

MODEL QUESTION PAPER – 2
SUBJECT: BIOLOGY (36)

IIPUC

Time: 3 Hours and 15 minutes

Maximum Marks: 70

GENERAL INSTRUCTIONS:

- i) *The question paper consists of four parts A, B, C and D. Part D consists of two parts, Section-I and Section-II. Part A contains of 10 questions of one mark each, Part B is of 8 questions of two marks each, Part C is of 8 questions of three marks each, Part D – Section I is of 6 questions of five marks each and Part D – Section II is of 5 questions of five marks each.*
 - ii) *All the parts are Compulsory.*
 - iii) *Draw diagrams wherever necessary. Unlabelled diagrams or illustrations do not attract any marks.*
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PART – A

Answer the following questions in one word or one sentence each:

10 x 1 = 10

1. What is a staminate flower?
2. What is amniocentesis?
3. Who provided an experimental proof for chemical evolution of life?
4. Name the causative organism of ringworm.
5. What are oncogenic viruses?
6. Name the bioactive molecule used in organ transplantation. Who provided an experimental proof for chemical evolution of life?
7. Write the function of DNA ligase.
8. What are eurythermal organisms?
9. What is an ecological succession?
10. Define Endemism.

PART – B

Answer any five of the following questions in 3 – 5 sentences each, wherever applicable: 5 x 2 = 10

11. Mention any two vegetative propagules of angiosperms.
12. Differentiate between chasmogamous and cleistogamous flowers
13. Mention any two hormones secreted by ovary.
14. Expand GIFT and ICSI.
15. Write any two preventive measures to control STD's
16. What is male heterogamety? Give an example.
17. Name the technique involved in separation and isolation of DNA fragment, which dye is used to stain gel to make the DNA visible under UV light
18. With reference to transcription, define a) splicing b) capping.

PART – C

Answer any five of the following questions in 40 – 80 words each, wherever applicable: 5 x 3 = 15

19. What is asexual reproduction? Mention any two types.
20. Write karyotype of Klinefelter syndrome. Mention any two symptoms.
21. List out any THREE important goals of HUMAN GENOME PROJECT.
22. Define the terms a) Explant b) Totipotency. c) Somatic hybrids.
23. What is plasmid? Mention two sites of plasmid.
24. Write any three effects of Global warming.
25. List out any three causes of Biodiversity losses.
26. Define the following: a) Eutrophication. b) Biological magnification. c) Biochemical oxygen demand.

PART – D

Section -I

Answer any four of the following questions in 200 – 250 words each, wherever applicable: 4x5= 20

27. Give a schematic representation of Mendelian Dihybrid cross.
28. Enumerate salient features of GENETIC CODE.
29. Explain the following terms .a) Adaptive radiation .b) Founder's effect) Homologous organs.d) Analogous organs e) Saltation.
30. List out the harmful effects caused by Alcohol/Drug abuse.
31. a) How do Multiple Ovulation and Embryo Transfer (MOET) technology helps in increasing the herd size? b) Mention any two microbes as a source of SINGLE CELL PROTEIN
32. Give an account of microbes used as Biofertilizers

Section -II

Answer any three of the following questions in 200 – 250 words each, wherever applicable: 3x 5 = 15

33. Draw a labeled diagram of anatropous OVULE of angiosperm
34. Give a schematic representation of Spermatogenesis.
35. List out the uses of Genetically Modified plants.
36. Mention any FIVE population interaction with an example each
37. Give a schematic representation of Nitrogen Cycle.

