

**MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE**  
**SEMESTER END THEORY EXAMINATION**

**B.Sc. (Hons.) Agriculture**

Semester : IV (NEW)	Term : II	Academic Year : 2023-24
Course No. : AGRO-248	Title : Principles of Organic Farming.	
Credits : 2(1+1)	Time (hrs.) : 2 hrs.	Total Marks : 40
Day & Date :		

- Note :**
1. Solve ANY EIGHT questions from SECTION "A".
  2. All questions from SECTION "B" are compulsory.
  3. All questions carry equal marks.
  4. Draw neat diagrams wherever necessary.

SECTION 'A'		Marking scheme
Q.1 Ans:	<p><b>Define integrated pest management? Explain in detail mechanical methods.</b></p> <p>Integrated pest management measures are either preventive or curative. Control of insect pest relies on understanding of the pest life cycle, behavior and ecology. It involves natural enemies, host resistance and cultural practices.</p> <p><b>Mechanical Methods:</b> Hand picking of egg masses, gregarious larvae and sluggish/ lazy adults and their destruction helps in reducing of pest population</p> <p>1) Use of phenomones and light traps : Sex pheromones are mostly emitted by female insects to attract the male insect for mating. Such chemical compounds can be prepared in the laboratory and make available as lures for use in traps. These pheromones &amp; also light traps attract the insects in large numbers to the traps, where they get trapped and killed. Pheromones are non toxic, species specific, safe to other organisms, plants and environment. Generally at least 5 traps/ha are recommended for monitoring for each pest species.</p> <p>2) Use of yellow sticky traps : It is used to monitor aphids and white fly.</p> <p>3) Erecting bird perches : Bird perches helps in attracting birds, keep water in small bowl and spread cooked yellow rice to attract insectivorous birds.</p> <p>4) Soil solarization : Soil solarization by mulching the soil with polythene cover for 3-4 weeks during summer months results in killing of soil borne pathogens and weed seeds.</p> <p>5) Use of nylon net: Growing of vegetable nursery under nylon net drastically reduces pest population and virus/ mycoplasma diseases by preventing the entry of vectors.</p> <p>6) Hot water treatment : For the control of nematode problem in planting stock of banana suckers soaked in hot water for 25 minits at 55<sup>0</sup> C temperature.</p>	4
Q.2 Ans:	<p><b>What do you mean by organic manures? Give the classification of organic manures.</b></p> <p><b>Organic manures:</b> Term 'manure' was used originally for denoting materials like cattle manure and other bulky natural substances that were applied to land, with the object of increasing the production of crops. Therefore, manures are defined as well decomposed plant and animal wastes which are used as sources of plant nutrients.</p> <p><b>Classification of organic manure/fertilizers:</b></p> <p>(A) <b>Bulky organic manures:</b> Contain small percentage of nutrients and they applied in large quantities like FYM, compost, green manure, biogas slurry, night soil, sewage and sludge, poultry manure, sheep &amp; goat manure, animal waste, crop residue etc.1. Farm Yard Manure (FYM), 2. Compost, 3. Biogas Slurry, 4. Night Soil (Poudrette), 5. Sewage and Sludge, 6. Sheep &amp; Goat Manure, 7. Poultry Manure, 8. Green Manuring</p> <p>(B) <b>Concentrated organic manures:</b> These have required in small quantities and contain higher nutrients as compared to bulky organic manures. The most commonly used are oil</p>	4

