

Class 12 Agriculture Sample Question Paper 2018

Class 12 Agriculture Sample Paper 2018 Solved

1 Mark Questions

1 What is luxury consumption?

Ans: Luxury consumption is defined as the nutrient concentration range in which added nutrients will not increase yield, but can increase nutrient concentration.

2. Traditionally, potato chips are stored after drying. Justify the reason behind removal of moisture during its preparation.

Ans: Reason behind the removal of moisture from potato chips

- a) Microorganisms require free water for their growth and multiplication. If free water is removed from potato chips, it will not be available to microorganisms, and thus growth and multiplication of microorganisms will stop.
- b) Water becomes unavailable for chemical/biochemical reaction, and thus storage life of potato chips increases.

3. What is vermicomposting?

Ans: Vermicomposting, sometimes called ‘vermiculture’, ‘composting with worms’ or ‘worm composting’, is a modified and specialised method of composting - the process that uses earthworms to eat and digest farm wastes and turn out high-quality compost.

4. Neem is a very good biopesticide. The insecticidal property of neem is due to presence of which active principle ingredient?

Ans: Azadirachtin

5. Write down the name of two species of honey bees which can be used in commercial beekeeping.

Ans: *Apis cerana* (Indian/Asian / Eastern honey bee)

Apis mellifera (Italian/ European honey bee)

6. What is kitchen gardening?

Ans: A kitchen garden is a vegetable garden where the vegetable crops are grown in the backyard of a house or any available space in the home compound to meet the daily requirements of the family.

7. Where is National Centre for Mushroom located in India?

Ans: Solan, Himachal Pradesh

8. When was Plant Nursery Registration Act was enforced in India?

Ans: 1973

9. How presence of a lawn around the place of living or work is beneficial to the people?

Ans: A lawn can be defined as the green carpet of a landscape. It is a basic feature for any type of garden. In a home garden, a lawn improves the appearance of the house, enhances its beauty, increases convenience and usefulness, thus adding monetary value to the house. The lawn provides a perfect setting for a flower bed, a border, or a shrub. Besides the material value, a lawn has its spiritual value, too. A lawn is the source of charm and pride and reduces stress after a day's hard work in the materialistic world.

2 Marks Questions

10. How can organic farming improve soil productivity?

Ans: Organic farming is a knowledge-intensive agricultural production system that sustains the soil health, agro-ecosystems, and human beings. Organic farming relies on ecological principles, agro-biodiversity, and bio-geochemical cycles adapted to local conditions, rather than the use of inputs which cause adverse impacts. Maintenance of soil biodiversity enables soil ecological balance and improves soil productivity. Further, organic farming practices improve the physical, chemical, and biological properties of soil and the biological functions of the soil-water-nutrients continuum. Crop diversification through organic farming aids in improving soil health and agricultural productivity.

Or

Write two objectives of National Project on Organic Farming(NPOF).

Ans:

- a) Promotion of organic farming in the country through technical capacity building of all the stakeholders, including human resource development, transfer of technology, promotion, and production of quality organic and biological inputs.
- b) motion of Organic Farming through a low-cost certification system known as "Participatory Guarantee System".
- c) NPOF scheme provides financial assistance through Capital Investment Subsidy Scheme (CISS) for agro-waste compost production units, bio-fertilizers/bio-pesticides production units, development and implementation of quality control regime, human resource development, etc.

11. Discuss the advantages of using sulfur dioxide as preservative.

Ans: The advantages of using sulphur dioxide are : (ANY TWO)

- It has a better preserving action than sodium benzoate against bacterial fermentation,
- Being a gas, it helps in preserving the surface layer of juices also,

- Being highly soluble in juices and squashes, it ensures better mixing and hence their preservation.
- Any excess of sulphur dioxide present can be removed either by heating the juice to about 71°C

12. Define food additive. How is it different from ‘food preservative’?

Ans: The Food and Drug Administration (FDA) has defined a food additive as a substance or a mixture of substances, other than the basic food stuff, which is present as a result of any aspect of production, processing, storage, or packaging, it comprises preservatives, antioxidants, and many others.

