

Telangana Board Class 10 General Science Part II 2018 Question Paper with Solutions

Part- A

Section-I

7 x 1=7

1. How can we say that Photosynthesis is the basic energy source for the living world?

Answer: Photosynthesis is the basic energy source for the living world because it releases oxygen, which is very important for all living beings. This is how the green plants and blue-green algae utilise the energy of light to convert carbon dioxide and water into the simple sugar glucose. It is crucial for auto-trophic nutrition and is considered a significant part of the food chain. Also, in the absence of Photosynthesis, the carbon cycle will not take place.

2. Name the food material on which trypsin acts and name the end products.

Answer: The trypsin found in the pancreas will break down the protein-rich food items, thus digesting the proteins into peptides and amino acids. These end products are in active form trypsinogen. Thus, we find that the food material on which trypsin acts is protein, and the end products released are proteose and peptone. .

3. List the materials you have used to observe the goat heart in your laboratory.

Answer: Materials that you need to observe the goat heart in your laboratory are the heart of a goat from the butcher, dissecting scissors, scalpels, soda straws, tray, forceps, used pen refills, a jug of water and so on.

4. Give any two suggestions to create awareness to stop female foeticide.

Answer: Creating awareness campaigns is the best solution to stop female foeticide. One way to create awareness to stop female foeticide is to educate people about the importance of females. We can also conduct street plays in cities with a low female ratio. Meanwhile, Beti Bachao, Beti Padhao (means save girl child and educate girl child) scheme launched in 2015, also works for women's welfare.

5. Write two precautions you take while observing Rhizopus in the laboratory.

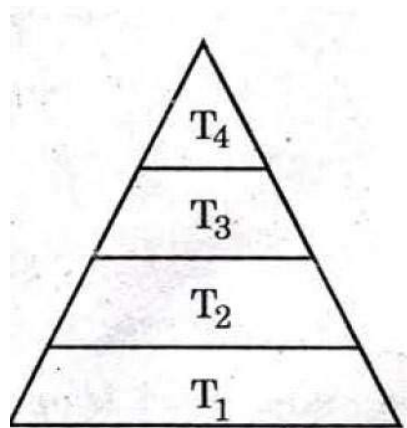
Answer: Since mould is an allergen and can be toxic, it is better to cover as much skin as you can and wear gloves when handling it. You can use a toothpick to scrape it off. If you do touch the mould with your bare hands, make sure to wash it off properly. If you have any allergies like asthma, it is better to stay away from it.

6. “We can’t imagine the world without insects and birds”. Suggest two methods to conserve them.

Answer: Here are some methods suggested, to conserve insects and birds:

- Protect natural insects and bird
- Avoid indiscriminate use of pesticides
- Develop bird sanctuaries
- Raise awareness of proper waste management
- Avoid using plastics
- Create a viable population for the species
- Protect natural areas of habitat

7. The figure given below represents a food pyramid. Study it and answer the following questions:



- Which trophic level has maximum energy?
- Give one example for T_4 trophic level.

Answer: (a) The amount of energy at each trophic level decreases, as it moves through an ecosystem. It is seen that at any trophic level, as little as 10% energy is transferred to the next level and the rest is lost largely via metabolic processes as heat. Hence, it is confirmed that T_1 has maximum energy.

(b) Example for T_4 Trophic level are top consumers such as hawk, etc.

Section-II

6 x 2=12

8. Explain two tropic movements with suitable examples.

Answer: When a plant exhibits some growth movement in response to a stimulus, it is referred to as tropism. Tropism is specific to the direction of the stimulus. Plants can either display a negative or positive movement in response to a stimulus. It is positive tropism when the movement is towards the direction of stimuli while it is negative tropism when the movement is away from the stimuli. Check out [types of tropic movements with examples](#) here.

9. Prepare four questions that you will ask a nephrologist about kidney failure.

Answer: Here are some questions to ask your nephrologist about kidney failure:

- What is my creatinine level?
- What are the main causes of kidney failure?
- What are the symptoms of kidney failure?
- How important is dialysis for my kidney failure?
- Is it possible to replace the kidneys?

10. Observe the chequerboard and answer the following questions:

♀ \ ♂	Y	y
Y	YY	Yy
y	yY	yy

- Write phenotypic ratio of monohybrid cross.
- How many heterozygous plants are present in the chequerboard?

Answer: (a) We normally consider the amount of homozygous dominant (YY) and heterozygous (Yy) squares as one phenotypic group and so the amount of homozygous recessive (yy) squares is considered as another group. The result, as a ratio of the two groups: A count of 3 from one group and 1 from the other would give a ratio of 3:1. Hence, the phenotypic ratio of the monohybrid cross is 3:1.
(b) There are two heterozygous plants yY and Yy present in the chequerboard

11. What will happen, if Islets of Langerhans fail to function?

Answer: If Islets of Langerhans fail to function properly, insulin will not be produced, thus leading to increased sugar level in the blood. This results in diabetes in people. As there is no secretion of Gherlin, you will also not feel hungry.

