

## **COVER PAGE**

### **GENERAL INSTRUCTIONS:**

1. The marking scheme carries only suggested value points for the answers. These are only guidelines and do not constitute the complete answers. The students can have their own expression and if the expression is correct, the marks be awarded accordingly.
2. As per orders of the Hon'ble Supreme Court, the candidates would now be permitted to obtain photocopy of the Answer Book on request on payment of the prescribed fee. All examiners/Head Examiner are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking scheme.
3. All the Head Examiners/Examiners are instructed that while Evaluating the answer scripts, if the answer is found to be totally incorrect, the (x) should be marked on the incorrect answer and awarded '0' marks

AGRICULTURE (068)

### MARKING SCHEME WITH EXPECTED ANSWERS

2017 – 18

Agriculture (Theory)

Class XII

Time duration: 3 Hrs

Maximum Marks: 70

General instructions: 1) Marks of each question is indicated against it.

Q. No.	EXPECTED ANSWERS	Marks
1	Pectin	1
2	Spawn	1
3	Silver oak, Cassia, Gulmohar, Neem, Banyan, etc. ( <i>any one</i> )	1
4	Molybdenum deficiency	1
5	Phosphorus	1
6	Available water is brought to a low level so as to check growth of bacteria and moulds.	1
7	Drip irrigation.	1
8	Urea	1
9	Potassium meta bisulphite (KMS)	1
10	<p><i>Answer should be based on following points (Any two)</i></p> <p><b>Preserved flower products</b></p> <p>(1) Fragrance and flavours</p> <p>(2) Dried flowers: Cock's comb, Jasmine, Amaranthus, Areca and Coconut leaves and cut flowers come in this category.</p> <p>(3) Dried flower parts : Dry stems and shoots are used</p> <p>(4) Potpourri: It is mixture of scented loose dry flowers kept in a polythene bag. Normally kept in cupboards, drawers and bathrooms for fragrance.</p> <p style="text-align: center;">OR</p> <p>Importance of cut flowers</p> <p>(1) Used in indoor decoration as in flower vase.</p> <p>(2) Preparation of Gajra, Garland, Veni or Bouquets.</p>	2

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11	<p><i>Any two</i></p> <p>(1) <i>Cynodon dactylon</i> (Hariyali or Doob grass)</p> <p>(2) Zoysia, (carpet grass or jumping grass )</p> <p>(3) <i>Paspalum</i> grass</p>	2
12	<p>Any person interested to establish fruit nursery in the particular area are advised to meet the SMS/ Horticulture Development Officer of that area and shall make an application in writing in prescribed form and manner accompanied by the revenue papers of the land and prescribed license fee. At present, the license is valid for three years. After the validity period, the license can be renewed on the application of owner with the renewal fee after inspection by licensing authority.</p>	2
13	<p>(1) The desirable pH range for optimum plant growth occurs at optimum pH. While some crops grow best in the 6.0 to 7.0 range, others grow well under slightly acid conditions</p> <p>(2) Application of right type of fertilizer can recommended as some fertilizer are acidic, alkaline or neutral in nature.</p>	2
14	<p><b>Packing of nursery plants –</b></p> <p>Packing is the method or way in which the young plants are tied or kept together till they are transplanted. So, they have to be packed in such a way that they do not lose their turgidity and are able to establish themselves on the new site. At the same time, good packing ensures their success on transplanting. The baskets, wooden boxes, plastic bags, etc., are used for packing the plants with their earth ball. This is useful for local transportation.</p>	2
15	<p><b>The criteria for essentiality of a mineral element are given below:</b></p> <p>(a) The element must be absolutely necessary for supporting normal growth and reproduction. In the absence of the element the plants do not complete their life cycle or set the seeds.</p>	3

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	<p>(b) The requirement of the element must be specific and not replaceable by another element. In other words, deficiency of any one element cannot be met by supplying some other element.</p> <p>(c) The element must be directly involved in the metabolism of the plant.</p>	
16	<p>(a) Chlorosis: It is symptom of plant disease where the chlorophyll in green parts of plant are lost due to deficiency of mineral elements.</p> <p>(b) Necrosis: It is also a symptom of plant where degeneration of protoplast followed by death of the tissue or organ or plant occur due to the deficiency of nutrients.</p> <p>(c) Die back: Extensive necrosis of shoots from top/ tip to down ward.</p>	3x1 =3
17	<p><b>Preservation by sugar:</b></p> <p>Syrup containing 65% or more of sugar help to check the growth of microorganisms and their multiplication.</p> <p>Thus, sugar acts as a preservative by osmosis. Fruit syrup, jam, jelly, marmalade, preserve, candy, crystallized fruit and glazed fruit are preserved by sugar.</p>	3
18	<p><i>Answer should be based on following points</i></p> <p><b><u>Various post harvest operation in oilseed crop</u></b></p> <p>i) After the harvest, oilseeds are dried to reduce moisture content. Upon drying the seeds are cleaned to remove foreign materials including stones, metals, and dust from seed and later they are subjected to primary processing where sorting, grading, packaging of seeds (in cloth or jute bags) and storage is done.</p> <p>ii) For oil extraction processing following steps are followed</p> <ul style="list-style-type: none"> <li>• The oilseeds are cleaned by passing high speed air over it.</li> <li>• They are dehusked and kernels are allowed to pass through the roller mills to rupture the seeds and increase the oil recovery efficiency.</li> </ul>	3