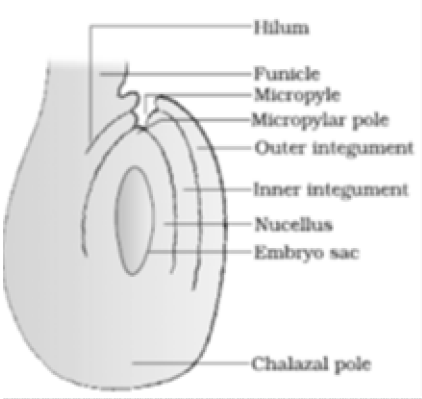
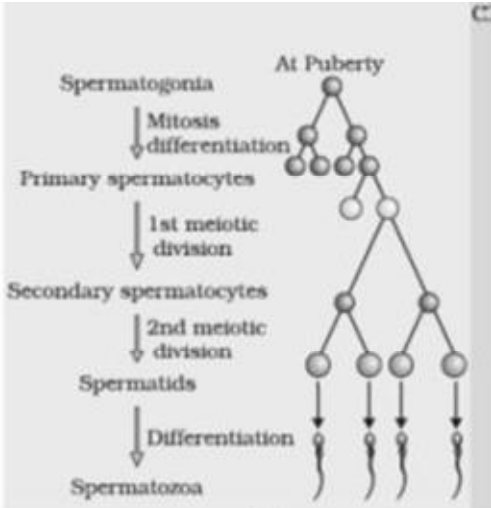
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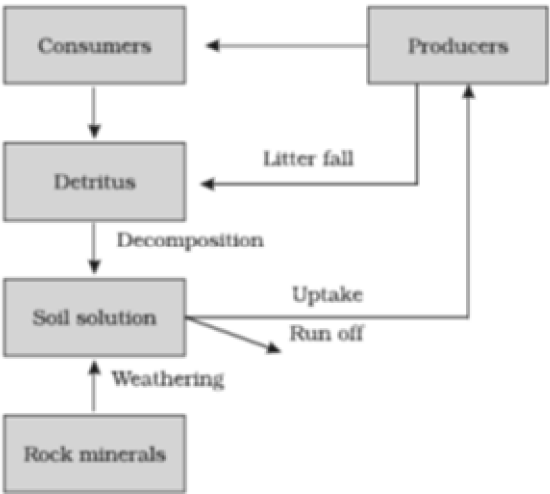
Q NO	Answer	Marks	Page no
PART- A			
1	What is a staminate flower? Unisexual male flower.	01	11
2.	What is amniocentesis? A foetal sex determination test based on chromosomal pattern in the amniotic fluid	01	58
3.	Who provided an experimental proof for chemical evolution of life? S. L.Miller.	01	127
4	Name the causative organism of ringworm. Trichophyton/Epidermophyton/Microsporium (any one)	01	149
5.	What are oncogenic viruses? Cancer causing viruses.	01	157
6.	Name the bioactive molecule used in organ transplantation Cyclosporin-A..	01	183
7.	Write the function of DNA ligase. It is an enzyme used to join any two segments of DNA	01	106
8.	What are eurythermal organisms? The organisms can tolerate and thrive in a wide range of temperatures	01	222
9.	What is an ecological succession? The gradual and fairly predictable change in the species composition of a given area	01	250
10.	Define Endemism. Species confined to that region and not found anywhere else.	01	266
PART –B			
11.	Mention any two vegetative propagules of angiosperms. Runner, Rhizome, Sucker, Tuber, Offset, Bulb.(any two) one mark each	02	07
12	Differentiate between chasmogamous and cleistogamous flowers Flower with exposed anthers and stigma -01 Flowers with unexposed anthers and stigma-01	02	28

