

BIOTECHNO ACTIVITY BOOK

CLASS - III

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EDUHEAL FOUNDATION
• LEARNING FOR LIFE •

Enhancing awareness & knowledge in children about BIOTECH



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Preface

Biotechno Activity Book is a small step towards encouraging school students to take up Biotechnology. These activity books, meant for free distribution to students enrolled for Nationwide Biotechnology Olympiad (NBtO) will help students generating interest for Biotechnology. We at EduHeal Foundation still need a lot of help and encouragement from school teachers and Principal in accomplishment of our goal. It is you, who form the vital link between EduHeal Foundation and students as you can further encourage students to know about Biotechnology on a day to day basis. We will also not sit idle but make all possible efforts to increase interest :

- By publishing books like **Biotechno Activity Book**.
- Create awareness by conducting Nationwide Biotechnology Olympiad.
- Teacher Training Programme in pure and applied sciences.
- Career Development Workshop for Students.
- **Online course management system** so as to provide an affordable platform to schools for online teaching and testing.
- Networking to enhance school/Govt./ Industry Interface.

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With best wishes

Dr. Sandeep Ahlawat
Managing Director

CLASS - III

S. No.	Topic	Page No.
1.	Syllabus Guide Lines	04
2.	The Story of Leaves	10
3.	Activity	13
4.	Ingredients for Life	14
5.	Glow in Dark	15
6.	Change	16
7.	Microbes	18
8.	A scary story	22
9.	What makes me me	24
10.	Plants to run Cars	27
11.	Green Jeans	28
12.	Making Food	29
13.	The Unfruitful Tree	30
14.	How to Make Recycle Paper	32
15.	Biotechnology and Biodiversity	34
16.	Sample Paper	35

SYLLABUS GUIDELINES

(based on National Curriculum frame work issued by NCERT)

CLASS - III

Questions	Key concepts	Activities/ Processes
<p>1. Family and Friends 1.1 RELATIONSHIPS My family Who all live with you at home? How are they related to each other? Do you have relatives who do not live with you? Have they always been there? How many children did your grand parents have? Who do you think will be your new relatives in future?</p>	<p>Concept of a family; diversity in family types; Family as a support system, Ideas about relationships; Simple family tree (three generations).</p>	<p>Observation, enquiry about family relations from adults, discussion.</p>
<p>My family and me Do you look like anybody in your family? Have you learnt anything from anybody in your family? Whom do you admire most among all your relatives? Who is the most caring and patient person? When do you meet members of your family who do not live with you?</p>	<p>Family influences – physical characteristics, values and habits, appreciating qualities and skills of family members; family as a support system.</p>	<p>Observation, exploring from elders about extended family, narrating stories/singing poems related to festivals, writing about any festival, drawing.</p>
<p>Whom do I look like? Do some of your relatives look similar? Which features are similar – eyes, ears, the voice or height? Are there any two people in your family who look exactly alike?</p>	<p>Concept of similarity between relations, hereditary features.</p>	<p>Discussion About stories/ films/jokes involving twins</p>
<p>Old and the physically challenged Do you know of people who are hard of hearing? Are many of them old? Do you have any friends who cannot hear/see well? Is there any way in which you may have helped them? Are there any sounds you like but others/elders do not? gest animals you have seen? Which have you only heard about? Which animals have tails? How many legs?</p>	<p>Sensitivity to the old and physically challenged; Introduction to the sense of hearing and sight; sensitization to the fact that the body ages, also that some children may not hear / see at all or may be partially affected. Basic idea about Braille.</p>	<p>Reading and discussion; Making different kinds of sounds and expressing likes and dislikes about them.; blindfold act, visiting any local institution that deals with the blind or any other institution.</p>
<p>1.2 PLANTS Plants around us How many different kinds of plants do you see around you? What are the differences you notice? What things around you are made of plants? Is there a plant in your area that was not there when your grandparents were young? Do you know of some plants which do not grow around you, say things that we eat and not grown around you?</p>	<p>Exploring children's ideas about a 'plant'. Plant diversity; size, where they grow, shape, colour, aroma, etc.; dependence on plants for everyday life. Introduction of new plants/crops and changes observed by elders over time. Plants and the climate/environment.</p>	<p>Observation of different plants around, compare and classification based on simple characters; Discussion about things made of plants, pencil prints of barks, leaf prints.</p>

