

First Terminal Exam – 2025

Botany - Answer Key

HSE 2

Total marks - 30

Categor y	Questi on No:	Answer key / Value points	Split score	Total score
Part I		Answer any 3 questions from 1 - 5 Each carries 1 mark		
	1.	Apomixis	1	1
	2	a. rop b. DNA ligase	$\frac{1}{2} \times 2$	1
	3	Sporopollenin	1	1
	4	Ti plasmid of Agrobacterium tumefaciens & Retrovirus	$\frac{1}{2} \times 2$	1
	5	Stanly Cohen & Herbert Boyer	1	1
Part II		Answer any 9 questions from 6 - 16. Each carries 2 mark		
	6	Epidermis, Endothecium & Middle layers Function :- Protection & dehiscence	$\frac{1}{2} \times 4$	2
	7	a. ampicillin resistance gene / amp^R and tetracycline resistance gene / tet^R b. Selectable markers helps to identify and eliminate recombinants/ transformants from non-recombinants/non-transformants	1 1	2
	8	a. Embryosac developed from single haploid megaspore. b. Synergids and Antipodals	1 $\frac{1}{2} \times 2$	2
	9	E - First letter of genus from which it is isolated Co - first two letters of species name of the prokaryotic cell from which they were isolated R - denotes the strain I - Roman number, denotes the order in which they are isolated from that strain of bacteria.	$\frac{1}{2} \times 4$	2
	10	a. Removal of anther from the flower buds of female flower before maturity b. prevent self pollination.	1+1	2
	11	DNA enters the bacterium through the pores in cell wall. The bacterial cell is treated with divalent cation such as calcium. Incubate Recombinant DNA and bacterial cell on ice. Place this bacterial cell at 42°C which provides a heat shock & then Put them back on ice. Now bacteria can take up the Recombinant DNA	2	2
	12	a. Nector and pollengrains b. Yucca (Yucca and moth) & Amorphophallus	$\frac{1}{2} \times 4$	2
	13	Restriction enzymes / Polymerase enzymes / Ligase or Molecular glue / Vectors / Host	2	2

	14	a. Embryogenesis b. Development of embryo from zygote	1+1	2
	15	a. Microinjection / Recombinant DNA is directly injected into the nucleus of an animal cell using micropipette. b. Biolistics /Gene gun method / High velocity microparticles of gold or tungsten coated with DNA and is bombarded into the host cell (plant cell)	1 +1	2
	16	a. In ground nut, endosperm is not present in the seed. In castor, some amount of endosperm left in the seeds b. Self incompatibility is the genetic mechanism that prevent self pollen from fertilizing the ovule by inhibiting pollen germination / pollen tube formation.	1+1	2
Part III		Answer any 3 questions from 17- 20. Each carries 3 marks		
	17	Water independence – Water is not essential for pollination and post fertilization changes. So angiosperms can survive in a wide range of habitats. Dispersal – Seeds are dispersed to new habitats and help the species to colonise in other areas Nourishment to seedlings – Seeds contain food reserves that support seedlings until they can photosynthesize independently. Genetic variation – Being product of sexual reproduction, they generate new genetic combinations leading to variations Protection – Hard seed coat provides protection to young embryo (any 3 point)	1+1+1	3
	18	a. 500 bp. DNA fragments are separated according to their size through a sieving effect provided by agarose gel . Smaller fragments move farther b. Elution	1+1+1	3
	19	a. Syngamy & Triple fusion b. (A) – Male gamete (B) – Female gamete / Egg (C) – Polar nuclei / Secondary nucleus. (D) - Endosperm	$\frac{1}{2} \times 2$ $\frac{1}{2} \times 4$	3
	20	a. Palindromic sequence b. sequence of base pairs that read the same on the two strands when orientation of reading is kept the same. c. EcoRI, a restriction endonuclease	1+1+1	3