	<p>cakes, fish meal, meat meal, blood meal, horn &amp; hoof meal, bird guano, raw bone meal etc. which act a good source of organic manures for organic farming system.</p> <p><b>a)Oil Cakes:</b>Oil cakes are generally grouped into two groups,</p> <p>i) Edible oil cakes suitable for feeding the cattle and other domestic animals and <i>non-edible</i> oil cakes exclusively used as manure due to their higher content of plant nutrients. It has been estimated that India produced about 2.5 million tons of oil cakes annually</p> <p>ii) Non-edible oil cakes are used as manure especially for horticultural crops. Nutrient present in oil cakes, after mineralization, are made available to crops 7-10 days after application. Oil seed cakes need to be well powdered before application for even distribution and quicker decomposition. <b>Neem cake</b> acts as <b>Nitrification Inhibitor</b>.b). Fish Meal,,c). Meat Meal,d). Blood Meal,e). Horn &amp; Hoof Meal,f). Guano (Bird / Fish),g). Raw Bone Meal .</p>	
<p><b>Q.3</b> <b>Ans:</b></p>	<p><b>Define integrated weed management? Discuss in brief different method of weed management in organic farming.</b></p> <p>Integrated weed management measures are either preventive or curative by using different methods of weed control. Control of weed population relies on understanding of the season, growing habit weed dynamics.</p> <p>In organic farming weeds can be managed by the following methods;</p> <p><b>A) Preventive methods:</b> Preventive method of weed control include use of weed free crop seeds, weed free manure, clear equipments and elimination of weed infestation in and around irrigation channels and cultivated fields.</p> <p><b>B)Cultural methods:</b> Smother crops are highly competitive with the weed species infesting an area for light, nutrients and moisture. The crops such as barley, millet, sorghum, alfalfa, clover, cowpea, sesbania, sunflower etc. creating problems. Other cultural methods are sowing of cover crops, crop rotation, line sowing, maintaining optimum plant population, drip irrigation etc. which reduces weed problems.</p> <p><b>C)Mechanical methods:</b> This method includes such practices as hand weeding, hoeing, moving, flooding, mulching, burning and tilling the soil for the reduction of weeds.</p> <p><b>D): Soil solarisation:</b> This is an eco-friendly technology used to kill weed seeds in soil. It involves mulching of soil with clear plastic films so as to trap the solar heat in the surface soil. The resultant temperature increase would be lethal to soil pathogens, nematodes and weeds. This method can be use where air temperature goes up to 45 °C during summer months. It is efficient in weed where bright sun light is available for about 4-6 weeks.</p> <p><b>E) Biological methods:</b> This method involves utilization of natural enemies for the control of certain weeds. This can be achieved by direct or indirect action of biological control agents. In direct action, firstly the bio control agent bores into plant, weakens its structure which leading to its collapse and consumes as food and destroys the vital plant parts. In indirect action the bio control agent reserves the competitive ability of weed over other plants and enhances the condition favourable for plant pathogens.</p>	4
<p><b>Q.4</b> <b>Ans:</b></p>	<p><b>Define organic farming. Write the advantages and disadvantages of organic farming.</b></p> <p>Organic farming is a production system that integrates site specific cultural, biological and mechanical practices designed to foster the cycling of resources, ecological balance and biodiversity. Or It is a production system which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators and livestock feed additives.</p> <p><b>Advantages of organic farming :</b></p> <ul style="list-style-type: none"> <li>➤ Nutrition - Improved soil health makes food dramatically superior in mineral content</li> <li>➤ Poison-free - Free of contamination with health harming chemicals like pesticides, fungicides and herbicides.</li> <li>➤ Food tastes better</li> </ul>	4

	<ul style="list-style-type: none"> <li>➤ Food keeps longer - can be stored longer</li> <li>➤ Disease and pest resistance - because of healthy plants</li> <li>➤ Weed competitiveness - Healthier crops able to compete</li> <li>➤ Lower input costs - No costly chemicals used, nutrients are created in-situ (in the farm)</li> <li>➤ Drought resistance</li> <li>➤ More profitable - Due to greater food value of organic produce consumers are willing to pay premium prices</li> </ul> <p><b>Disadvantages of organic farming :</b></p> <ul style="list-style-type: none"> <li>➤ Productivity - Low productivity is often reported as the quantum nutrient used comparatively lower</li> <li>➤ Labour intensive - Cultivation requires more labour especially for weed control</li> <li>➤ Skill - requires considerable skill to farm organically Ex. Choice of alternatives for control of pests</li> <li>➤ Lack of convenience in management compared to easier management like fertilizer application in conventional methods</li> </ul>	
Q.5 Ans:	<p><b>What do you mean by recycling of organic residues? Elaborate the sources of organic wastes.</b></p> <p>Organic wastes and surplus crop residues can be recycled in the soil to improve the biological, chemical and physical properties of soil resulting in higher yield. There are three ways of recycling the organic residue in the soil</p> <ol style="list-style-type: none"> <li><b>1. In-situ manuring :-</b> In this method the manure is provided by animal or plant sources at site.</li> <li><b>2. Ex-situ manuring :-</b> The organic matter and plant nutrients taken out in terms of biological yield need to be returned to the soil for sustaining the soil fertility. Incorporation of decomposed plant and animal wastes are the major source for this type of manuring.</li> <li><b>3. Biological manuring :-</b> Several types of fauna and flora which either help in mobilizing organic matter and nutrient or act as nutrient provider from other sources e.g. Nitrogen fixing microbes.</li> </ol> <p><b>Sources of organic wastes:</b></p> <ol style="list-style-type: none"> <li><b>1) Crop residues:</b> Residues left out after the harvest of the economic portion are called crop residues/straw. Straw has good manurial value since it contain appreciable amount of plant nutrients. On an average, cereal straw and residues contain about 0.5%N, 0.6% <math>P_2O_5</math> and 1.5% <math>K_2O</math>. The crop residues can be recycled by way of incorporation, compost making or mulch material.</li> <li><b>2) Agro-industrial wastes:</b> Agro-industrial wastes are available in substantial quantities at processing sites and can be effectively utilized as manure. <ol style="list-style-type: none"> <li><b>i) Rice husk:</b> It is the major by-product of the rice milling industry. Unhulled paddy grain constitutes 20-25% of husk. It is a poor source of manure and the nutrient is very low (0.3-0.4%N, 0.2-0.3% <math>P_2O_5</math> and 0.3 – 0.5% <math>K_2O</math>). Rice husk should be incorporated into the wet soil and can be used in saline and alkaline soils to improve the physical conditions. It can also be used as a bedding material for animals.</li> <li><b>ii) Bagasse:</b> It is the by-product of sugar industry. It is mainly used as fuel in boilers of sugar factories. It can be used as manure raw or after composting. It contain 0.25%N and 0.12% <math>P_2O_5</math>.</li> <li><b>iii) Pressmud:</b> It is the by-product of sugar industry. It contains 1.25%N, 2% <math>P_2O_5</math> and 20-25% organic matter. Addition of pressmud is highly useful to acidic soils since it</li> </ol> </li> </ol>	4