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	<ul style="list-style-type: none"> <li>• If required the rolled flakes are cooked heated to increase oil recovery.</li> <li>• The oil is extracted by mechanical pressing, screw pressing, prepress solvent extraction and direct solvent extraction.</li> <li>• The oil is filtered to remove any solid impurities. Later it is refined to produce edible grade oil.</li> <li>• The byproduct i.e., deoiled cakes are stored in bags for other commercial purposes.</li> </ul>	
19	<p><i>Answer should be based on following points</i></p> <p><b>Role of calcium (Any three)</b></p> <ol style="list-style-type: none"> <li>(1) Required by meristematic and differentiating tissues.</li> <li>(2) Used in synthesis of calcium pectate in middle lamella.</li> <li>(3) Required during formation of mitotic spindle.</li> <li>(4) Involved in normal functioning of cell membrane.</li> <li>(5) Important role in regulating metabolic activity.'</li> </ol> <p><b>Role of Magnesium (Any three)</b></p> <ol style="list-style-type: none"> <li>(1) Constituent of the ring structure of chlorophyll</li> <li>(2) Act as a cofactor for many enzymatic reactions of respiration, photosynthesis, phosphate metabolism.</li> <li>(3) Involved in the synthesis of DNA and RNA.</li> <li>(4) Essential for binding of ribosome subunits.</li> </ol>	$1\frac{1}{2} + 1\frac{1}{2}$ $=3$
20	<p><i>Answer should be based on following points</i></p> <p>Packaging is the science, art and technology of enclosing or protecting products for distribution, storage, sale, and use. Packaging also refers to the process of design, evaluation, and production of packages.</p> <p><b>Materials Used As Food Packaging (Any four)</b></p> <ul style="list-style-type: none"> <li>• Traditional or natural packaging materials are – Bamboo basket, fiber or leaf mats, Leather containers of animal skin, clay containers, gunny bags, cloth bags.</li> </ul>	1

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	<ul style="list-style-type: none"> <li>• wooden boxes and crates</li> <li>• Paper and board</li> <li>• Glass</li> <li>• Metal – tin, aluminum, Enameled containers, Containers made of Copper or Brass</li> <li>• Ceramic Plastics</li> <li>• bio-degradable polymers</li> <li>• Regenerated cellulose films</li> </ul>	4 x ½ = 2
21	<p><u>Answer should be based on following points</u></p> <p><b>(a) Pasteurisation</b> is a heat treatment that kills part but not all the microorganisms present and usually involves the application of temperatures below 100 °C.</p> <p><b>Preservatives</b> are defined as "chemical agents, which serve to retard, hinder or mask undesirable change in food".</p> <p><b>(b) Class I preservatives</b> include common salt, sugar, dextrose, glucose (syrup), wood smoke, spices, vinegar or acetic acid, honey, etc. They are used without limitation.</p> <p><b>Class II preservatives</b> include Inorganic substances like sulphurous acid including salts thereof, nitrates of sodium or potassium, and organic substances like benzoic acid, sorbic acid. They are used in limitation.</p> <p style="text-align: center;">OR</p> <p><b>(a) Temporary preservation:</b> In this method growth of microorganisms is only retarded or inhibited for short time like low temperature preservation or with chemical preservatives.</p> <p><b>Permanent preservation:</b> In this method the growth of spoilage microorganisms are completely destroyed by different means like, drying, canning, freezing, etc. and prevented further entry and growth of microbes by suitable packaging and storage.</p> <p><b>(b) Syrup</b> are sugar solution of known concentration. Used in canning or preservation of fruits.</p>	<p>1 ½ + 1 ½ =3</p> <p>1 ½ + 1 ½ =3</p>

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	Brine are salt solution of known concentration. Used in canning or preservation of vegetables.			
22	Fertilizer		10 x ½ =5	
	Fertilizer	Nutrient available		Percentage of nutrients
	Urea	Nitrogen		46 %N
	Anhydrous ammonia	Nitrogen		82%N
	Calcium cyanamide	Nitrogen		21 %N
	Muriate of Potash (MOP)	Potassium		60-62 % K <sub>2</sub> O
	Di-Ammonium phosphate (DAP)	Nitrogen and Phosphorus	18% N and 46% P <sub>2</sub> O <sub>5</sub>	
23	<p><u>Answer should be based on following points/steps</u></p> <p><b>Process of preparation of morabba:</b></p> <p><i>Mature fruits → Washing → Preparation of fruit for sugar treatment → Keeping fruit and sugar in alternate layers or steeping fruit in syrup of 40% TSS for a day → Removal of fruit → Increasing consistency of syrup to 60% TSS by boiling → Steeping of fruit for a day → Repeating the process and raising strength of syrup by 5% TSS to 75% on alternate days → Preserve → Draining → Filling in jars or containers → Sealing → Storage.</i></p> <p style="text-align: center;">OR</p> <p>Post-harvest management of fruits and vegetables can increase their availability by</p> <ol style="list-style-type: none"> <li>(1) Post-harvest losses are reduced at different stages. Thus, increases their availability.</li> <li>(2) Processing of surplus fruits and vegetables into value added products.</li> <li>(3) Utilization of cull fruits and vegetables into processed product,</li> <li>(4) Increase shelf life by improved post-harvest management.</li> <li>(5) Quality of fruit and vegetable is maintained.</li> </ol>		5	

