

## AGRICULTURAL SCIENCE

Class : 12

Marks 90

### Part – I

I Choose the correct answer

Question .No.	Selection	Answer	Marks
1.	c)	Quality Seed	1
2.	c)	Borax	1
3.	d)	5 X 4	1
4.	b)	P	1
5.	a)	Isotema	1
6.	a)	Dairy farming	1
7.	b)	Emasculation	1
8.	c)	19 <sup>th</sup> Century	1
9.	d)	<u>3 years</u>	1
10.	d)	Arboratum	1
11.	c)	Green	1
12.	c)	Poor quality of water	1
13.	a)	Sensor	1
14.	b)	Peppering	1
15.	d)	Top Dressing	1

Part – II

II Answer any Ten : Question No.28 Compulsory

10 X 3 = 30

Question. No	Answer	Marks
16.	<p><b><u>Seed rate formula:</u></b></p> $\frac{\text{No.of crops/ha} \times \text{No. of seeds /hill} \times \text{Test weight (gm)} \times 100}{1000 \times 1000 \times \text{Germination (\%)}}$	3
17.	<ul style="list-style-type: none"> <li>• Important oil seed crop of India</li> <li>• Edible oil</li> <li>• Seed has 48 – 50% oil, 25- 28 % protein, vitamins, minerals and anti oxidants</li> <li>• Used in preparation of soap, cosmetics, lubricating oil</li> <li>• Groundnut oil cake is used as fertilizer, dairy and cattle feed.</li> <li>• Groundnut shell is used in preparation of cardboard sheet also used as fuel</li> </ul>	3
18.	<ul style="list-style-type: none"> <li>• Sterilized coir pith 300kg</li> <li>• Neem oil cake 5kg</li> <li>• Azospyrillum 10 kg</li> <li>• Phosphobacteria 10kg are required to prepare media</li> <li>• 1.2kg media is enough for one protray</li> </ul>	3
19.	<ul style="list-style-type: none"> <li>• Exclusion</li> <li>• Eradication</li> <li>• Protection</li> <li>• Immunization</li> </ul>	3
20.	Integrated farming is a scientific methodology that combines the crop production and its allied sectors in appropriate manner	3
21	<ol style="list-style-type: none"> <li>1. Nuclear Seed</li> <li>2. Breeder Seed</li> <li>3. Foundation Seed</li> <li>4. Certified Seed</li> </ol> <p align="right">( Any 3 )</p>	3
22.	Organic farming is production of crops and livestock without use of the synthetic chemicals and inorganic fertilizers	3

23.	<p><b><u>Seedling :</u></b> A seedling is a young sporophyte especially one that develops from an embryo or seed. Seedlings emerge from seed that germinates</p> <p><b><u>Nursery :</u></b> Is a place where seedlings, cuttings and grafts are raised with care before transplanting</p>	3
24.	<p><b><u>Pests of Silkworm :</u></b> Ants, crows, kites, rats feed upon silkworms. Diseases of Silkworm :</p> <ul style="list-style-type: none"> <li>• Pebrine (Protozoan disease)</li> <li>• Flacherie (Bacterial disease)</li> <li>• Grasserie (Viral disease)</li> <li>• Muscardine (Fungal disease)</li> </ul>	3
25.	<p><b><u>Adulteration :</u></b> Addition of another substance or removal of a valuable from the food, affecting the natural quality of food item</p>	3
26.	<ul style="list-style-type: none"> <li>• Greenish or yellowish diarrhoea</li> <li>• Keep their neck between the two legs</li> <li>• Due to high fever, not able to consume feed</li> <li>• Vaccination with F strain, Lasota strain</li> <li>• Burn the dead ones</li> </ul>	3
27.	<p>Art and Science of gathering information about objects or areas from a distance without having physical contact with objects or area being investigated</p>	3
28.	<ul style="list-style-type: none"> <li>• Azospyrillum</li> <li>• Rhizobium</li> <li>• Azolla</li> <li>• Blue green algae (BGA)</li> <li>• Azatobactor</li> <li>• Pseudomonas</li> <li>• Bacillus</li> <li>• Vesicular arbuscular mycorrhiza (VAM) (Any 3 )</li> </ul>	3