13.	Mention any two hormones secreted by ovary Estrogen and Progesterone. -one mark each	02	53
14.	Expand GIFT and ICSI. Gamete Intra Fallopian Transfer -01 Intra Cytoplasmic Sperm Injection -01	02	64
15	Write any two preventive measures to control STD's <ul style="list-style-type: none"> ■ Avoid sex with unknown partners/multiple partners. ■ Always use condoms during coitus ■ In case of doubts one should go to a qualified doctor for early detection and complete treatment if diagnosed with disease(any two) 	02.	63
16.	What is male heterogamety? Give an example. It is a mechanism of sex determination in which males produce two different types of gametes -01 Ex,XO,type ,XY_ type of sex determination(any one)	02	86
17	Name the technique involved in separation and isolation of DNA fragment, which dye is used to stain gel to make the DNA visible under UV light Gel electrophoresis-01,Ethidium bromide-01	02	198
18	With reference to transcription, define a) splicing b) capping. a)The removal of introns and joining of exons-01 b)Addition of adenylate residues at 3 prime end of RNA	02.	111
PART – C			
19.	. What is asexual reproduction ? Mention any two types. Process of formation of offsprings by a single parent without the formation and fusion of gametes-01 -Budding,conidia,gemmule,sporulation Any 2 (-01mark each)	03	5,6
20.	Write karyotype of Klinefelter syndrome. Mention any two symptoms 47,XXY/44+XXY-01 Masculine development ,development of breast,sterile individuals are sterile-any 2 (-01 mark each)	03	91
21	List out any THREE important goals of HUMAN GENOME PROJECT. 1. Identify all the approximately 20000-25000 genes in Human DNA 2. Determine the sequences of the three billion chemical base pairs that make up human DNA. 3. Store this information in databases. 4. Improve tools for data analysis.—any 3	03	118
22.	Define the terms a) Explant b) Totipotency c) Somatic hybrids	03	177

	a)any part of a plant taken out and grown in test tube under sterile conditions in a special nutrient media-01 b)the capacity to generate the whole plant from any cell/explants 01 c)the plants produced by the process of somatic hybridization-01		
23.	What is plasmid? Mention two sites of plasmid. Autonomously ,replicating circular extrachromosomal DNA-01 Ori site(origin of replication),Cloning site(recognition site)-02	03	194
24	.Write any three effects of Global warming 1.Rise in temperature is leading to deleterious changes in the environment and resulting in odd climatic changes 2.increased melting of polar ice caps. 3.rise in sea level that can submerge many coastal areas.	03	281,282
25.	List out any three causes of Biodiversity losses. 1.Habitat loss & fragmentation 2.Over exploitation 3.Alien species invasion 4.coextinctions -any three 01 mark each	03	264&,265
26.	.Define the following; a) Eutrophication.b) Biological magnification c)Biochemical oxygen demand a)it is a natural aging of a lake by nutrient enrichment of it,swater-01 b)increase concentration of the toxicant at successive trophic levels c)It is the amount of oxygen that would be consumed if all the organic matter in one liter of water were oxidized by bacteria-01	03	275,276,
PART-D SECTION -1			
27.	Give a schematic representation of Mendelian Dihybrid cross P generation -,gametes,F1 generation-2 Punnet,s square,-2 Phenotypic ratio-1	05	79
28.	. Enumerate salient features of GENETIC CODE. 1.genetic code is a triplet 2.Unambiguous and specific 3.degenerate 4 universal 5.Initiator codon- 01 mark each.	05	112
29.	Explain the following terms .a) Adaptive radiation .b) Founder's effect c) Homologous organsd) Analogous organs e) Saltation. a) the process of evolution of different species in a given geographical area starting from a point and radiating to other areas of geography-01 b) sometimes the change in allele frequency is so different in the new	05	130/ 131/ 132/135 / 137

