

Telangana Board Class 10 General Science Part II 2017 Question Paper with Solutions

PART-A

Section-I

7 X 1 = 7

1. Which chromosomes determine the sex in human beings?

Answer: There are 46 chromosomes (23 pairs) in human beings, half of which come from the mother and the rest from the father. Of these 23 pairs, 22 pairs are autosomes, while 2 are allosome pairs (known as sex chromosomes). Allosomes are not always a perfect pair. Females carry 22 pair autosomes and 2 x chromosomes, while in males, you will find 22 pair autosomes and one X chromosome as well as one Y chromosome.

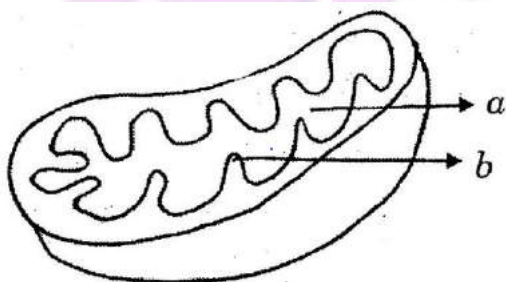
2. Which part of the small intestine absorbs digested food?

Answer: The Duodenum of the small intestine absorbs the partially digested food along with the digestive juices from the liver, pancreas and its walls.

3. Why do we use the KOH solution in Mohl's Half leaf experiment?

Answer: The KOH or the potassium hydroxide solution is used to absorb the carbon dioxide in the bottle. This experiment proves that carbon dioxide is essential in the process of photosynthesis.

4. Label a and b in the given diagram.



Answer: In the image of mitochondria, A is the matrix and B is the cristae.

5. Name the chemical that is used to test the action of saliva on flour.

Answer: Diluted tincture iodine is the chemical used to test the action of saliva on flour.

6. Write two healthy habits which you practise to protect your kidneys from diseases.

Answer: Here are some healthy habits that you have to practise to protect your kidneys from diseases:

- Eat a healthy diet and keep fit
- Drink lots of water
- Control your blood pressure and blood sugar levels

7. Prepare two slogans on protecting non-renewable resources.

Answer: Some slogans on protecting non-renewable resources are given below:

- "Conserve for a better future."
- "Whether half full or half empty resources are limited, don't misuse it."
- "Too much usage of petrol and diesel causes too much pollution."
- "The future is green energy, sustainability, renewable energy."

Section-II

6 X 2 = 12

8. Explain in brief the alternate methods to be followed to prevent the harmful effects of overusing pesticides.

Answer: We have mentioned some alternative methods to prevent the harmful effects of over usage of pesticides:

- Have more organic fruits and vegetables, thus ensuring pesticide-free food items
- Wash the fruits and vegetables thoroughly to remove the chemical residue before eating
- Use non-toxic methods of controlling the insects at your home and garden
- Predator insects, such as ladybugs and praying mantises, can be used as a natural solution to control garden pests

9. What happens if there are no valves in veins?

Answer: Valves are the flaps inside the vein that controls the blood flow. It helps the blood flow in the right direction and prevents the backflow of de-oxygenation of blood from the ventricles to the auricles. Thus, it makes the flow of the blood unidirectional. However, if there are no valves in veins, blood can flow in any direction. The blood flow becomes bi-directional, and consequently, blood will never reach the heart for it to get oxygenated.

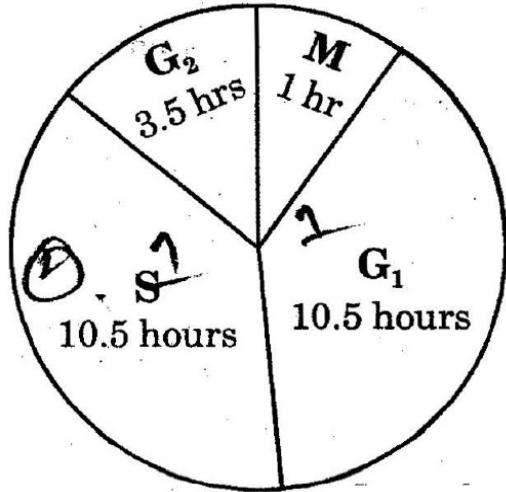
10. What questions will you ask a neurologist on the function of a brain?