According to the FDA, a Chemical preservative is any substance that is capable of inhibiting, retarding, or arresting the process of fermentation, acidification, or other decomposition of food or masking any of the evidence of any such process or neutralizing the acid generated by any such process. But does not include salt, vinegar, sugar, spices, or oils extracted from spices.

13. Define Field Capacity.

Ans: Field capacity: The field capacity of soil describes the maximum amount of water that a soil will retain after free drainage. This situation usually exists one to three days after the soil has been thoroughly wetted by irrigation or rain. The field capacity is the upper limit of the available moisture range in soil moisture and plant relations. The soil moisture tension at field capacity varies from soil to soil, but it generally ranges from 1/10 to 1/3 atmospheres. At field capacity, the micro pores are filled with water, and the large soil pores are filled with air.

14. Enlist four value-added products that can be made from cereals.

Ans:

- Corn flakes (any four)
- Bread
- Wheat flour
- Cakes/ Pastries
- Cookies / Biscuits
- Milled Dal
- Sooji/Rava

3 Marks Questions

15. What are the principles of food preservation?

Ans: Principles of food presentation

(1) Removal of microorganisms or inactivating them can be done by keeping out microorganisms (asepsis); by removal of microorganisms (filtration); by increasing the temperature (Heating:- Blanching, pasteurization/sterilization, HTST processing) or lowering the temperature (chilling and freezing); by controlled reduction of water content of food products

(dehydration, osmotic dehydration)

(2) Inactivation of enzymes:- Enzymes present in food cause its deterioration, and hence, inactivation of enzymes helps in preserving food for a longer duration. It can be done by blanching and preventing oxidation by using antioxidants.

(3) Removal of insects, worms, and rats:- By storing foods in dry, air-tight containers, the insects, worms, or rats are prevented from destroying them. E.g.. Protective packaging and sanitation

16. Gulkhanda and rose water are two important processed flower products. Describe the process of their preparation.

Ans: Gulkhanda is prepared by mixing rose petals and sugar in the ratio of 1:2 followed by mashing and drying the mixture in the sun.

Rose water is prepared by boiling the rose flowers/petals in water, and the steam is condensed to get rose water.

17. Explain the process of preparation of mango pickle.

Ans: Preparation of Mango Pickle

Material:

Well-developed green mango fruit, salt (1 kg, salt), vinegar, oil, cutting knife, and spices (200 g, red chilli powder 10 g, asafetida -5 g, fenugreek, black pepper, cardamom (large), cumin and cinnamon (powdered) each 10 g, clove (headless) 6 numbers.)

Procedure of Preparation of Mango Pickle:

- Select an under-ripe (mature and green) fully developed mango without any diseased parts.
- Wash them with clean water.
- Slice them longitudinally with a stainless steel knife. Discard the seed.
- Keep the slices in a brine solution of 2-3 percent.
- Mix the mango slices with the common salt powder and place them in a glass jar.
- Keep it in the sun for 4-5 days, till the slice turns pale yellow.
- Mix the other ingredients (spices) with the slices and smear them with a little mustard oil.
- Pack the pickle in a glass or glazed jar and cover with a thin layer of mustard oil. Keep it in the sun. They should be covered initially by a thin cloth. The pickle will be ready in 2-3 weeks.
- Store tightly in a cool place.

18. Various methods are employed to dry flowers and foliage. Describe any three methods.

Ans: The method adopted for drying depends largely on the character of the plant, that is to say, whether the plant is glabrous, succulent, or not succulent, hardy or delicate in nature.

- a) **Air drying** - Air drying flowers is one of the easiest methods of preservation and gives plants a crisp look that lasts for years. It is the oldest and easiest drying technique. No

special equipment is needed. The stems of flowers and their foliage are tied and hung upside down. However, it is one of the longest drying methods. It usually takes three to four weeks for the flowers to dry completely. The flowers are hung upside down so that the stems remain straight. If they are hung with the right side up, they would bend over, and the result will be dried flowers with distorted stems.