	<p>contains high amount of lime (upto 45%).</p> <p>iv) <b>Tea wastes:</b> In the tea industry, tea wastes are available during the course of tea production, processing and storage. Tea wastes are used for extraction of caffeine. The decaffeinated tea wastes can be used as a manure. Nutrient content of the spent tea waste is 0.3-0.35%N, 0.4% P<sub>2</sub>O<sub>5</sub> and 1.5% K<sub>2</sub>O</p> <p>v) <b>Coir waste:</b> It is the wastes product from the coir industry and mostly dumped near the road sides. To reduce the bulk and C:N ratio, composting of coirpith is recommended. The composted coirpith contains 1.26%N, 0.06% P and 1.2% K with C/N ratio 24:1. The lignin is reduced to 4.8% due to composting.</p> <p>vi) <b>Livestock and Human wastes:</b> Cattle shed wastes, other livestock and human excreta, byproducts of slaughter houses and animal carcasses</p> <p>vii) <b>Urban and rural wastes:</b> Human habitation has always created large usable wastes. Such wastes may consists of</p> <p>viii) <b>Garbage</b> – Household wastes, road sweepings wastes</p> <p>ix) <b>Sewage</b> – Consisting of solid and liquid wastes from internal drainage. It may consist of Sewage sludge (solid part) and sewage water</p> <p>x) <b>Sullage:</b> That part of the city wastes from which separation of liquid and solid part is not possible.</p> <p>xi) <b>Marine wastes:</b> Fish meal and aquatic /sea weeds.</p>	
Q.6	<b>What do you mean by processing? Write the techniques adopted for processing.</b>	4
Ans:	<p><b>Processing:</b> Processing of organic food products and handling should be optimized to maintain the development of pest and diseases. Processing and handling of organic products should be done separately in time or place from handling and processing of non-organic products.</p> <p>Processing of organic fresh produce requires cleaning, grading followed by peeling, stoning or slicing. At this stage fruits and some vegetable such as onion and peppers are ready for freezing, but most vegetables need to be blanched with hot water or steam at 80°C to 100 °C to inactivate enzymes that could otherwise lead to a loss in vitamin C and flavor. Fruit can be coated in sugar or in syrup that contains an antioxidant like ascorbic acid. Coating retards browning, avoids the cooked tests after defrosting and increases product quality. The products may be packaged before or after freezing.</p> <p><b>The techniques adopted for processing.</b></p> <p>1) <b>Freezing :</b> Freezing is quite often applied to vegetables but rarely used for fruits, as they do not handle it well. Nutritional quality is maintained when the product is sold from colour, odour and taste are retained well by freezing. The degree of freezing depends on the duration of storage.</p> <p>2) <b>Drying:</b> Drying facilitates for easy transportation and storage of fruits. Dried vegetables are produced in low quantities for the local market but can be useful for soup mixes. The major risks with dried products are microbiological attack and physiological deterioration which leads to browning, loss of vitamins and the development of off-flavours.</p> <p>3) <b>Water content:</b> Dry fruit products have a water content of 8 to 12 % and dry vegetable around 7%. Under these conditions, there are no microbiological problems during storage of the products.</p> <p>4) <b>Additives and processing aids:</b> Permitted processing aids helps to retain quality of dry produce, such as ascorbic acid, citric acid, tartaric acid, which resulting in low pH, it limits the development of microorganisms and browning. The product is treated by dipping in or spraying with acids or lemon juice. Salt can be used for drying. The salt adds in dehydration and anti-microbial activity.</p> <p>5) <b>Blanching:</b> A brief period at high temperature destroys most of microorganisms and inactivates eazymes which promote browning and degradation i.e.</p>	