<p>Leaves in our lives What different kinds of leaves do you see? Do you use plant leaves to eat on? In what other ways are leaves used? Is there some time of the year when lots of leaves fall to the ground? Are they burnt? Have you seen a compost pit? What leaf motifs do you find on clothes, pots, walls, animals, etc.? Do you decorate your house with leaves on some occasions?</p>	<p>Leaf diversity – colour, shape, texture, aroma, etc. Seasonal shedding of leaves; compost from leaves. Leaf designs/motifs on different objects.</p>	<p>Observation, collection of different leaves, smelling different plant leaves, discussion, visit to a nearby compost pit, decorating the classroom with leaf motifs. Applying <i>mehndi</i> on palms in different designs.</p>
<p>1.3 ANIMALS Animals: small and big Which are the smallest and the biggest animals you have seen? Which have you only heard about? Which animals have tails? How many legs?</p>	<p>Exploring children's ideas of an 'animal'.</p>	<p>Observation of diversity of animals around you, listing, Discussion about what they eat, where they live relative size of animals they have seen, pictures in books, animals heard about. Drawing pictures of favourite animals.</p>
<p>Some creepy crawlies – and flyers too What different kinds of small crawling animals do you know? Where and from what does each of them hide? Which insects can crawl and also fly? Which ones bite us? Can flies make us ill? Why does a spider make a web?</p>	<p>Exploring children's ideas of crawling animals, flyers and insects.</p>	<p>Observation, of ants, flies, spiders, crickets, cockroaches, earthworms, lizards and other animals. Discussion about them, where they live, what they eat, insect bites (wasp) etc. Drawing some of them.</p>
<p>Birds Which are the birds you see around your area? Do they like some trees more than others? What do they eat? Can you recognize birds by their feathers? What are the different sounds they make? Are they saying something to each other? Are there some birds that come from other places? Do you feed any birds or place water for them?</p>	<p>Exploring children's ideas of birds-their living places, eating habits, common features like feathers and sounds produced by them. Feeding birds.</p>	<p>Drawings of birds; mimicking different neck movements and sounds of birds, collecting feathers.</p>
<p>1.4 WORK AND PLAY Work around me What are the different kinds of work done around me? What work does my mother/ father/ brother/ sister etc. do? What work do I do? What work do others do? When I am not working what do I do? When my father/ mother is not working what do they do?</p>	<p>Different occupations, idea of working time and leisure time; work inside and outside homes –gender, age, caste, economic, etc. aspects.</p>	<p>Draw a daily time-chart for your father, mother and yourself, discussion.</p>
<p>Working children What kind of work was done by children when your grandparents were young? Has that changed today? Who are the children you know who work and go to school/ who work and cannot go to school?</p>	<p>Sensitize children to other children who work at home and outside - not as a result of family neglect but more as a systemic cause. Important that all children go to school.</p>	<p>Reading and listening to the story/ excerpts. Discussion and narratives about children making firecrackers at Shivkashi., child workers at Dhabas and auto workshops.</p>