- b) **Press drying:** One of the most popular methods for drying flowers is to put them under pressure, to remove the moisture while leaving the color of the flowers and structure intact. The easiest method is to place them in heavy books and allow them to dry. Flower presses can also be used. Unglazed paper, such as newsprint or an old telephone book, is best for pressing
- c) **Drying by embedding in desiccants:** A is simply a substance with a high affinity for water, which can be used as a drying agent. Embedding the flowers in a granular, desiccating material is probably the most commonly used method most well-known desiccants are silica gel and borax. The container must be kept closed during the drying process. After 4-14 days, depending on the thickness of the flower, the flower will be dry.

19. Justify the reason behind pre-cooling in harvested fruits and vegetables before their storage?

Ans: Reason for pre-cooling in harvested fruits and vegetables before their storage is: Lowering the temperature as quickly as possible after harvest will slow the rate of metabolism (respiration and ethylene production) and therefore extend the product's shelf life. High temperatures accelerate ripening and the speed at which rots develop. A 10°C increase in temperature will cause fruit and vegetables to deteriorate twice as fast, as well as encouraging disease organisms to grow twice as fast.

Moreover, it also reduces the water losses from the harvested product. Therefore, it is important to remove field heat from the produce by adopting a suitable pre-cooling method as quickly as possible after harvest.

20. Mention the common methods of packaging adopted in food preservation.

Ans: Various common methods of packaging :

- a) **Vacuum Packaging:** It is a procedure in which air is drawn out of the package before sealing, but no other gases are introduced. This technique has been used for many years. It offers an extensive barrier against corrosion, oxidation, moisture, drying out, mechanical damage, fungus growth, and perishability etc. This technology has commendable relevance for tropical countries with high atmospheric humidity.
- b) **Controlled atmosphere (CA):** This refers to a storage atmosphere that is different from the normal atmosphere in its composition, wherein the component gases are precisely adjusted to specific concentrations and maintained throughout the storage and distribution of perishable foods. The system requires sophisticated instruments to monitor

the gas levels and is therefore practical only for refrigerated bulk storage or shipment of commodities in large containers.

- **c) Modified atmosphere packaging (MAP):** It is a procedure that involves replacing air inside a package with a predetermined mixture of gases before sealing it. The gases involved in modified atmosphere packaging, as applied commercially today, are carbon dioxide, nitrogen, and oxygen. In general, MA containing between 2-5% Oxygen and 3.8% carbon dioxide has been shown to extend the shelf life of a wide variety of fruits and vegetables.

21. Describe drip irrigation system.

Ans: Drip irrigation involves the application of water near the plant roots at short intervals through a network of piping system. It allows an irrigator to limit watering closely to the consumptive use of the plants. The crop yields are higher by adopting this method on account of increased water use efficiency. The water conveyance and application losses are minimized in this irrigation method. It is suitable for water scarcity and salt-affected soils. Drip irrigation is highly suitable for wide-spaced and high-value crops like coconut, grapes, lime, banana, vegetables, mango, pomegranate, etc.

Components of a drip irrigation system:

- A drip irrigation system consists of a pump or overhead tank, main line, sub-mains, laterals, and emitters. The mains, sub-mains, and laterals are usually made of black PVC (polyvinyl chloride) tubing.
- The main line delivers water to the sub-mains and the sub-mains to the laterals.
- The emitters, which are attached to the lateral,s distribute water for irrigation.
- Other components include pressure regulator, filters, valves, water meter, fertilizer application components, etc..

Pump: The pump creates the pressure necessary to force water through the components of the system. Centrifugal pumps operated by engines or electric motors are commonly used.

The laterals may be designed to operate under pressures as low as 0.15 to 0.2 kg/cm² and as large as 1 to 1.75 kg/cm².