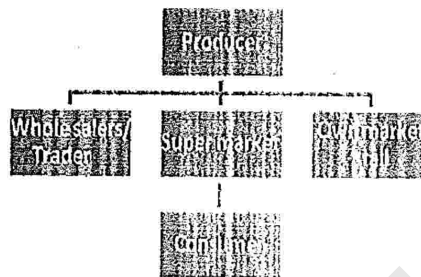


	<table border="1"> <tr> <th>Fruits /Vegetables</th> <th>Process</th> </tr> <tr> <td>Banana</td> <td>Boiling water for 5 min</td> </tr> <tr> <td>Mango, Papaya</td> <td>Hot water (56°C) for 1 min</td> </tr> <tr> <td>Cabbage</td> <td>Boiling water 3 min</td> </tr> <tr> <td>Carrot</td> <td>Boiling water 4-6 min</td> </tr> </table>	Fruits /Vegetables	Process	Banana	Boiling water for 5 min	Mango, Papaya	Hot water (56°C) for 1 min	Cabbage	Boiling water 3 min	Carrot	Boiling water 4-6 min	
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	<p><b>6)Rapid Drying:</b> Sun drying is mostly used for organic fruits such as figs, bananas etc, but there is risk to quality and the difficulty of maintaining a high degree of sanitation. Hence a rapid drying is followed.</p>											
<p><b>Q.7</b> <b>Ans:</b></p>	<p><b>Define biofertilizers and give classification of biofertilizers.</b></p> <p><b>Biofertilizers :</b> The term bio-fertilizer refers to the preparation containing active strains of microorganism. They are ready to use live formulates of such microorganism, which on application to seed, root or soil fix atmospheric nitrogen or solubilize/mobilize plant nutrients or otherwise stimulate plant growth substances. Or biofertilizers are living organisms or bio-inoculants which have got the capacity to convert unavailable form of plant nutrient to available form of nutrient for plant use.</p> <p><b>Classification of biofertilizers:</b> Depending upon the activity of mobilizing different nutrient biofertilizers are broadly classified as</p> <ol style="list-style-type: none"> <li>1. Nitrogen Fixer</li> <li>2. Phosphate solubilizer and mobilizer</li> <li>3. Compost accelerators and enrichers</li> </ol> <p>1) <b>Nitrogen fixer:</b> Depending upon the mechanisms of nitrogen fixation this group is broadly grouped as: i. <b>Symbiotic Nitrogen fixer:</b> These microbes fix atmospheric nitrogen with symbiotic association. a) Rhizobium is host specific and they fix nitrogen with symbiotic association with host plant. It is recommended for leguminous pulses and oilseeds. b) Azolla (Azolla and <i>Anabaena azollae</i>)</p> <p>ii. <b>Associative symbiotic Nitrogen fixer:</b> a) Azospirillum, b) Acetobacter</p> <p>iii. <b>Non-Symbiotic Nitrogen fixer:</b> a) Azotobacter, b) Blue green algae</p> <p>2) <b>Phosphate solubilizer and mobilize:</b> VA-mycorrhizal fungi such as Blomus, Gigaspora etc.</p> <p>3) <b>Compost accelerators and enrichers:</b> Species of <i>Trichoderma</i>, <i>Penicillium</i>, <i>Aspergillus</i>, <i>Trichurus</i> and <i>Paecilium myces</i> are the compost accelerators.</p>	4										
<p><b>Q.8</b> <b>Ans:</b></p>	<p><b>What do you mean by organic certification? Discuss in brief Certification and Inspection in organic farming.</b></p> <p>It is a certification process for producers of organic food and other organic agricultural products. In general, any business directly involved in food production can be certified, including seed suppliers, farmers, food processors, retailers and restaurants. Requirements vary from country to country, and generally involve a set of production standards for growing, storage, processing, packaging and shipping that include:</p> <ol style="list-style-type: none"> <li>1) Avoidance of synthetic chemical inputs (e.g. fertilizer, pesticides, antibiotics, food additives, etc) and genetically modified organisms;</li> <li>2) Use of farmland that has been free from chemicals for a number of years (often; three or more); • Keeping detailed written production and sales records (audit trail);</li> <li>3) Maintaining strict physical separation of organic products from non-certified products;</li> <li>4) Undergoing periodic on-site inspections.</li> </ol> <p><b>Certification and Inspection in organic farming:</b> Certification means having the farm and the farmer's methods inspected by an organic certifying group to ensure that they comply with guidelines of organic farming. Each certifying group has a code of standards which is available to interested people. Certification is a procedure by which a third party gives written assurance that a product, process or services in conformity with certain standards. The certification process focuses on the method and material used in</p>	4										