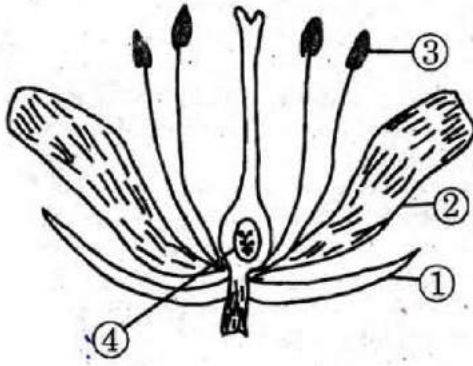
12. Suggest four measures to conserve fossil fuels.

Answer: Here are some measures to conserve the fossil fuels. You can answer any four from these for the question (as suggested):

- Reduce, reuse or recycle plastic materials
- Limit the use of fossil fuels
- Avoid the wastage of fossil fuels or non- renewable energy resources
- Conserve energy
- Use more of public transport or carpools
- Conduct seminars and workshops to create environmental awareness

- Prevent deforestation and adapt other soil conservation methods
- Avoid unnecessary use of paper and plant more trees

13. Observe the diagram and answer the following questions:



- Name the male and female reproductive parts of the above figure.
- Write the names of (1) and (2) in the diagram.

Answer: The sexual parts of a flower are the stamen, the male reproductive organ and pistil, the innermost part and the female reproductive organ. The reproductive parts of a flower consist of the following:

- **Stamen:** This is the male reproductive organ and is also known as Androecium. It consists of two parts namely: anther and filaments.
 1. The anther is a yellowish, sac-like structure, involved in producing and storing the pollens.
 2. The filament is a slender, threadlike object, which functions by supporting the anther.
- **Pistil:** This is the innermost part and the female reproductive organ of a flower which comprises three parts -stigma, style and ovary. This is collectively known as the pistil.
 1. Stigma: It is the topmost part or receptive tip of carpels in the gynoecium of a flower.
 2. Style: It is the long tube-like slender stalk that connects stigma and the ovary.
 3. Ovary: It is the ductless reproductive gland that holds a lot of ovules. It is the part of the plant where the seed formation takes place.

(b) The names given are (2)- filament and (1)-Sepal

Section-III

4 x 4=16

14. Explain the vegetative methods of artificial propagation in plants.

Answer: Vegetative propagation, an asexual method of plant reproduction occurs in its leaves, roots and stem. This can occur through fragmentation and regeneration of specific vegetative parts of plants. Learn more about [Artificial vegetative propagation](#) here.

Or

What do you understand by the term Natural Selection? Write Darwin's theory of evolution.

Answer: Natural selection is a process in nature by which, as per Darwin's theory of evolution, which gives a more rational explanation of the formation of new species. As per natural selection, various species originated from a single species as a result of adaptation to the changing environment. Also, learn more about [Darwin's theory of evolution](#) from here.

15. What are four R's? Explain how they help to conserve the environment.

Answer: There are essentially 3 R's in the process of creating and maintaining a comprehensive recycling program. Learn more about the 3 R's [here](#).

Reduce: Repair leaky taps and avoid a shower or switch off unnecessary lights and fans. Think of other things that you could reduce usage of.

Reuse: things that you often tend to throw away, like paper and wrapping papers. This would save plants and minimise pollution.

Recycle: may not always be a very good option as recycling plastic is a tricky process and can cause havoc. The chief problem lies in plastics' complexity. There are as many types of plastic as their uses. Since each type can only be recycled with its own kind, plastics need to be carefully sorted before they can be processed.

Now, adding to this is the 4th R of environment conservation. This fourth R that is an important part of environment conservation is Recover. It stands for recovering valuable commodities.

Or

How do pesticides, herbicides and fungicides affect the ecosystems? Explain about Bioaccumulation and Biomagnification with examples.

Answer: Pesticides or fungicides are chemicals used to kill the fungal or animal pests. Meanwhile, these pesticides also come with some environmental concerns, which has caused some of them to be banned, while the use of others have also been restricted or reduced. It is seen that almost 95% to 98% of the pesticides reach other destinations than their targets as these insecticides are sprayed or spread across the entire field. These chemicals normally contaminate the soil, water, turf or other vegetation. Apart from killing the insects or destroying the weeds, these chemicals are also harmful for birds, fish, beneficial insects, and non-target plants. It is also seen that excessive use of pesticides could result in [Bioaccumulation and Biomagnification](#). The process of accumulating toxic chemicals such as pollutants, pesticides and other toxins directly into the human body either through air, water, food intake, or directly through the skin is termed as Bioaccumulation. Example for this is the use of DDT as an insecticide in the 1950s and 1960s. The process of a build-up of certain chemical substances or toxins at the higher

trophic levels of a food chain is termed as [Biomagnification](#). For example, spraying a marsh to control mosquitoes will cause trace amounts of DDT to accumulate in the cells of microscopic aquatic organisms, the plankton, in the marsh. In feeding on the plankton, filter-feeders, like clams and some fish, harvest DDT, as well as food.

16. List out the materials required and the procedure to be followed to prove that “Carbon dioxide is essential for photosynthesis.”