Chemical tank: A tank may be provided at the head of the drip irrigation systems for applying fertilizers, herbicides, and other chemicals in solution directly to the field along with irrigation water.

Filter: It is an essential part of a drip irrigation system. It prevents the blockage of pipes and drippers/emitters. The filter system consists of valves and a pressure gauge for regulation and control.

Emitters: Drippers are provided at regular intervals on the laterals. The drippers allow water to trickle out at very low rates. The amount of water dripping out of each emitter in a unit time will depend on the pressure and size of the opening. The water coming out of the emitters is almost at atmospheric pressure.

Or

Write advantages and limitations of sprinkler irrigation system.

Ans: Advantages:

- Suited for all types of land topographies.
- High irrigation efficiency due to uniform distribution of water.
- Land leveling is not essential.
- Soluble fertilizer, herbicides, and fungicides can be applied along with the irrigation water.
- Can be used to protect to crop against high temperatures that reduce the quantity and quality of the harvest.
- Sprinklers are also used for the irrigation of high-value plantation crops like orchards.

Limitations:

- It requires a high initial investment.
- Power requirement is usually high due operation of the pump.
- Cannot be used efficiently in a hot, windy area.
- Loss of water due to evaporation.
- The water must free large amounts of dissolved salts as it clogs the nozzle.
- Wind distorts the sprinkler pattern and causes uneven distribution of water.

5 Marks Questions

22. Explain the functions and deficiency symptoms of nitrogen and phosphorus.

Ans: Functions of nitrogen:

- Nitrogen is an essential component of several metabolically active compounds, and it plays a vital role in plant metabolism.
- Nitrogen is an integral part of chlorophyll, which harvests solar energy through the photosynthesis process.
- As a constituent of nucleic acids, it transfers genetic information and regulates cellular metabolism of amino acids and proteins.

Deficiency of nitrogen:

- Plants containing less than 1 % nitrogen are considered deficient in nitrogen.
- Symptoms of nitrogen deficiency first appear in the older leaves as nitrogen is mobilized from older to young leaves. A pale yellow chlorosis develops near the tip of the leaf blade, and the chlorosis advances towards the base in a V-shaped pattern along the leaf margins until the whole leaf blade turns yellow. The leaf turns from yellow to brown, and necrosis occurs at the leaf tip.
- Nitrogen-deficient plants show stunted growth and produce fewer flowers and shrivelled grains.
- The nitrogen-deficient plants have slender and woody stems due to the buildup of excess carbohydrates.

- Example: In cauliflower, young leaves turn pale yellow and old leaves become orange. In the case of coffee, the Veins become yellow, and the new leaves are very small.

Functions of phosphorus:

- Phosphorus plays an important function as a structural component of the cell membrane system, chloroplasts, and mitochondria.
- Phosphorus is an important constituent of nucleic acids, nucleoproteins, phospholipids, co-enzymes, energy-rich adenosine diphosphate (ADP), and adenosine triphosphate (ATP).
- It plays a vital role in energy transfer, metabolic processes, the transformation of sugars and starch, and physiological processes like photosynthesis.
- It is essential for cell division, stem and root growth, fruit and seed development.

Deficiency symptoms of phosphorus:

The phosphorus concentration below 0.1% in plants causes deficiency, and the plants exhibit deficiency symptoms.

