FIRST YEAR HSS EXAM – 2025

Botany - Answer Key

HSE I — Total marks – 30

Category	Question No:	Answer key / Value points	Split score	Total score
Part I		Answer any 3 questions from 1 - 5 Each carries 1 mark		
	1.	a/ Chrsophytes	1	1
	2.	Floridean starch	1	1
	3.	Reticulate	1	1
	4.	Zygotene	1	1
	5.	Log phase / Exponential phase	1	1
Part II		Answer any 9 questions from 6 - 16. Each carries 2 mark		
	6.	Phycobiont - Algal partner in lichens Mycobiont - Fungal partner in lichens	1+1	2
	7.	Chlamydomonas – Algae Cycas - Gymnosperm Selaginella - Pteridophytes Sphagnum - Moss	½ x 4	2
	8.	i. (A) – Subsidiary cell (B) – Guard cell ii. Stomatal pore, guard cells & subsidiary cells together known as Stomatal apparatus.	½ x 2 1	2
	9.	(A) – Closed vascular bundle Parts - 1 – Phloem 2 – Xylem (B) - Open vascular bundle Part- 3- Cambium	½ ¼ x 2 ½ ½	2
	10.	a. Fluid Mosaic Model b. Lipid / Protein / Carbohydrate (any 2) c. Transport of some molecules across it (Membrane is selectively permeable)/ Cell growth / Formation of intercellular junctions / Secretion / Endocytosis / Cell division. (any 1)	½ ½ x 2 ½	2
	11.	a. Cristae –Cristae infoldings of inner mitochondrial membrane .All others are parts of chloroplast . b. Fimbriae - Small bristle like fibres sprouting out of prokaryotic the cell .All others are parts of chromosome	½x 2 ½ x 2	2
	12.	Ribulose -1,5-biphosphate CO_2 acceptor in dark reaction	1+1	2
	13.	a. Photorespiration b. Photo respiration is the metabolic pathway occurs in the presence of light in which O_2 is consumed & CO_2 is	1 ½ x 2	2

		released / There is no synthesis of ATP & NADPH (energy) , and glucose formation but ATP is utilised / RuBP combines with O_2 to form 1 molecule of 3PGA & 1 molecule of phosphoglycolate, when, O_2 concentration is more than that of CO_2 , Enzyme RuBisCO catalyse this reaction/ Correct equation (any 2 point)		
	14.	a. Acetyl CoA b. Pyruvate dehydrogenase	1+1	2
	15.	a. Internode elongation before flowering in beet, cabbage etc b. Gibberellin	1+1	2
	16.	a. Auxin b. Apical dominance / Inhibition of growth of lateral buds by the terminal bud / Initiate rooting in stem cutting /Promote flowering in pineapple /Prevent fruit & leaf drop at early stages but promote the abscission of older mature leaves & fruits /Induce Parthenocarpy. eg., in tomatoes / Weedicide (2,4-D used to kill dicot weeds, & does not affect monocot plants) / 2,4-D used to prepare weed-free lawns by gardners / Auxin control xylem differentiation & helps in cell division (any 2 response)	1 ½ x 2	2
Part III		Answer any 3 questions from 17 - 20. Each carries 3 scores		
	17.	a. (A) Cymose (B) Racemose b. Racemose inflorescence - main axis continues to grow / unlimited growth / Flowers borne laterally in an Acropetal succession / Younger flowers at tip and older flowers at bottom Cymose inflorescence :- Main axis terminates in a flower / limited growth/ Flowers borne in a Basipetal succession / Younger flowers at bottom and older flowers at tip (any 2 difference)	½ x 2 ½ x 4	3
	18.	a. Anaphase b. Centromere split/ Sister chromatids separate / Sister chromatids move towards opposite poles. (any 2 point) c. Cell growth / Cell repair / Maintenance of nucleo-cytoplasmic ratio /Regeneration (any 3 point)	½ ½ x 2 ½ x 3	3
	19.	a. (A) – Mesophyll cell (B) – Bundlesheath cell b. First stable compound (First CO_2 fixation product) is 4-C compound (C_4 acid) c. C_4 plants – Lack photorespiration / Better productivity and yield / Tolerance to high temperature / Show response to high light intensities (any 3 response)	½ x 2 ½ ½ x 3	3
	20.	a. Glycolysis / EMP pathway	½	3

		b. (A) – Glucose 6- phosphate. (B) 3 PGAL (3-Phosphoglyceraldehyde) (C) - 2- phosphoglyceric acid (2 PGA) (D) – PEP (Phospho enol pyruvic acid) c. Alcoholic fermentation by microorganisms and yeast / Pyruvic acid reduced to ethanol and CO_2 in the cells of microorganisms / Lactic acid fermentation in muscle cells / Pyruvic acid reduced to lactic acid in muscle cells Aerobic respiration / Pyruvic acid Oxidatively decarboxylated to acetyl CoA and enter into aerobic respiration	¼ x 4 ½ x 3	