Answer: Given here are some questions to ask a neurologist on the function of a brain:

- What does it mean to be brain-dead?
- Is there any alternative procedures or treatment?
- What are the steps or precautions that should be taken to keep the brain active?

- How do we reduce the stress on the brain?

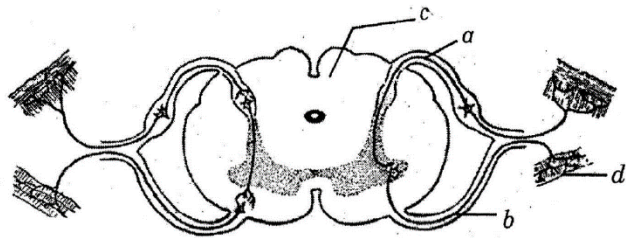
11. Observe the diagram and answer the following questions:



- Which phases take the same time duration?
- In which phase, DNA synthesis takes place?

Answers: (i) The phases S and G₁ take the same time duration
(ii) DNA synthesis takes place during G₂ phase

12. Label a,b,c,d in the diagram given below and write their functions.



Answer: a) Part A is Motor neuron. It directly or indirectly controls the effector organs, mainly muscles and glands
b) Sensory neuron is Part B. They carry the signals from the outer parts of your body into the central nervous system.
c) Part C is White matter. It is the tissue through which messages pass between different areas of grey matter within the central nervous system.
d) Spinal nerve is part D. It transfers the motor, sensory and autonomic signals between the spinal cord and the body.

13. Name the secondary metabolites which are useful in the leather and rubber industry. From which plants do we obtain them?

Answer: The secondary metabolites that are used in the leather industry is Tannis, obtained from Cassia and Acasia plants. Meanwhile, the secondary metabolites used in the rubber industry is Latex, obtained from Jatropha and rubber plants.

Section-III

4 X 4 = 16

14. Write about the accessory excretory organs and their excretory substances in human beings.

Answer: Apart from the urinary system, the skin, liver and the lungs of the vertebrates are the accessory excretory organs. Now, take a look at the excretory substances:

(1) Human skin contains glands that secrete the two fluids, namely sweat from the sweat glands and sebum from sebaceous glands. Sweat, a watery fluid primarily consists of sodium-chloride, lactic acid, urea, amino acids and glucose. It also helps in excreting mainly water and sodium chloride, as well as few quantities of urea and lactic acid. Meanwhile, Sebum is a wax-like secretion that helps to excrete some lipids such as waxes, sterols, other hydrocarbons and fatty acids on the skin.

(2) Lungs are the main respiratory organs of vertebrates, which helps to eliminate the entire volume of carbon dioxide produced in the body, as well as some moisture, during expiration. The lungs maintain the blood-gas homeostasis through elimination of carbon dioxide. If the lungs fail to eliminate enough carbon dioxide, then the kidneys attempt to compensate. They change some carbon dioxide into sodium bicarbonate, which becomes part of the blood buffer system.

Or

What is Phenotype and Genotype? Explain them with the help of Mendel's Monohybrid cross.

Answer: The genotype is a set of genes in which the DNA is responsible for the unique trait or characteristics while the phenotype is the physical appearance or characteristic of an organism. Here, we have tried to explain them with the help of [Mendel's Monohybrid cross](#).

15. Write the mechanism of light dependent reactions in Photosynthesis.

Answer: Photosynthesis is a process by which phototrophs convert light energy into chemical energy, which is later used to fuel cellular activities. The chemical energy is stored in the form of sugars, which are created from water and carbon dioxide. The process of photosynthesis occurs in two stages:

- [Light-dependent reaction or light reaction](#)
- Light independent reaction or dark reaction

Or

Which system of our body is called the second brain? Why?

Answer: The enteric nervous system (ENS) or the intrinsic nervous system of the gastrointestinal tract, which controls all the gut functions and nervous regulation independently is called the second brain. Neurons are part of the enteric nervous system. This is different from the central nervous system that makes up the brain and the spinal cord. Its functions appear very co-ordinated and it has its own reflexes. The enteric nervous system (ENS) is called the "second brain" or the brain in the gut, as it can function independently of the brain and spinal cord.