FIRST TERMINAL EXAMINATION-2025
CLASS-12-ZOOLOGY ANSWER KEY

Qn No.	Scoring Key	Score
I. Answer any 3 questions from 1 to 5. Each carries 1 score.		
1	Semen	1
2	Ovary it Produce female gamete egg/Oogenesis/It secrete female sex hormone called estrogen and progesterone	$\frac{1}{2}$ $\frac{1}{2}$
3	MTP/Medical Termination of pregnancy/Induced abortion	1
4	Genetics	1
5	a)RCH: Reproductive and child health care b)RTI : Reproductive Tract Infection	$\frac{1}{2}$ $\frac{1}{2}$
II. Answer any 9 questions from 6 to 16. Each carries 2 scores		
6	<p> $I^A i$ Father (A-blood group) \times $I^B i$ Mother (B-blood group) gametes (I^A, i) (I^B, i) $I^A I^B$ $I^A i$ $I^B i$ ii -AB- -A- -B- -O- blood group blood group blood group blood group Genotype of mother = $I^B i$ Genotype of father = $I^A i$ possible genotypes of offsprings ① AB - $I^A I^B$ ② A = $I^A i$ ③ B = $I^B i$ ④ O = ii </p>	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
7	Color blindness All others are Autosomal recessive disorders,color blindness is sexlinked recessive disorder	1 1
8	<p>a) </p> <p>b) </p>	1 1
9	1. A rapid decline in death rate. 2. Decline in maternal mortality rate (MMR) . 3. Decline in infant mortality rate (IMR) . 4. Increase in number of people in reproducible age.	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

10	a) Corpus luteum : It secrete progesterone, and it maintain endometrium/It support pregnancy b) Fimbriae : It collect ovum/Secondary oocyte after ovulation		1 1
11	Barrier methods	IUDs	1
	Diaphragms, Condoms,	LNG-20, Multiload-375,	1
12	1)Menstruation- d)Menstrual flow		½
	2) Proliferative phase- a)Endometrium of uterus regenerates		½
	3)Ovulatory phase- b)The release of ovum		½
	4)Luteal phase- c)Secretion of progesterone		½
13	Yes, It is used to determine the sex of the child, and to kill normal female foetus. Hence determination of sex by amniocentesis has been legally banned to avoid female foeticides		½ 1½
14	a)GIFT-Gamete intra fallopian Transfer b)AI (Artificial Insemination)/IUI (Intra Uterine Insemination)		1 1
15	Yes, The hymen is often torn during the first coitus (intercourse). However, it can also be broken by a sudden fall or jolt, insertion of a vaginal tampon, active participation in some sports like horseback riding, cycling, etc. In some women the hymen persists even after coitus. so, the presence or absence of hymen is not a reliable indicator of virginity or sexual experience		½ 1½
16	1) It is essential for supporting the fetal growth, 2) It is essential for metabolic changes in the mother and maintenance of pregnancy		1 1
III. Answer any 3 questions from 17 to 20. Each carries 3 scores			
17	a)Incomplete dominance b)Pleiotropy c)Polygenic inheritance		1 1 1
18	Diseases or infections which are transmitted through sexual intercourse are collectively called sexually transmitted infections.		1
	1. Avoid sex with unknown partners/multiple partners		1
	2. Always use condoms during coitus. 3. In case of doubt, one should go to a qualified doctor for early detection and get complete treatment if diagnosed with disease (Any two measures)		1
19	It's a common misconception in some societies to blame women for giving birth to daughters, but from a scientific perspective, this notion is incorrect. The sex of a child is determined by chromosomes contributed by both parents, and it is the father's sperm that ultimately determines the child's sex.The sex of the baby is determined by the type of sperm that entering the egg./ Genetic cross showing sex determination in human		3
20	A- Placental villi B- Placental villi C- Yolk sac D- Embryo E- Plug of mucus in cervix F- Umbilical cord with its vessels		½ ×6=3