<p>Games we play What games do I play? Did my grandparents play the same games? Are these indoor/outdoor?</p>	<p>A sense of how child labour existed in other countries before all children began to go to good common schools.</p> <p>Leisure; games in school and outside, past and present; for some play is work</p>	<p>Listing, classifying indoor and outdoor games.</p>
<p>2. Food Foods from plants and animals Which of these is food – red ants, bird's nests, snakes, bananas, goat's milk, etc.? What plants do you eat - what parts of the plant? What food do we take from animals?</p>	<p>Appreciation of cultural diversity in food; basic ideas about various plant used as food; food from animals.</p>	<p>Listing and discussing about food we do or do not eat; tabulating food we take from different plants and animals. Observing and drawing different parts of plants eaten.</p>
<p>Cooking What do you eat that is not cooked? What is eaten only when cooked? How do you cook food? What do you cook it on? What are the different kinds of vessels used for cooking? What are they made of? Is water used in all forms of cooking? Which food is cooked without using water? How?</p>	<p>Food may be eaten raw or cooked - steamed, boiled, baked, fried etc.; Different fuels, types of stoves; Types of vessels used in cooking, different shapes (regional/traditional), different materials, etc.</p>	<p>Listing raw and cooked food; discussion on cooking methods/ materials, etc; survey to find out the types of fuels/vessels used; drawing various utensils; historical time line tracing what in the kitchen has changed and roughly when.</p>
<p>Eating in the family Do all members of the family eat the same food in your family? Who eats more? Who eats last in your family? Who buys the food and what is bought from the market? Who cooks the food in your family? What do babies have for food? When do babies start eating and what do they eat other than milk?</p>	<p>Different eating practices in the family. Amount of food varying with gender, age, physical activity, etc. Cooking and gender/ caste roles in the family; Food for the baby, significance of milk.</p>	<p>Observation and asking adults, discussion. Listing of food items bought from the market/grown at home.</p>
<p>What animals eat Do animals eat the same things? What do different animals eat? Do you feed the animals around you - what? What do they take from your house even when not fed?</p>	<p>Food of domestic and wild animals; care of domestic animals.</p>	<p>Observing and listing different animals and their feeding habits.; Discussing food given to animals.; observing animals being fed, keeping food out and observing animals come and feed.</p>
<p>3. Shelter Houses and houses Have you seen - a house on stilts, a tent, a flat on the tenth floor, a house on wheels or a house on a boat? Do you know anyone living in such houses? Why do people use such houses?</p>	<p>Some unusual houses, a narrative and a discussion about why such houses are built. Different types of houses.</p>	<p>Discussion; observation; Drawing, model making and art work. Creative writing about imagined experiences.</p>
<p>Decorating and cleaning our shelter How do you decorate your shelter? Do you draw designs on your walls/ floor or decorate with leaves/flowers/other objects? How do</p>	<p>My house, Houses/ shelters are decorated in different ways in different cultures; Need for shelter</p>	<p>Draw a picture of your house. Draw the various kinds of designs/motifs used to decorate walls/ floors of houses.</p>