16. Write the procedure which you follow to observe bread mould Sporangium in your laboratory. What precautions do you take during the activity?

Answer: Apparatus needed: Mold sample or Spoiled Bread, Plain glass slide, Cover slip, Water, Disposable gloves, Microscope.

Procedure: Place a drop of water at the centre of the slide. Then, using a toothpick, scrape very little of the mold and place it on the drop of water. Now, place the cover slip on the mold sample without any air bubbles. Also, use the tissue paper to blot up the excess water present at the edges of the cover slip. Finally, view the slide with a compound microscope.

Precautions: The coverslip should be placed on the sample without any air bubbles and also tissue paper should be used to blot up the excess water.

Or

Write the materials required and the procedure to prove that light is essential for photosynthesis.

Answer: The materials required to prove that light is essential for photosynthesis is a potted plant, the black paper strips or Ganongs light screen, clips or cello tape, alcohol, iodine solution, water bath, beaker, burner, water, petri dish and dropper. Now, see the procedure to prove that light is essential for photosynthesis. First, choose a healthy potted plant and then destarch the plant by placing it in complete darkness for a minimum of 48 hours. After 48 hours, use a clip or cello tape and cover a part of the leaf of the plant from both upper and lower sides with black paper strips. Then, keep the potted plant in sunlight for about 3 to 4 hours. After 3 to 4 hours, pluck the leaf and remove the black paper strips. Now, boil the leaf in water for two minutes. After this, transfer the leaf from the boiling water to a beaker containing ethanol and then boil the leaf in a water bath. This helps to decolourise the leaf. Now, remove the leaf from the beaker and then wash it in water at room temperature. Now, place this leaf in a petri dish and add a few drops of iodine solution over the decolourised leaf. The area of the leaf that was uncovered has undergone photosynthesis and so it will have starch(which has turned blue-black with iodine solution). Meanwhile, the covered portion of the leaf remains yellow as it has not performed any photosynthesis.

17. Read the table and answer the following questions:

S. No	Name of Phylum	Type of Transport System
1.	Cnidarians	Gastro Vascular Cavity

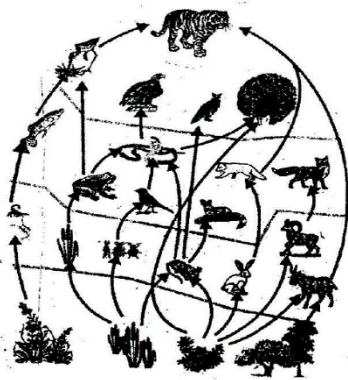
2.	Platyhelminthes	Digestive System
3.	Nemathelminthes	Pseudo-Coelom
4.	Annelida	Blood Vessels
5.	Arthropoda	Open Circulatory System

- (i) In which phylum, blood vessels are first formed?
 (ii) In which phylum, organisms have haemoglobin in their blood?
 (iii) In which phylum, digestive system helps in transportation?
 (iv) Why do Arthropods have an open circulatory system?

Answer: (i) In Annelida, the blood vessels are first formed
 (ii) In Annelida phylum, organisms have haemoglobin in their blood
 (iii) In Cnidarians, the digestive system helps in transportation
 (iv) Arthropods have open circulatory system because they have air sacs to supply blood to the heart so that oxygen is also supplied to all over the body. Their circulatory system helps to supply oxygen to the body and to dispose of carbon dioxide.

Or

Observe the following diagram and answer the following questions:



- (i) Name the primary producers in the given food web.
 (ii) Prepare any food-chain from the diagram.
 (iii) What are the tertiary customers?
 (iv) Write the name of any two herbivores.

Answer: (i) Primary producers are organisms that can synthesise their own food. For example, some plants or algae.
 (ii) Any food chain given from the diagram is plants - grasshoppers - mice- snake- eagles
 Or Plants- goat- lion
 (iii) They are the ones who feed on secondary consumers. They are thus called the top predators. They are also termed as apex predators and have no natural enemies. Will be the example for a tertiary customer in this food chain.

(iv) Examples for herbivores are grass hopper and goat.