Answer: Photosynthesis requires raw materials like water, carbon dioxide and cellular components like plastids. Plants utilise these raw materials to synthesise carbohydrates only in the presence of light. These key features of photosynthesis were revealed during the mid-nineteenth century. Here, we have listed out the materials and the procedure to be followed to prove that “Carbon dioxide is essential for photosynthesis.”

Materials required: A healthy potted plant, a wide-mouthed glass bottle with a split cork, potassium hydroxide solution (KOH), and starch solution.

Experiment:

1. Select a healthy potted plant and place it in the darkroom for two to three days to ensure leaves are free from starch.
2. In a wide-mouthed glass bottle add 10-15 ml of potassium hydroxide solution and split the cork vertically.
3. Now carefully insert half part of a leaf into a glass bottle through the split cork and the other half exposed to air.
4. Place the complete unit undisturbed in sunlight for about 3 – 4 hours.
5. After 4 hours, detach the leaf from the plant and slowly remove it out from the bottle and test it with the starch solution.
6. We can observe that the half part leaf which was inside the glass bottle (KOH solution) did not show any colour change but the other half part exposed to surroundings turned its colour to dark brown indicating the presence of starch in it.

Conclusion: In this experiment, we can conclude that carbon dioxide is essential for photosynthesis. Both portions of the leaf received the same amount of water, chloroplasts, and sunlight but the half part which was inside the glass bottle did not receive carbon dioxide.

Or

Write the procedure you have followed to observe “heat is evolved during respiration” in your laboratory. What precautions did you take during the activity?

Answer: Given here are some precautions taken during this activity:

The mouth of the thermos flask is closed tightly with a cork. A thermometer is introduced through the cork so that its bulb rests among the gram seeds. Also, make sure that the seeds collected in one flask is wet, while the other is completely dry.

Aim: Prove that heat is evolved during respiration

Experiment: Place a thermometer in two thermos flasks consisting of 200 seeds that are soaked in water for 24hrs. Now, divide these seeds into two flasks. Flask A will have the live germinating seed, while Flask B will contain the seeds (live germinating) boiled and washed with formalin/carbolic acid.

Observation: After a few hours, the thermometer kept in Flask A shows a rise in temperature, while that in Flask B does not show any rise in temperature.

Result: This rise in temperature indicates that heat is given out by germinating seeds. Thus, this experiment proves that heat is evolved during respiration.

17. Analyse the following information and answer the questions:

Sl No.	Organ	List 1- Effect of Nervous System	List 2- Effect of Nervous System
1	Eye	Dilates Pupil	Constricts Pupil
2	Mouth	Inhibits Salivation	Stimulates Salivation
3	Lungs	Relaxes Bronchi	Constrict Bronchi
4	Heart	Accelerates Heart Beat	Heart beat to normalcy
5	Blood Vessel	Increase Blood Pressure	Decrease Blood Pressure
6	Pancreas	Inhibits Pancreas Activity	Stimulates Pancreas Activity

- (i) Write two functions of Sympathetic Nervous System.
- (ii) Name two organs that are influenced by Parasympathetic Nervous System.
- (iii) Name the nervous system mentioned in the table that increases the blood pressure.
- (iv) What systems constitute an Autonomous Nervous System?

Answer: (i) Two main functions of the Sympathetic Nervous system are inhibiting salivation and accelerating the heart beat.

(ii) The Parasympathetic Nervous System brings the heartbeat to normalcy and also stimulates the pancreas activity. Hence, the two organs influenced by this nervous system include the heart and pancreas.

(iii) Sympathetic nervous system increases the blood pressure.

(iv) Autonomous nervous system comprises Sympathetic Nervous System and Parasympathetic Nervous System.

Or

Read the following table and answer the following questions:

Sl. No	Structure	Location
1	Tricuspid Valve	Right auriculo-ventricular aperture
2	Guard Cells	Epidermis of leaves
3	Glomerulus	Nephron
4	Alveoli	Lungs
5	Acrosome	Above the head of a sperm

- (i) Name the structure concerned to the heart.
- (ii) What is the function of an acrosome?

- (iii) Name the structures, which are helpful for gaseous exchange.
(iv) Name the part performing excretion.

Answer: (i) The Tricuspid valve or the right auriculo-ventricular app is located in the right dorsal side of the mammalian heart, between the right atm and the right ventricle.

(ii) The acrosome in Eutherian mammals includes digestive enzymes (including hyaluronidase and acrosin). These enzymes break down the outer membrane of the ovum, called the zona pellucida, which allows the haploid nucleus in the sperm cell to join with the haploid nucleus in the ovum.

(iii) The key function of Alveoli, an important part of the respiratory system is to exchange oxygen and carbon dioxide molecules to and from the bloodstream. These tiny, balloon-shaped air sacs are located at the very end of the respiratory tree and are organised in clusters throughout the lungs.

(iv) The part that performs excretion is the Glomerulus. The main function of the kidney is the excretion of body wastes and harmful chemicals into the urine. Each kidney has one million nephrons and these nephrons have three primary regions that function during the renal excretion process: the glomerulus, proximal tubule and the distal tubule. Filtration also takes place in the glomerulus, which is the vascular beginning of the nephron.