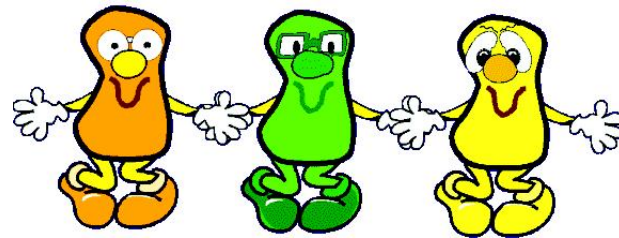
<p>you keep your house clean? Do you also help in cleaning? Who mops and sweeps it? Where do you throw the garbage? Do you have any problems living in your house during rains, summer or winter? Have you seen houses with sloping roofs? Why are they made sloping?</p>	<p>to provide protection from heat, cold, rain and problems faced. Need to share housework. Garbage disposal.</p>	
<p>My family and other animals Who all live with you? Which animals live with Daily life experiences. you - which are the biggest and the smallest animals living in your house? From where do they get their food? Where in your house do these animals live? Which of them are seen only at night?</p>	<p>Family members; pets and other animals, insects, rodents, etc. Food for the pets and other animals. Some are seen only at night.</p>	<p>Discussion and sharing of experiences and Cartoons. knowledge. Drawings of insects, rodents; pets and other domestic animals.</p>
<p>Mapping my neighbourhood How big is your school? What kind of a building is it? Can you draw a picture of your school and your classroom? Do you know your way around your neighborhood? Can we explain to someone how to reach the post office or the bus stand from our house?</p>	<p>Neighbourhood, mapping and representation in two dimensions. Directions.</p>	<p>Estimating distances, marking location of places and drawing/ mapping from different perspectives, like from the top, from the front etc, Draw a map of the route from our house to the nearest shop.</p>
<p>4. Water Water for my family What are the main sources of water in your locality? Who fetches the water and from how far? Do all the people in your locality use the same source of water? Are some people not allowed to take water from where you take it? From where do you get water? Does it look clean enough for drinking?</p>	<p>Local sources of water; uses of water; gender roles; distance estimates; social discrimination; clean water for drinking.</p>	<p>Listing the sources of water, Exploring by asking questions from elders or people around, Discussion.</p>
<p>Do animals and plants need water? What happens if plants and animals do not get water – how do you see that a plant or animal is thirsty? Do all animals/ plants need the same amount of water? Which plants/animals need the least?</p>	<p>Water for plants and animals.</p>	<p>Reading, Discussion; Comparison of a well watered and a wilting plant.</p>
<p>Water shortage When is it difficult to get water? Are there some people in your area who always face water shortage? What would happen if we had no water? Have you seen water being wasted – how? How can we avoid it? Do you reuse water?</p>	<p>Water scarcity, wastage and recycling, water harvesting.</p>	<p>Poster making/ writing activity in groups with a message of saving water.</p>

<p>Water in our lives Which of your daily activities use water? Do you and others you know wash your hands and feet before you enter the house? Why do you think this is done? Can you describe the scene of a rainy day – with details about birds, animals, plants and yourself.</p>	<p>Use of water in different activities; cultural expressions about water/ rain/ rivers; observations related to rain and the response of plants and animals.</p>	<p>Enacting different activities that utilise water/ a rainy day, listing the activities in which water is used, singing rain/river/ water songs/poems together in the class.</p>
<p>Storing water How do you store water in your home? Do you collect rainwater - how? How much water do you store every day? About how much do you use for drinking or bathing? In what kinds of containers do you store water for drinking/ washing/or for animals? What are the containers made of? If the water is at the same level in a narrow and a broad container does it mean they contain the same amount of water?</p>	<p>Measurement of volume in terms of non-standard units such as buckets, pots, etc. Estimates of quantities used for different domestic activities; safe handling of water. Containers made of different shapes and materials to store water for different purposes; Conceptual development of conservation of volume.</p>	<p>Drawings of different containers. Measurement activities; demonstration to help the understanding of conservation of volume. Touching different containers and discussing about their material.</p>
<p>5. Travel Going places Has your family traveled together to another place? Where and what for? How did you go? How long did it take? How far did your grandparents (or other elderly persons) travel when they were young? How did people travel in those times? How do people travel today in the desert, hilly areas, on sea, etc.</p>	<p>Need for travel, travel within the locality and beyond; travel to different social spaces – forest, village, city, etc.; travel for migration, sight-seeing, family occasions.</p>	<p>Reading and Discussion, Drawing a village / sea/ forest /mountain scene.</p>
<p>Ways to travel How do we go to school? How do we travel to other places? How many different ways have we travelled? How many different ways of travel do we know of? Have you been to a railway station? What all do you see there? Who are the people who work at the station and on the train? How did people travel in the past?</p>	<p>Different modes of transport; short distance, long distance, newer ways of traveling. Different kinds of workers associated with railways/station.</p>	<p>Collect pictures of different modes of transport; classify them into different types of transport; enact a train journey/ railway station, Observations of activities at the station like loading, weighing, washing trains, signaling, selling tea, level crossing, etc.</p>
<p>Talking without speaking If I cannot speak, how do I tell people what I want to say?</p>	<p>Communication without speaking. Use of sign language, dance mudra's.</p>	<p>Playing dumb charades, enacting situations without speaking, learning sign language, practicing mudra's.</p>
<p>Mailing a letter What happens when I post a letter? How does it reach my friend? Who are the people who help to do this? Are there any other ways of sending a message? How was a letter sent in the past?</p>	<p>Letter as a means of communication, work and people associated with the post office; different means of communication, changes with time.</p>	<p>Trip to local post office, Observing sorting, stamping, weighing etc.</p>

