
- C. Bites through the membrane with teeth
- D. Squeezes through gaps in the membrane

Answers: (D) Squeezes through the gaps in the membrane

22. Identify the diagram



- A. Algae
- B. Neuron
- C. Blood cell
- D. Mitochondria

Answer: (B) Neuron

23. Outer membrane of the lungs is called pleura. Name the outer membrane of Heart.

- (A) Hypercardium
- (B) Pericardium
- (C) Apicardium
- (D) Upper Cardium

Answer: (B) Pericardium

24. A person has lost control of emotions. Which part of the brain is responsible for it?

- A. Cerebrum
- B. Diencephalon
- C. Mid brain
- D. Cerebellum

Answer: (A) Cerebrum

25. Identify the animal in which excretory organ is absent_____

- A. Bird

- B. Amoeba
- C. Sponge
- D. B and C

Answer: (C) Sponge

26. Which of the following practices is suitable for a farmer with less water resource?

- (i) Selective short-term crops
- (ii) Cultivate commercial crops
- (iii) Adapt drip irrigation system
- (iv) Crop holiday

- A. (i), (ii)
- B. (i), (ii), (iii)
- C. (i), (iv)
- D. (iii), (iv)

Answer: (B) (i), (ii), (iii)

27. Which plant hormone is responsible for the closing of Stomata?

- A. Abscisic Acid
- B. Auxin
- C. Cytokinin
- D. Ethylene

Answer: (A) Abscisic Acid