<b>Part – III</b>		
	<b><u>Answer any Five : Question No.35 Compulsory</u></b>	
	<b>5 X 5 = 25</b>	
29.	<p><b><u>Seed treatment :</u></b></p> <ul style="list-style-type: none"> <li>• Mixing some material to improve the quality of seed</li> <li>• Insecticide Fungicide, Biofertilizer are used for seed treatments.</li> </ul> <p><b><u>Advantages :</u></b></p> <ul style="list-style-type: none"> <li>• Protection from soil and seed borne pest and diseases</li> <li>• Increase germination and vigour</li> <li>• Improve storage shelf life</li> <li>• To fix atmospheric nitrogen in the roots of pulse crop</li> <li>• To reduce fertilizer cost</li> <li>• For drought resistance</li> </ul>	5
30.	<p><b><u>Gypsum application :</u></b></p> <ul style="list-style-type: none"> <li>• 400kg of gypsum can be applied at 40-70 days after sowing and earthing up can be done</li> </ul> <p><b><u>Advantages :</u></b></p> <ul style="list-style-type: none"> <li>• Soil loosening</li> <li>• Easy penetration of peg</li> <li>• Deficiency of calcium and sulphur can be overcome</li> <li>• Increase in oil content and seed size</li> <li>• Nematode disease is controlled</li> </ul>	5
31	<p><b><u>Stomach Poison :</u></b></p> <ul style="list-style-type: none"> <li>• Toxicant is applied on the parts of plant, when ingested, acts in the digestive system of the insect and kills</li> <li>• Control insects with sucking and biting habit</li> </ul> <p>Eg. Quinolphos Lambda cylothrin</p> <p><b><u>Fumigant :</u></b></p> <ul style="list-style-type: none"> <li>• Respiratory poison which act in gaseous phase</li> <li>• Enters trachea and cause death of insects</li> </ul> <p>Eg: Aluminium phosphide</p>	5

32.	<p><b><u>Model plan for wetland:</u></b></p> <ul style="list-style-type: none"> <li>• Suitable crops – paddy, Banana Sugarcane, Turmeric, Pulses and Oil seeds</li> <li>• Suitable allied industry sectors – Dairy farming, fisheries, poultry mushroom, cultivation</li> </ul>		
1.	Maize (June – July) Paddy (September – October) Sesame ( February – March)	0.45 ha	5
2.	Sunflower (June – July) Paddy (September – October) Greengram ( February – March)	0.50 ha	
3.	Fishery ( 400 numbers) Poultry (Over fish pond - 20 no.)	0.04 ha	
4.	Mushroom cultivation	0.01 ha	
33.	<p><b>Roguing :</b></p> <ul style="list-style-type: none"> <li>• Process to be followed from sowing to storage</li> <li>• Removal of variety mixed with other variety of same crop or other crop varieties, undesirable characteristics and weeds</li> <li>• Field inspection should be done 3 – 4 times before flowering, after flowing and before harvesting</li> <li>• Pest and disease infected crops are also removed</li> <li>• To maintain genetic purity</li> <li>• Undesirable characterised seeds are removed from harvest to storage</li> </ul>		5
34.	<p><b>Uses of honey</b></p> <ul style="list-style-type: none"> <li>• Contains sugar,minerals, organic acids, amino acids and protein</li> <li>• Easy to digest food and gives instant energy</li> <li>• Stimulate appetite and promotes physical growth</li> <li>• Heals intestinal related problem</li> <li>• Strengthens heart and muscles</li> <li>• Beauty to skin</li> </ul>		5

35.	<p><b><u>Harvest and yield of clorrisosa:</u></b></p> <ul style="list-style-type: none"> <li>• Harvest can be done after 160 – 180 days of sowing</li> <li>• Turning of brown colour and wrinkling is the harvest index</li> <li>• Pods should be plucked and dried in shade for 10 – 15 days</li> <li>• Seeds can be separated when the colour of pod changes to reddish yellow</li> <li>• Dried for 10 – 15 days on the floor ; remove soil and stones ; pack in gunny bag</li> </ul> <p>Yield - Seeds 200 – 250 kg / ha/year  Tuber 300 kg / ha/year  Skin of pods 150 – 200 kg / ha/year</p>	5
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<p><b><u>Part – IV</u></b></p> <p><b><u>Answer the following</u></b></p> <p style="text-align: right;"><b>2 X 10 = 20</b></p>		
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36 (a)	<b>Button shedding in coconut</b>		10	
	Causes for button shedding	Reclamation method		
	PH of soil	Addition of lime for acid soil; Gypsum for alkali soil		
		Lack of drainage		Drain excess water so that roots can be aerated well
		Water scarcity or severe drought		Drought management techniques
		Genetic causes		Select seed materials from high yielding mother palm
		Nutrient deficiency		Application of recommended dosage of nutrients. Application of 2kg MOP with 200gm Borax to correct the barren nuts
		Lack of pollination		Setting up of beehives @ 15 / ha
		Hormone deficiency		Spraying 2,4-D sodium salt 30 ppm or NAA 20ppm on inflorescence
	Pest and disease	Follow proper plant protection methods		