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24	<p><u>Answer should be based on following points</u></p> <p><b>Advantages of furrow irrigation</b></p> <p>(1) Water in furrows contacts only one half to one fifth of the land surface.          (2) Labour requirement for land preparation and irrigation is reduced.          (3) Compared to check basins there is less wastage of land.</p> <p><b>Disadvantages of furrow irrigation</b></p> <p>(1) Requirement of skilled labour is more          (2) Operation of machinery becomes difficult          (3) Drainage must be provided.          (4) not suitable for all types of soil</p>	<p>2 ½ + 2 ½ =5</p>
25	<p>(a) 2006</p> <p>(b) Any one function</p> <ul style="list-style-type: none"> <li>↳ Framing of Regulations to lay down the Standards and guidelines in relation to articles of food and specifying appropriate system of enforcing various standards <b>OR</b></li> <li>↳ Laying down mechanisms and guidelines for accreditation of certification bodies engaged in certification of food safety management system for food businesses. <b>OR</b></li> <li>↳ Laying down procedure and guidelines for accreditation of laboratories and notification of the accredited laboratories. <b>OR</b></li> <li>↳ To provide scientific advice and technical support to Central Government and State Governments in the matters of framing the policy and rules in areas which have a direct or indirect bearing of food safety and nutrition</li> </ul> <p>(c) AGMARK is a Quality Certification Mark . It ensures quality and purity of a product. Quality standards for agricultural commodities are framed based on their intrinsic quality. Products available under AGMARK are as follows:</p>	<p>1+1+ 3</p>



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	<p>i. Pulses</p> <p>ii. Whole spices &amp; ground spices</p> <p>iii. Vegetable oils</p> <p>iv. Wheat Products</p> <p>v. Milk products</p> <p style="text-align: center;"><b>OR</b></p> <p>(a) 2006</p> <p>(b) <i>Any one</i></p> <ul style="list-style-type: none"> <li>➤ To meet a country's sanitary and phytosanitary requirements, food must comply with the local laws and regulations to gain market access.</li> <li>➤ These laws ensure the safety and suitability of food for consumers.</li> </ul> <p>(c) <b>Fruit Product Order (FPO), 1955</b></p> <p>The main objective is to lay down quality standards to manufacture fruit &amp; vegetable products maintaining sanitary and hygienic conditions in the premises. It is mandatory for all manufacturers of fruit and vegetable to obtain a license under this Order.</p>	1+1+ 3
26	<p><u><i>Answer should be based on following points</i></u></p> <p><b>Thermal processing:</b> Application of heat helps preserve food by inactivating the enzymes, destroying the microorganisms. If it is appropriately packaged to prevent recontamination, the food can be stored for extended periods of time. The heat treatment achieved during the cooking of foods also helps to render the food more safe and palatable.</p> <p>Thermal processing can be done by following methods:</p> <p>(1) <b>Blanching</b> The primary purpose of blanching is to destroy enzyme activity in fruit and vegetables. It is not intended as a sole method of preservation,</p>	2

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	<p>but as a pre- treatment prior to freezing, drying and canning. Other functions of blanching include: Reducing surface microbial contamination, softening vegetable tissues to facilitate lining into containers and removing air from intercellular spaces prior to canning. These conventional processes are simple and inexpensive</p> <p>(d) Pasteurization: It is a heat treatment that kills part but not all the microorganisms present and usually involves the application of temperatures below 100 °C. The heating may be by means of steam, hot water, dry heat or electric currents and the products are cooled promptly after the heat treatment.</p> <p>(2) Sterilization: It is a method of destruction of all microorganisms using temperatures above 100°C. Sterilization is generally carried out at temperatures ranging from 116°to 129°C.</p>	<p>3x1 =3</p>
<p>27</p>	<p><u>Answer should be based on following points</u></p> <p>Definition of the USDA “organic farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc.) and to the maximum extent feasible rely upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection”. or definition</p> <p style="text-align: center;">OR</p> <p>FAO suggested that “Organic agriculture is a unique production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity, and this is accomplished by using on-farm agronomic, biological and mechanical methods in exclusion of all synthetic off-farm inputs”</p>	<p>1</p>