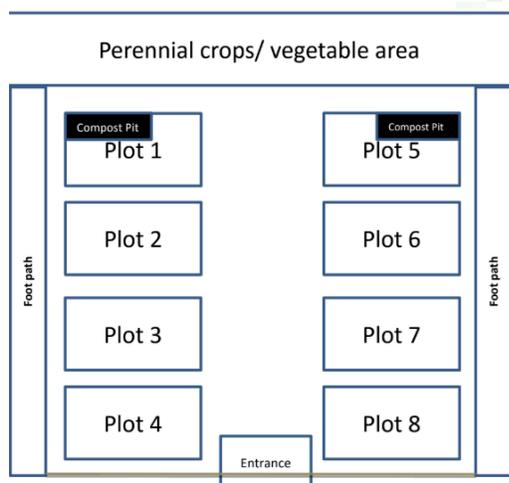
- Phosphorus-deficient plants develop a poor root system, and the plants remain stunted.
- Since phosphorus is mobile in plants and at times of deficiency, phosphorus mobilizes from older leaves to new leaves or active meristematic regions. The older leaves develop characteristic symptoms of blue-green colouration starting from the leaf tip to the base. The colour changes to reddish brown in the later stages. The leaves may be malformed and contain small necrotic spots, which are dead tissues.
- Under the condition of severe deficiency, the plants develop spindly growth, and reddish purple colour is observed in the nodes and internodes, which shows the formation of anthocyanin.

23. Draw the layout plan for a kitchen garden with an area of 40 m². What are the advantages of kitchen garden?

Ans: The site selected for the kitchen garden in most cases is the backyard of the house. The size of the garden depends on the land availability and the family size. It is preferable to have a rectangular layout for the garden. The following are the principles involved in the layout of the kitchen garden.

- The perennial plants should be located at the rear end of the garden so that these perennials can be grown effectively, and also their shade does not affect the growth of other crops. Crops like moringa, lime, banana, etc., can be grown in this area.
- Live fences can be created with creepers like bitter gourd, etc.
- Manure pits are dug at the corners of the garden.
- The entire garden is divided into two halves, and the main path, side path, and irrigation channels are formed with minimal use of land resources.
- Beds of equal size and rectangular shape are formed. About 6-8 beds may be formed. Ridges separating the beds may be grown with onion, radish, or turnip for maximum utilization of the land.

The vegetable crops can be grown on different beds or plots depending upon the geographical location, climate, and choice of family members. Crops like brinjal, chillies, tomato, radish, carrot, beet root, onions, etc, can be grown on rotation in the kitchen garden.



Advantages of a kitchen garden:

- A kitchen garden helps to grow selected vegetables in fresh form.
- Vegetables grown in the kitchen garden help to meet the nutritional requirements of the household.
- Growing vegetables by the family members serves as a good hobby and helps save money on the purchase of fresh vegetables.
- Domestic wastewater and land available within one's house compound are best utilized for growing vegetables. A kitchen garden provides a healthy atmosphere in the house.

Or

What are the important Government Schemes for the promotion of organic farming in our country?

Ans: The Government of India is promoting organic farming through various schemes like

- National Project on Organic Farming (NPOF)
- National Horticulture Mission (NHM),
- Horticulture Mission for North East & Himalayan States (HMNEH)
- National Project on Management of Soil Health and Fertility (NPMSH&F)
- Rashtriya Krishi Vikas Yojana (RKVY)
- Network Project on Organic Farming of Indian Council of Agricultural Research (ICAR).

1) National Project on Organic Farming: Under the National Project on Organic Farming (NPOF) scheme, assistance up to 25% and 33% of the financial outlay up to a ceiling of Rs. 40 lakhs and Rs. 60 lakhs respectively, is provided as back ended subsidy through NABARD for the establishment of bio-pesticides/bio-fertilizers production

units and agro waste compost production units, respectively. The government has been advocating the integration of chemical fertilizers and organic manures, including biofertilizers, for increasing the production of major crops.

2) National Horticulture Mission: Under National Horticulture Mission (NHM) and Horticulture Mission for North East & Himalayan States (HMNEH), financial assistance is provided for setting up vermi-compost production units @ 50% of the cost, subject to a maximum of Rs. 30,000/- per beneficiary, for adoption of organic farming @ Rs 10,000/- per hectare for a maximum area of 4 hectares per beneficiary and for organic farming certification @ Rs 5.00 lakh for a group of farmers covering an area of 50 hectares.

3) Rashtriya Krishi Vikas Yojana: Assistance for promotion of organic farming on different components is also available under Rashtriya Krishi Vikas Yojana (RKVY) with the approval of the State Level Sanctioning Committee.