<p>6. Things we Make and Do</p> <p>Pottery</p> <p>What kinds of pots do we see around us? What containers are used to store grain? What kinds of containers did people make long, long back with rings of clay- when they did not have a potter's wheel? Can you make such pots and dry them in the sun – how long do you think these will last? How does the potter bake them?</p>	<p>To meet basic needs human beings make things; need natural resources, creativity; have changed the way we live. An idea of the earliest pots made for storage of grain – when there was no potters wheel.</p> <p>The experience of making such pots with clay; drying and the need to bake them for greater strength.</p>	<p>Making pots of clay; also with rings; with different types of clay; drying in the sun; talking to potters or brick makers to find out how these are burnt/ baked in furnaces. Making different ornaments etc. with clay.</p>
<p>Textiles</p> <p>In how many different ways can you wear a long cloth that is not stitched? How many kinds of sarees or lungis have you seen worn by people from different parts of the country?</p> <p>How many different colours do we know of – how many new ones can we create? What are fast colours and what problems do we face when colours run? How do we make our own vegetable block prints and tie and dye?</p>	<p>Diversity in types of clothing we wore; even with unstitched clothing. Colours and design are used in textiles; scope for creativity; vegetable dyes.</p>	<p>Activity to wear/drape a dupatta or long cloth in different styles to emulate what different people do and also to create their own designs.</p> <p>Play with colours and colour mixing; Using dyes to dye cloth; making blocks with potato or ladies fingers for printing on paper.</p>

THE STORY OF LEAVES

Why Leaves Change Colour in Fall



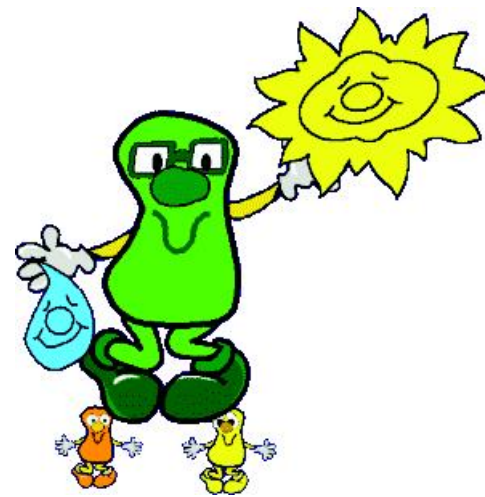
Inside a leaf there are millions of little packages or bags of colour in green, yellow and orange colour.

Pronounce as

- ☺ The green bags are called chlorophyll (chloro+fill)
- ☺ The yellow bags are called xanthophyll (xantho+fill)
- ☺ The orange bags are called carotene (carrot+in)

Autumn Leaves

In the summer, the green bags are very, very busy. They catch sunlight and, using it for energy, they change water from the ground and a special gas from the air ("carbon dioxide") into sugar ("glucose").



This sugar is the food for the tree.

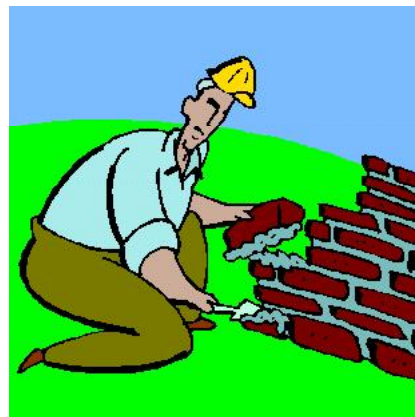
All summer long the green bag produces food for the trees. Because the green bags are so many, the green colour covers up all of the other colours.