	<p>sample of population that they become a different species .The original drifted population becomes founders and the effect is called founder effect.-01</p> <p>c) the organs having similar structure but perform different functions.-01</p> <p>d) the organs having different structures and perform similar functions.-01</p> <p>e) Single step large mutations is called saltation -01</p>		
30.	<p>List out the harmful effects caused by Alcohol/Drug abuses</p> <ul style="list-style-type: none"> ■ The immediate adverse effects of drugs and alcohol abuse are manifested in the form of reckless behaviour, vandalism and violence. ■ Excessive doses of drugs may lead to coma and death due to respiratory failure, heart failure or cerebral hemorrhage. ■ A combination of drugs or their intake along with alcohol generally results in overdosing and even deaths. ■ The most common warning signs of drug and alcohol abuse among youth include drop in academic performance, unexplained absence from school/college, lack of interest in personal hygiene. ■ The chronic use of drugs and alcohol damages nervous system and liver (cirrhosis). 	05	161
31	<p>a) How do Multiple Ovulation and Embryo Transfer (MOET) technology helps in increasing the herd size?</p> <p>b) Mention any two microbes as a source of SINGLE CELL PROTEIN.</p> <p>a) MOET</p> <ul style="list-style-type: none"> ■ In this method, a cow is administered hormones, with FSH-like activity, to induce follicular maturation and super ovulation – instead of one egg, which they normally yield per cycle, they produce 6-8 eggs. ■ The animal is either mated with an elite bull or artificially inseminated. - 03 ■ The fertilised eggs at 8–32 cells stages, are recovered non-surgically and transferred to surrogate mothers. The genetic mother is available for another round of super ovulation. <p>b) Spirulina, Methyphilousmethylophilus - 02</p>	05	168/169
32.	<p>Give an account of microbes used as Biofertilizers.</p> <ul style="list-style-type: none"> – Biofertilisers are organisms that enrich the nutrient quality of the soil. – The main sources of the biofertilisers are bacteria, fungi, cyanobacteria, – The Rhizobium bacteria form nodules on the roots of legume plants and they fix atmospheric Nitrogen into organic forms,which is used by the plant as nutrient. ■ Fungi are known to form symbiotic associations with plants.The fungal symbiont 	05	187 & 188

PART- D SECTION-II			
33.	<p>.Draw a labelled diagram of anatropous OVULE of angiosperm</p> 	05	25
34.	<p>.Give a schematic representation of Spermatogenesis</p> 	05	49
35	<p>List out the uses of Genetically Modified plants.</p> <ul style="list-style-type: none"> ■ Made crops more tolerant to abiotic stresses (cold, drought, salt, heat). ■ Reduced reliance on chemical pesticides (pest-resistant crops). ■ Helped to reduce post harvest losses. ■ Increased efficiency of mineral usage by plants (this prevents early exhaustion of fertility of soil). ■ Enhanced nutritional value of food, e.g., Vitamin 'A' enriched rice. 	05	208

36	<p>Mention FIVE population interaction with an example each</p> <table border="1" data-bbox="302 243 1138 688"> <thead> <tr> <th data-bbox="302 243 602 275">Population Interaction</th> <th data-bbox="602 243 1138 275">Example</th> </tr> </thead> <tbody> <tr> <td data-bbox="302 275 602 331">Mutualism</td> <td data-bbox="602 275 1138 331">Mycorrhiza/ lichens/ Ophrys and wasp</td> </tr> <tr> <td data-bbox="302 331 602 432">Commensalism</td> <td data-bbox="602 331 1138 432">Orchid grown on epiphyt/ Barnacles growing on back of whales/ cattle egret and grazing cattle</td> </tr> <tr> <td data-bbox="302 432 602 489">Parasitism</td> <td data-bbox="602 432 1138 489">Lice on humans/Ticks on dogs/Cuscuta on plants</td> </tr> <tr> <td data-bbox="302 489 602 590">Predation</td> <td data-bbox="602 489 1138 590">Herbivores feed on plants/Sparrow eating any seed/starfish <i>Pisaster</i></td> </tr> <tr> <td data-bbox="302 590 602 688">Competition</td> <td data-bbox="602 590 1138 688">South American lakes visiting flamingoes and resident fishes/ Superior Balancla and small Branacle</td> </tr> </tbody> </table>	Population Interaction	Example	Mutualism	Mycorrhiza/ lichens/ Ophrys and wasp	Commensalism	Orchid grown on epiphyt/ Barnacles growing on back of whales/ cattle egret and grazing cattle	Parasitism	Lice on humans/Ticks on dogs/Cuscuta on plants	Predation	Herbivores feed on plants/Sparrow eating any seed/starfish <i>Pisaster</i>	Competition	South American lakes visiting flamingoes and resident fishes/ Superior Balancla and small Branacle	05	233/234 / 235/236 /237
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37	<p>.Give a schematic representation of Nitrogen Cycle.</p> 	05	255												