4) National Food Security Mission: Under the National Food Security Mission (NFSM) on Pulses, including the Accelerated Pulses Production Programme (A3P), assistance for popularizing Rhizobium culture/Phosphate Solubilising bacteria (PSB) is provided to the farmers under cluster demonstrations.

5) National Project on Management of Soil Health and Fertility (NPMSH&F): The Central Government has notified biofertilizers like Rhizobium, Azotobacter, Azospirillum, Acetobacter, PSB, and Zinc Solubilizing bacteria under the Fertilizer Control Order (FCO). Further, under the National Project on Management of Soil Health and Fertility (NPMSH&F), financial assistance of Rs 500 per hectare is provided to promote the use of organic manure.

6) ICAR Contribution in Promoting Organic Farming All India Network Project on Soil Biodiversity-Biofertilizers is implemented by the Indian Council of Agricultural Research (ICAR) for R&D on biofertilizers. The ICAR has developed technologies to prepare various types of organic manures such as phosphocompost, vermicompost, municipal solid waste compost, etc. Improved and efficient strains of biofertilizers specific to different crops and soil types are being developed under the Network Project on biofertilizers. Indian Council of Agricultural Research (ICAR) under Network Project on Organic Farming, with lead centre at Project Directorate for Farming Systems Research Modipuram, is developing a package of practices of different crops and cropping systems under organic farming in different agro-ecological regions of the country.

24. Define flush in respect of mushroom cultivation. Write the names of most commonly cultivated mushrooms in India.

Ans: Spawn:- The actively growing vegetative mycelium of a mushroom present in suitable sterile organic matter used as seed is called spawn.

Flush: - Each crop or harvest of mushrooms is called a flush. Flushes appear once every 7-10 days.

The most commonly cultivated mushroom in India

- (i) White Button mushroom – *Agaricus bisporus*
- (ii) Oyster mushroom – *Pleurotus sajor-caju*
- (iii) Paddy Straw mushroom – *Volvariella volvacea*

25. Explain the concept and components of Integrated Nutrient Management.

Ans: The concept of Integrated Nutrient Management is the continuous improvement of soil productivity on a long-term basis through appropriate use of fertilizers and organic manures and their scientific management for optimum growth, yield, and quality of crops and cropping systems in specific agro-ecological situations. The Integrated Nutrient Management helps restore and sustain the soil fertility and crop productivity. This strategy also checks the nutrient deficiency and soil problems. The INM strategies focus on the following areas:

- Reduction of nutrient losses from the applied fertilizers
- Fertilizer application to synchronise with the crop demand
- Timing, placement, and choice of the fertilizers
- Controlled release of nutrients
- Retention and efficient use of the native soil nutrients
- Research and development of alternative sources of nutrients

The components of INM are the following:

- Organic manures (Farmyard manure, crop waste, animal waste, industrial waste, sludge, oil cakes, etc.)
- Bio-fertilizers (Rhizobia, Azospirillum, Azotobacter, Phosphobacteria, etc.)
- Chemical fertilizers (Urea, Urea super granules, Single Super phosphate, Muriate of potash, micronutrient fertilizers).
- Green manure and Green leaf manure (*Sesbania rostrata*, *S. aculeata*, *Crotalaria juncea*, *Azolla*, etc.)

Or

Explain the constraints in bio-fertilizer technology.

Ans: Though the biofertilizer technology is a low-cost, eco-friendly technology, several constraints limit its application or implementation. Main constraints are

- 1) Technological constraints
 - a) Use of improper, less efficient strains for biofertilizer production
 - b) Lack of qualified technical personnel and modern production units.
 - c) Production of poor-quality inoculants.
 - d) Shorter shelf life of inoculants.
- 2) Infrastructural constraints
 - a) Non-availability of up-to-date equipment for production
 - b) No proper space availability for research, laboratory, production, storage, etc.
 - c) Lack of a facility for providing a low temperature for inoculant packets storage.
- 3) Financial constraints

- a) Non-availability of sufficient funds.
- b) Lesser profits.
- 4) Environmental constraints
 - a) Seasonal demand for biofertilizers
 - b) Difficulty in using in problematic soils like salinity, acidity, drought, waterlogging, etc.
- 5) Human resources and quality constraint
 - a) Lack of technically qualified staff in the production units.
 - b) Lack of suitable training on the production techniques.
 - c) No regulation or act on the quality of the products]
 - d) Problem in the adoption of the technology by the farmers due to different methods of inoculation.