The green bags of chlorophyll in the leaves need the water from the ground to do their job. The water is soaked up by the trees roots, travels up the trunk and enters the leaves

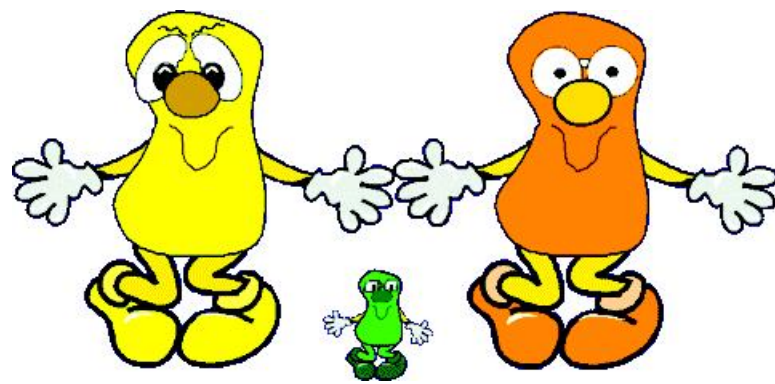
through tiny tubes in the leaf's stem.

As fall approaches, the weather grows colder. The tree realizes that winter is near and begins to get ready.



A thin layer of cells grows over the water tubes in the leaves and closes them up in preparation for the winter. No more water can get into the leaf!

Without the water, the green bag starts to disappear and the other colours in the leaf — the yellow and the orange bags — can finally be seen.



The leaves don't really "turn" a certain colour — they just lose their green.

What about brown leaves?

When the leaves stop having water flow into them and food made inside them, they start to die.

The green chlorophyll dies first but the yellow and orange packages die too. When all of the packages are gone, the leaf is dead and brown.

The dead leaves are usually dry and crunchy. They fall from the tree and form the litter. These dead leaf and tree branches form compost which provide nutrients to the growing plants.



ACTIVITY

1. Plants food is (sugar / leaves).
2. What releases energy (respiration / photosynthesis).
3. New plants are made to have (big apple / black apples).
4. is used as antiseptic (turmeric / ginger).
5. Rubber is a (plant product / animal product).
6. Keep a plant inside your house in dark for two-three days. It becomes weak and begin to wilt because
7. If all plants disappear from the earth what will happen

Answers :

- | | |
|--|-------------------|
| 1. Sugar | 2. Photosynthesis |
| 3. Big Apples | 4. Turmeric |
| 5. Plant product | |
| 6. It does not get sunlight and water. | |
| 7. Animals and humans will die | |

SAMPLE PAPER

MENTAL ABILITY

1. Fill the missing numbers (skip by 9)

18 27

- (a) 36,46,56 (b) 35,45,54
(c) 36,45,54 (d) 36,45,54

2. If you add me to myself and then add 6, you get 10.
Who am I ?

- (a) 4 (b) 5 (c) 2 (d) 3

3. The heights of 5 mountain peaks is given.

Mountain	Height (m)
(A) Everest	8848
(B) K2	8611
(C) Kanchen Junga	8597
(D) Lhotse	8511
(E) Makalu	8481

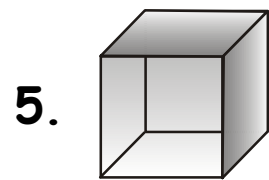
If you first climb Kanchen Junga, how much more height you have to climb mt. Everest.