36 (b)	<p><b>Cultivation practices for Jasmine</b></p>	
	<p>Botanical Name : Jasminum Sambac  Family : Oleacea  Origin : India</p> <p><b><u>Economical Importance</u></b></p> <ul style="list-style-type: none"> <li>• Used for making garlands, adorning hairs of women</li> <li>• In ceremonial and religious functions</li> <li>• Production of perfumery oil</li> <li>• Reduce stress</li> <li>• Improve mood</li> <li>• Cultivated in more area in Tamilnadu</li> <li>• Gives employment opportunity throughout the year</li> </ul> <p><b><u>Soil:</u></b>  Well drained loamy (or) red loamy soil</p> <p><b><u>Climate :</u></b>  Warm summer, mild winter, moderate rainfall and sunny days.</p> <p><b><u>Varieties:</u></b>  Single Mogra, double mogra, Iruvatchi, Ramanathapuram local and Arka Aradhana etc.,</p> <p><b><u>Field Preparation :</u></b></p> <ul style="list-style-type: none"> <li>- Deep ploughing – 1.25m spacing – 30 x30 x30cm pits</li> <li>- 10 kg farmyard manure per pit</li> </ul> <p>Planting :  June – November, 6400 cuttings/ha</p> <p>Water management  Immediately after planting, once in a week</p> <p><b><u>Fertilizer management:</u></b></p> <ul style="list-style-type: none"> <li>- Fym @ 10kg/pit is applied before planting</li> <li>- NPK @ 60:120: 120 gm/plant/year is applied in equal splits during Nov and June –July along with 10 kg FYM/plant</li> </ul> <p><b><u>Miicro nutrients:</u></b>  Foliar spray of Znso4 0.25%, Mg So4o.50% + FeSo4 o.50% - at 15 days interval until the chlorotic symptoms disappear</p> <p>Pruning :  The bushes are pruned at 50cm height from the ground level during last week of November</p> <p><b><u>Harvest:</u></b></p> <ul style="list-style-type: none"> <li>- Flowering commences in March – October</li> <li>- Unopened, matured flower buds are plucked during early morning</li> <li>- Opened flowers harvested for scent extraction</li> </ul> <p><b><u>Yield :</u></b>  8-9 tonnes/ ha</p>	10

37(a)	<b>Crop protection methods in crop cultivation</b>																									
	<p style="text-align: center;"><b>Crop protection methods in crop cultivation</b></p> <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left; width: 33%;"><b>Natural control</b></th> <th colspan="2" style="text-align: left; width: 67%;"><b>Artificial control</b></th> </tr> </thead> <tbody> <tr> <td>1. Heat</td> <td>1. Resistant varieties</td> <td>1. Physical method</td> </tr> <tr> <td>2. Relative humidity</td> <td>2. Seed Treatment</td> <td>2. Cultural method</td> </tr> <tr> <td>3. Wind Speed</td> <td>3. Pest and disease Monitoring</td> <td>3. Mechanical method</td> </tr> <tr> <td>4. Rain</td> <td></td> <td>4. Legal method</td> </tr> <tr> <td>5. Natural enemies</td> <td></td> <td>5. Biological method</td> </tr> <tr> <td>6. Land reform</td> <td></td> <td>6. Chemical method</td> </tr> <tr> <td></td> <td></td> <td>7. Genetic method</td> </tr> </tbody> </table> <p><b><u>Cultural method:</u></b> Includes crop production practices that makes less susceptible to pests and diseases</p> <p><b><u>Mechanical method:</u></b> Includes use of manpower and equipments in pest control</p> <p><b>Physical method</b> Use of heat, rays, sound</p> <p><b><u>Genetic method:</u></b> Use of genetically modified seeds</p> <p><b><u>Legal method:</u></b> Quarantine, Insect and pest act 1914</p> <p><b><u>Biological method:</u></b> Use of parasites, predators and micro organisms</p>	<b>Natural control</b>	<b>Artificial control</b>		1. Heat	1. Resistant varieties	1. Physical method	2. Relative humidity	2. Seed Treatment	2. Cultural method	3. Wind Speed	3. Pest and disease Monitoring	3. Mechanical method	4. Rain		4. Legal method	5. Natural enemies		5. Biological method	6. Land reform		6. Chemical method			7. Genetic method	10
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<p>37 (b)</p>	<p><b>Intercultural Operations</b></p> <p>Cultivation practices performed after seeding or transplanting</p> <p><b><u>Thinning:</u></b> Keeping one healthy seedling and removal of extra seedlings after 5-7 days</p> <p><b><u>Gap filling:</u></b> Is done to fill the gaps by sowing seeds or transplanting seedlings</p> <p><b><u>Earthing up:</u></b> Farming technique that involves mounding soil around the base of the plant</p> <p><b><u>Weeding:</u></b> Removal of irrelevant crops</p> <p><b><u>Stirring up:</u></b> Pracitce to digging up the soil for proper aeration</p> <p><b><u>Roguing:</u></b> Removal of other variety plants to maintain genetic purity</p> <p><b><u>Topping:</u></b> To induce side branches (cotton, tobacco)</p> <p><b><u>Detrashing:</u></b> Removal of dried trashes to control pest and disease</p> <p><b><u>Propping:</u></b> Operation of tying leaves together in sugarcane to avoid lodging</p> <p><b><u>Desuckering:</u></b> Removal of side shoots to maintain nutrient use efficiency (Banana, Tobacco, chrysanthemum)</p> <p><b><u>Pruning:</u></b> To get proper aeration and sunlight – Increase yield – Removal of pest and disease infected plants (Jasmine, Rose, Sapota)</p> <p><b><u>Propping in Banana:</u></b> Use of bamboo and Casurina – To avoid lodging</p> <p>Plant protection method – Top dressing – spraying growth regulators - rubbing flowers face to face gently in sunflower etc , are also intercultural operations.</p>	<p>10</p>
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