26. Enumerate the importance of plant nurseries in India.

Ans: In view of the growing importance of fruit crops, the demand for quality planting material has increased manifold throughout India, both in urban and rural areas.

Hence, there is a lot of business potential in establishing nurseries. Nursery products are no longer restricted to orchards or large parks and gardens. The products of nurseries have great demand in hospitals, hotels, balconies/rooftops, offices, factories, roadside in and around highways, etc. There is heavy demand during fairs, melas, and festive seasons, and also during the Van Mahostava programme.

27. Describe various methods of sowing/transplanting of grasses during lawn making.

Ans: Methods of lawn making

- **Seeding:** The most popular grass suitable for seeding is "Doob" grass (*Cynodon dactylon*). It has a fast spreading mat-forming habit, radially forms roots at the nodes, and the foliage is dark green, narrow with parallel venation. About 30 kg of seed is required for planting one hectare. The soil should be reduced to fine tilth and given a light rolling. The site should be divided into suitable small squares or rectangles, the seeds are mixed with finely sieved soil and should be rolled again and watered liberally with a rose can. The seeds take four to five weeks for germination. Care should be taken not to flood the site. For the first few times, the grasses are cut with a scythe. A lawnmower may be used for easy maintenance and for its spreading.
- **Turfing:** The turfs are nothing but pieces of earth with compact grasses on them. These turfs should be cut uniformly in squares from a place where the grass is short, compact, and free from weeds. These turfs should be placed on the prepared ground site, side by side, and beaten down flat with a turf beater. The cavities in between should be filled with fine soil. The entire turfed area should be rolled and watered. This is the most expensive way of lawn making.

- **Turf plastering:** The doob grass can be procured in large quantities free from weeds and chopped properly into small bits of 5-7 cm long. Two baskets of chopped grass pieces should be mixed well with one basket each of garden soil and fresh cow dung, with the required quantity of water to form a thick, pasty substance. This mixture is then spread uniformly on the surface of a previously wetted, perfectly leveled ground to a thickness of at least 2.5cm, and watering should be done with a rose can. The next day, the ground should be rolled and the grass should be allowed to spread. The grass will shoot up in a fortnight. To start with, cut with a scythe and after three months, use the lawn mower.
- **Dibbling roots:** This is the cheapest but time-consuming method. Small pieces of grass roots should be dibbed 10-15 cm apart in a leveled ground when it is wet after rain. The roots spread and grow underground in the course of six months, making a fairly compact lawn by frequent mowing, rolling, and watering.

Or

Describe the nutritional status of mushrooms.

Ans: The nutritional value of mushrooms is as follows.

- They have low carbohydrate and fat content. Good as food for diabetics and people with high blood cholesterol.
- Have 19 – 35% protein content, which is much higher than the protein content of conventional vegetarian proteins like pulses, animal proteins like milk, fish, meat, etc.
- Rich in essential amino acids like Lysine and Tryptophan
- Rich in vitamins pantothenic acid, Vit.B12, ascorbic acid, etc.
- *Agaricus bisporus* is rich in P, K, Fe, and Cu but poor in Ca.
- They have a high K to Na ratio and fibers. Hence, good for people with hypertension and hyperacidity.
- Rich source of selenium, which acts as an antioxidant that helps neutralize free radicals, thus preventing cell damage and reducing the risk of cancer and other diseases. Mushrooms contain more selenium than any other form of produce.

BioSmartNotes