- (a) 116 m (b) 351 m (c) 251 m (d) 231 m

4. A worm moves 6 cm in one hour. How far it will go in 7 hours?



- (a) 50 cm (b) 42 cm (c) 40 cm (d) 52 cm

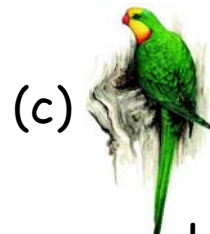


5. This will have how many edges?

- (a) 7 (b) 8 (c) 9 (d) 12

SCIENCE

6. A lizard crawls on the walls, because of
(a) its hands (b) its legs (c) it's head
(d) its sticky web like parts on hands and legs.
7. Find the bird that can mimic your voice.



8. Leaves on some trees changes colours from green to yellow and from orange to red during
(a) summer (b) autumn (c) spring (d) none of these
9. Name a medicine that is made by bark (trunk) of a plant and used to cure malaria.

- (a) pencillin
- (b) quinine
- (c) cold syrup
- (d) none of these




10. Which of the following leaf can make more food ?

- (a) green leaf
- (b) red leaf
- (c) yellow leaf
- (d) none of these

11. Your grandma says that some plants in their days were (missing) not found now-a-days? What may be the reason?

- (a) thieves stolen them away
- (b) Cows ate those plants
- (c) They have died because of bad surroundings and human activities.
- (d) none of these

12. Where did the life first form ?

- (a)  water
- (b)  mountain
- (c)  Tree
- (d) none of these

13. What can we do to reduce water pollution ?

- (a) dump trash into lakes
- (b) clean up oil spills properly
- (c) pour chemicals into drain
- (d) none of these

14. Mark the food items made by milk.



Ice cream
(A)



Cheese
(B)



Curd
(C)



Mango juice
(D)



Roti
(E)

(a) A, B, C

(b) A, E, D, C

(c) A, C, D

(d) All

15. How ants can recognize their friends ?

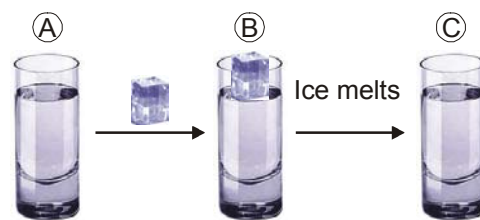
(a) by talking very slowly

(b) by giving some signs

(c) by a chemical that is made from their body

(d) none of these

16. Put an ice-cube in a glass tumbler, half-filled with water.



(a) the water level increases from A to C

(b) the water level increases from B to C

(c) the water level remains the same

(d) none of these

17. Radish is a
(a) root (b) stem (c) flower (d) leaf
18. The height of a tree would best be measured in
(a) celsius (b) meters
(c) grams (d) none of these
19. Which of these is not a part of soil ?
(a) bits of rock (b) humus
(c) plastic (d) none of these
20. In olden days which of the following bird was used to deliver letters ?



(d) none of these

BIOTECHNOLOGY

21. Name the tiny organism that helps in making food.
(a) cat (b) cow
(c) ant (d) bacteria
22. Which of the following will become less in future if we use it more and more?
(a) kerosine oil (b) wood
(c) water (d) all of these

- 23.** Your sister is four years old. Mother took her to hospital for vaccination. What vaccine your sister is going to get?
(a) malaria (b) polio (c) cough (d) cold
- 24.** How biogas is used in villages ?
(a) To make food (b) To run tractors
(c) To clear the air (d) To fill the cycle tube
- 25.** Curd will set in
(a) colder place (b) very hot place
(c) warm place (d) none of these

ANSWERS

- | | | | | |
|---------|---------|---------|---------|---------|
| 1. (c) | 2. (c) | 3. (c) | 4. (b) | 5. (d) |
| 6. (d) | 7. (c) | 8. (b) | 9. (b) | 10. (a) |
| 11. (c) | 12. (a) | 13. (b) | 14. (a) | 15. (c) |
| 16. (a) | 17. (a) | 18. (b) | 19. (c) | 20. (b) |
| 21. (d) | 22. (d) | 23. (b) | 24. (a) | 25. (c) |