

DIRECTORATE OF GOVERNMENT EXAMINATIONS, CHENNAI-6
HIGHER SECONDARY EXAMINATION MARCH 2016
BOTANY KEY ANSWER
SECTION - A

MAX. MARKS-150
30x1=30

TYPE-A			TYPE -B		
1	c	Arachis hypogea	1	b	Aegle marmelos
2	a	Parenchyma	2	a	Nitrosomonas
3	a	Jatropha curcas	3	b	Chlorophyll
4	b	5 years	4	c	40
5	c	Centimorgan	5	d	Abscisic acid
6	d	Nucleus	6	b	5 years
7	b	Aegle marmelos	7	c	Nucleotide sequence
8	c	40	8	a	Differentiation
9	d	Secondary phloem	9	c	Basal
10	a	Trichoblasts	10	b	Mussaenda
11	d	Abscisic acid	11	b	One
12	b	Interferon	12	c	Centimorgan
13	d	DNA viruses	13	a	Drosera
14	c	Basal	14	b	Tobacco
15	c	Triticale	15	c	Triticale
16	a	Solanum nigrum	16	c	Bacillus thuringiensis
17	a	Nitrosomonas	17	a	Species
18	a	Drosera	18	a	Solanum nigrum
19	c	Nucleotide sequence	19	b	Interferon
20	a	Species	20	c	Arachis hypogea
21	b	Mussaenda	21	c	Oxidative phosphorylation
22	b	Tobacco	22	a	Jatropha curcas
23	a	Differentiation	23	d	Nucleus
24	c	Cypselia	24	d	DNA Viruses
25	a	Kuhne	25	d	Malvaceae
26	b	Chlorophyll	26	a	Parenchyma
27	d	Malvaceae	27	a	Kuhne
28	c	Bacillus thuringiensis	28	c	Cypselia
29	b	One	29	d	Secondary phloem
30	c	Oxidative phosphorylation	30	a	Trichoblasts

SECTION – B

15x3= 45

31	<p><u>Binomial nomenclature</u> Every Species is given a name of two words. The first word refers to the genus and second word to the species. E.g . Mangifera indica (or) any one Binomial name</p>	1 1 1	3 Marks
32	<p><u>Fibre plants of Malvaceae (Any Three)</u> 1. Gossypium barbadense 2. Gossypium hirsutum 3. Gossypium herbaceum 4. Hibiscus cannabinus</p>	3X1=3	3 Marks
33	<p><u>Floral formula of Cocos nucifera</u> Male Flower Br, Ebrl, ⊕, ♂, P₃₊₃, A₃₊₃, G_o.</p> <p>Female flower Br, Ebrl, ⊕, ♀, P₃₊₃, A_o, G₍₃₎</p>	1 ½ 1 ½	3 Marks
34	<p><u>Polygamous</u> Staminate flowers. Pistillate flowers and bisexual flowers are present in the same plant is called polygamous Eg. Musa.....</p>	2 1	3 Marks
35	<p><u>Aerenchyma</u> Air filled parenchyma tissue is called Aerenchyma. It helps the plant to float in water</p>	2 1	3 Marks
36	<p><u>B- Chromosomes</u> 1. These chromosomes are abnormal chromosomes. 2. B-Chromosomes are also called supernumerary and accessory Chromosomes. 3. They are additional Chromosomes found in some individuals in a population 4. They are common in plants and they reduce viability. (Any three points)</p>	1 1 1	3 Marks

37	Biochemical Mutation Mutations that affect the biochemical reactions are called biochemical mutations. Eg. Neurospora	2 1	3 Marks
38	Positive super coil The DNA unwinds, the part of the DNA that is found above the replication fork becomes supercoils. These are called positive supercoils. Enzyme topoisomerase releases the supercoils	2 1	3 Marks
39	Super bug 1. Pseudomonas putida is called the super bug. 2. It Contains a hybrid plasmid derived by combining parts of CAM and OCT 3. It metabolizing hydrocarbons more efficiently	1 1 1	3 Marks
40	Importance of Agrobacterium tumefaciens 1. Agrobacterium tumefaciens is a soil inhabiting bacterium and has Ti Plasmid. 2. This bacterium invades crops such as tomato, sun flower, brinjal, and cotton and causes crown gall disease 3. The T-DNA Which holds the desired foreign gene after splicing is introduced into the plant cell.	1 1 1	3 Marks
41	Hydrolases These enzymes split larger molecules into smaller ones by the hydrolysis of water and breaking of specific covalent bonds. Eg. Carbohydrase	2 1	3 Marks
42	Chemosynthesis Chemosynthesis is a process by which certain organisms synthesis carbohydrates by using energy obtained by the oxidation of inorganic substances.	3	3 Marks
43	Richmond Lang Effect Application of cytokinin delays the process of ageing in plants. This is also known as Richmond lang effect.	3	3 Marks