	<p>production. There are three main requirements.</p> <ol style="list-style-type: none"> <li>1. The methods and material used in production must meet organic standards</li> <li>2. There must be clear and ongoing documentation of these methods and materials</li> <li>3. There must be a paper trail tracing a product back to its production site, in order to verify the methods and materials used in its production.</li> </ol> <p>Therefore, in essence, organic certification is a simple concept, A third party evaluates producers, processors and handlers to determine whether they conform to an established set of organic standards. Those who conform are certified by the agent and allowed to use a logo, Product statement or certificate to document their product as certified organic.</p> <p><b>Purpose of certification:</b> Organic certification addresses a growing worldwide demand for organic food. It is intended to assure quality and prevent fraud. For organic producers, certification identifies suppliers of products approved for use in certified operations. For consumers, "certified organic" serves as a product assurance, similar to "low fat", "100% whole wheat", or "no artificial preservatives". Certification is essentially aimed at regulating and facilitating the sale of organic products to consumers. Individual certification bodies have their own service marks, which can act as branding to consumers. Most certification bodies operate organic standards that meet the National government's minimum requirements.</p> <p><b>Third party certification process:</b> To certify a farm, the farmer is typically required to engage in a number of new activities, in addition to normal farming operations:</p> <ol style="list-style-type: none"> <li>1. <b>Study</b> the organic standards, which cover in specific detail what is and is not allowed for every aspect of farming, including storage, transport and sale.</li> <li>2. <b>Compliance-</b> farm facilities and production methods must comply with the standards, which may involve modifying facilities, sourcing and changing suppliers, etc.</li> <li>3. <b>Documentation-</b> extensive paperwork is required, detailing farm history and current set-up, and usually including results of soil and water tests.</li> <li>4. <b>Planning-</b> a written annual production plan must be submitted, detailing everything from seed to sale: seed sources, field and crop locations, fertilization and pest control activities, harvest methods, storage locations, etc.</li> <li>5. <b>Inspection-</b> annual on-farm inspections are required, with a physical tour, examination of records, and an oral interview.</li> <li>6. <b>Fee-</b> an annual inspection/certification fee (currently starting at \$400–\$2,000/year, in the US and Canada, depending on the agency and the size of the operation).</li> </ol> <p><b>Record-keeping-</b> written, day-to-day farming and marketing records. covering all activities, must be available for inspection at any time</p>	
Q.9 Ans:	<p><b>What do you mean by vermicomposting? State the advantages of vermicompost.</b></p> <p>The process of composting organic wastes through domesticated earthworms under controlled conditions is vermicomposting.</p> <p>Earthworms have tremendous ability to compost all biodegradable materials. Waste subjected to earthworm consumption decomposes 2 to 5 times faster than in conventional composting. During composting the wastes are deodorized, pathogenic micro-organisms are destroyed and 40 to 60 % volume reductions in organic wastes take place. It is estimated that the earthworms feed about 4 to 5 times their own weight of material daily.</p> <p><b>Advantages of vermicompost:</b></p> <ol style="list-style-type: none"> <li>1. When added to clay soil loosens the soil and provides the passage for the entry of air.</li> <li>2. The mucus associated with it being hygroscopic, absorbs water and prevents water</li> </ol>	4

	<p>logging and improves water holding capacity.</p> <ol style="list-style-type: none"> <li>3. In the vermicompost, some of the secretions of worms and the associated microbes act as growth promoter along with other nutrients.</li> <li>4. It improves physical, chemical and biological properties of soil in the long run on repeated application</li> <li>5. The organic carbon in vermicompost releases the nutrients slowly and steadily into the system and enables the plant to absorb these nutrients.</li> <li>6. The multifarious effects of vermicompost influence the growth and yield of crops.</li> <li>7. Earthworm can minimize the pollution hazards caused by organic waste by enhancing waste degradation.</li> </ol>	
Q.10 Ans:	<b>Write short notes (Any Two)</b>	4
	<p><b>a) Vermiwash:</b> The preparation of vermiwash is made from earthworms reared in earthen pots or plastic drums. It contains vitamins (B-12), hormones (giberllins) etc. The steps followed in preparation of vermin-wash are as follows.</p> <ol style="list-style-type: none"> <li>1. Take plastic drum of 60 lit. capacity having a hole situated at the bottom, to which water tap fixed to collect vermiwash.</li> <li>2. Fill the drum with pieces of bricks upto 10 cm height from the bottom, above which 5 cm thick layer of coarse sand is add, Above this, a plastic net is placed and spread out for effective drainge</li> <li>3. Place 30 cm thick layer of partially decomposed 15-20 days old cow dung and sprinkle sufficient water to moisten the layer</li> <li>4. Release 500 full grown earthworms in the waste/dung layer</li> <li>5. Place 30 cm thick layer of organic material and sprinkle water @ of 50 % of the weight of organic matter to moisten the layer. The water should be sprinkled at two days interval.</li> <li>6. Allow the composting process to continue till brownish black mask of compost is obtained. Occasionally, two or three tablespoons of fresh cow dung slurry is poured on the humus as feed for the worms.</li> <li>7. After the formation of compost, soak the entire mask with water. After 24 hours the stagnated water at bottom of drum is collected through water tap fixed at the bottom is called as 'Vermiwash'.</li> </ol>	
	<p><b>b) Key characteristics of organic market:</b></p> <ol style="list-style-type: none"> <li>1) <b>Strong market growth:</b> The market for organic products will continue to grow in the coming years according to ITC projections, the organic market size in 2010 is estimated to grow multifold to US \$ 100 billion in the key market of Eu, USA, &amp; Japn.</li> <li>2) <b>Growth in world export from tropical origin :</b> All tropical products of fruits, vegetables, cereals and other commodities (Tea cotea, cocoa) are produced in the developing countries of Asia, Latin America and Africa. These products are likely to see strong growth in organic exports to Eu, USA &amp; Japan. Non-tropical organic products are produced in the developed countries and consumed in their own market and hence less likely to offer for export to developing countries like India</li> <li>3) <b>Price premium and consumer behavior :</b> Prices of organic products are vary with the time and also from one market to another within a region. Most consumers are aware of the advantages of organic farming and are willing to pay certain price premium ranges between 35-100%.</li> <li>4) <b>Distribution channels :</b> Today in the developed countries have fastest distribution</li> </ol>	

channels for organic products. Large multinational companies have also their own organic products trading channels. In most of the cases, organic products are brought from the country of produce. After processed and packaged in the country of import and then sold through super market or specially stores. It is as follows.



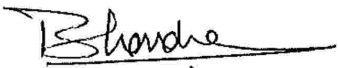

**c) Labeling of organic produce:** The label should convey clear and accurate information on the organic status of the product. The labels for organic products should be distinguishable by different coloured labels. The details like name of the product, quality of the product, name and address of the producer, name of the certification agency, certification, lot number etc, are to be given in the label. Information required on the label

Crop	OG (Organic Ginger)
Country	I (India)
Field No.	05
Date of harvest	32 (1 <sup>st</sup> Feb.)
Year	2009
Lot No.	OG I 05 32 2009



## SECTION 'B'



Q.11	Do as directed		4
Ans:	a) State the long form of NSOP. National Standard of Organic Production.		
Ans:	b) Who is father of organic farming? Sir Albert Howard		
Ans:	c) Howard and Wad have developed Indore method of composting.		
Ans:	d) Define parasitoids: The insects are always requiring passing at least one stage of their life cycle inside the host.		
Q.12	Match the pairs		4
Ans:			
	A	B	
	1) Sannhemp	(c) d) Green manuring	
	2) Castor	(d) b) Trap crop	
	3) Pheromones	(a) c) Sexual attractants	
	4) NPV	(b) d) Viral pesticide	
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