44	<p><u>Fermentation</u> The anaerobic breakdown of glucose to carbondioxide and ethanol is a form of respiration referred to fermentation. (or) Fermentation literally means a chemical change accompanied by effervescence.</p>	3	3 Marks
45	<p><u>Photoperiodism</u> The response of a plant to the relative lengths of light and dark periods is known as photoperiodism.</p>	3	3 Marks
46	<p><u>Dimorphic Chloroplasts</u> 1. The C4 plants contain dimorphic chloroplasts. 2. Chloroplasts in mesophyll cells are granal 3. Whereas in bundle sheath chloroplasts are agranal</p>	1 1 1	3 Marks
47	<p><u>Role of Aconitase</u> 1. Citric acid is dehydrated to form cis aconitic acid in the presence of aconitase 2. The same enzymes aconitase catalyzes the formation of isocitric acid from Cis- Aconitic acid by the addition of a molecule of water.</p>	1 ½ 1 ½	3 Marks
48	<p><u>C₂ cycle</u> Respiration that occurs in photosynthetic tissues in the presence of light and results in increased rate of carbondioxide evolution is called photorespiration or C₂ cycle.</p>	3	3 Marks
49	<p><u>Biopesticides</u> Biological agents that are used for control of insects, weeds, and pathogens produced from living organisms are called biopesticides.</p>	3	3 Marks
50	<p><u>Biopiracy</u> The clandestine exploitation and utilization of bioresources from a country by several organizations and multinational companies without proper authorization is known as biopiracy.</p>	3	3 Marks

SECTION –C
(Question No. 55 is compulsory)

7x5= 35

51	Salient features of ICBN Any five features	5X1=5	5 Marks
52	<u>Economic importance of Solanaceae</u> 1. Food plants One Binomial name +use 2. Medicinal plants Two Binomial name+ uses 3. Tobacco One Binomial name + use 4. Ornamental Plants One Binomial name + use.	1 2 1 1	5 Marks
53	<u>Functions of Epidermal tissue system</u> 1. The Cuticle checks excessive loss of water 2. Epidermis protects the underlying tissues. 3. Stomata involve in transpiration and gaseous exchange. 4. Trichomes are also helpful in the dispersal of seeds and fruits. 5. Root hairs absorb water and mineral salts from the soil.	1 1 1 1 1	5 Marks
54	<u>Annual Rings</u> 1. Spring wood 2. Autumn wood 3. Dendrocronology 4. Diagram 5. parts	1 1 1 1 1	5 Marks
55	<u>T.S of Dicot Root</u> 1. Diagram (Ground plan / Enlarged) 2. Any four parts	3 2	5 Marks
56	<u>Crossing Over</u> 1. Definition 2. Any three significance	2 3	5 Marks

57	Aneuploidy 1. Definition 2. Hypoploidy – Definition. Monosomy(2n-1) Nullisomy(2n-2) 3. Hyperploidy – Definition Trisomy (2n+1) Tetrasomy(2n+2)	1 2 2	5 Marks
58	Physiological effects of auxins. Any five Physiological effects.	5X1=5	5 Marks
59	Differences between C₃ and C₄ Pathway (Any Five Differences)		5X1=5
	C₃ Pathway 1. photosynthesis occurs in mesophyll cells. 2. The CO ₂ molecule acceptor is RUBP 3. The First stable product is PGA 4. Photorespiration rate is high 5. Optimum temperature is 20°C to 25°C 6. Examples is any one	C₄ Pathway 1. Photosynthesis occurs in mesophyll and bundle sheath cells. 2. The CO ₂ acceptor molecule is phosphoenol pyruvate. 3. The first stable product is OAA 4. Photorespiration is negligible. 5. Optimum temperature is 30°C to 45°C 6. Example is any one	
60.	Economic Importance of Rice Any five importance	5X1=5	5 Marks
61	Isolation of protoplast 1. Leaves from a 10 week old plant 2. Sterilized with 70% alcohol 3. Laminar air flow Chamber 4. Enzyme Mixture macerozyme sorbitol 5. Isotonic solution	1 1 1 1 1	5 Marks

62	<u>Herbicide resistance in transgenic plants.</u> 1. Herbicides affect photosynthesis or biosynthesis of essential amino acids 2. Herbicides kills the unwanted weeds 3. Herbicides also affects the field crops 4. To protect the crops against exposure to herbicides. 5. streptomyces hygroscopicus which encodes an enzyme, capable of inactivating the herbicide 'Basta'	1 1 1 1 1	5 Marks
----	--	-----------------------	---------

SECTION-D

4x10=40

63	<u>Bentham and Hookers system of Classification</u> 1. Flow chart Dicotyledonae Gymnospermae Monocotyledonae (or) Explanation Dicotyledonae Gymnospermae Monocotyledonae	6 2 2 6 2 2	10Marks
64	<u>Cilitoria Ternatea</u> Habit Root Stem Leaf } Any two vegetative character	2X1=2	
	Inflorescence Flower Calyx Corolla Androecium Gynoecium Fruit Floral Diagram Floral Formula } Any five Reproductive character	5X1=5 2 1	10Marks

65	<u>Monocot Stem</u> 1. epidermis 2. Hypodermis 3. Ground tissue 4. Vascular tissue 5. xylem 6. Phloem 7. Diagram (Ground plan / Enlarged) 8. parts (Any Four)	1 1 1 1 1 1 2 2	10Marks
66	<u>plant tissue culture</u> 1. Culture Vessels 2. Culture medium 3. Sterilization Chemical sterilization 4. Inoculation 5. Incubation 6. Induction of callus 7. Morphogenesis organogenesis Embryogenesis 8. Hardening	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10Marks
67	<u>DNA Structure</u> 1. Diagram 2. parts 3. Explanation	2 2 6	10Marks
68	<u>C₄ pathway</u> 1. Flow chart (or) Description	10	10Marks
69	<u>Nutrition in Angiosperms</u> (Any Five) 1. Autotrophic nutrition 2. Heterotrophic nutrition 3. Saprophytic plants 4. parasitic plants 5. insectivorous plants 6. Any two diagrams	5 x 2 = 10	10Marks
70	<u>Biofertilizers</u> 1. Definition 2. Example 3. Seven Benefits	2 1 7	10Marks