

I PU MODEL QUESTION PAPER 2023-2024

SUBJECT - BIOLOGY (36)

Duration: 3hr 15 Min

Max. Marks: 70

➤ General Instructions

- This Question paper consists of four parts A, B, C, D.
- Part – A consists of I and II and Part D consists of two parts, section –V and – VI
- All the parts are compulsory
- Draw diagrams wherever necessary. Unlabeled diagrams do not carry any marks

PART - A

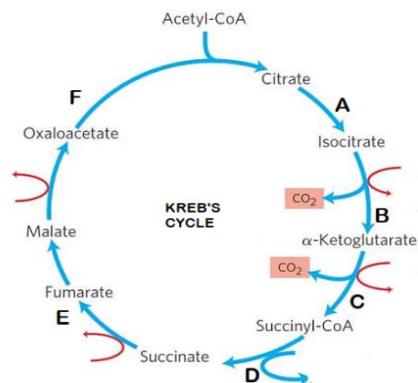
I. Select the correct alternative from the choices given below:

1 x 15 = 15

- The correct sequence in fungal sexual cycle is
 - Karyogamy-----Plasmogamy-----Meiosis
 - Meiosis ----- Plasmogamy ----- Karyogamy
 - Plasmogamy ----- Karyogamy ----- Meiosis
 - Meiosis ----- Karyogamy ----- Plasmogamy
- Statement I: Life cycle of Fucus is haplontic
Statement II: In Funaria, there is alternation of haploid gametophytic generation with diploid sporophytic generation
 - Both Statement I and Statement II are correct
 - Both Statement I and Statement II are incorrect
 - Statement I is correct and Statement II is incorrect
 - Statement I is incorrect and Statement II is correct
- One of the following is a mismatch
 - Pinctada - Cuttle fish
 - Aplysia - Sea hare
 - Pila - Apple snail
 - Loligo - Squid
- The ovary is said to inferior in
 - Guava and Coconut
 - Cucumber and Coconut
 - Cucumber and Ray florets of sunflower
 - Ray florets of sunflower and Coconut
- Endodermis, pericycle and pith are absent
 - Stem of dicots
 - Roots of dicots
 - Stem of monocots
 - Root of Monocots
- How many of the following properties are related to lysosomes?
Membrane bound vesicles, formed in the RER, contain hydrolytic enzymes, acts at alkaline pH, capable of digesting proteins
 - Five
 - Four
 - Three
 - Two
- Which of the following is a heteropolymer?
 - Polysaccharide
 - Polypeptide
 - Nucleotide
 - Lipids
- The centriole duplicates during the cell cycle
 - G1 phase
 - S - phase
 - G2 phase
 - M phase
- Tetrad is made up of
 - Two homologous chromosomes, each with two chromatids
 - Four non-homologous chromatids
 - Four non-homologous chromosomes
 - Four homologous chromosomes with four chromatids
- Select the incorrect statement/s
 - Plant pigments can be separated through Paper Chromatography

- B. Pigment have an ability only to absorb light
 C. Color of leaves that we see is due to a single pigment
 D. Chromatogram is the graphical representation of pigment separated in a Chromatography
 a) A and D b) C and D c) B and D d) B and C

11. Each steps of TCA cycle is labeled from A - F, which among these is the substrate level phosphorylation?



- a) A b) C c) D d) E
12. With respect to pulmonary capacities IC is equal to
 a) TV + ERV b) TV + IRV c) RV + ERV d) IRV + ERV
13. Choose the incorrect statement from the following:
 a) A thin, muscular wall called the interatrial septum separates right and left atria
 b) A thick, muscular wall called the interventricular septum separates right and left ventricles
 c) The atrium and ventricles of the same side are also separated by a thick fibrous tissue called atrioventricular valve
 d) Each of the atrioventricular septa are provided with an opening through which the two chambers of the same side are connected
14. The peptide hormone produced from the Juxtaglomerular cells is
 a) Renin b) Erythropoetin c) Renin and Erythropoetin d) Renin and Angiotensin
15. The Neurosecretory cells of the hypothalamus that secrete hormones are called
 a) Tract b) Nuclei c) Acini d) Follicles

II. Fill in the blanks by choosing the appropriate word/Words from those given below: 1 x 5 = 5

(Hibernation, Aestivation, Plasticity Diplotene, Melatonin, Aestivation)

16. The mode of arrangement of sepals or petals in floral bud with respect to other members of the same whorl is known as -----
17. Frogs have the ability to adopt extreme heat by taking shelter in deep burrows and is referred to as ----.
18. In oocytes of some vertebrates ----- stage can last for months or years
19. The ability of the plants to show different pathways in response to environment and phases of life to form different kinds of structures is termed as -----
20. Pineal gland secretes ----- hormone has also defense capability

PART - B

Answer any FIVE of the following questions in 3 - 5 sentences wherever applicable: 2 x 5 = 10

21. Brinjal and Potato belong to the same genus **Solanum**, but to two different species. What defines them as separate species?

22. Explain the sexual dimorphism exhibited in frog
23. Name the types of ribosomes found in prokaryotic and eukaryotic cell with their sub-units
24. Differentiate a primary metabolite from a secondary metabolite giving an example each
25. Both growth and differentiation in higher plants are open. Comment
26. The lungs are situated in the thoracic chamber which is anatomically an air tight chamber. List the structure involved in the formation of thoracic chamber.
27. Describe the disorders Tetany and Muscular dystrophy
28. Represent schematically the division of Peripheral neural system of Humans

PART - C

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

29. How Ascomycetes are different from basidiomycetes?
30. Coelenterates show two basic body forms. Explain with an example each.
31. Classify the flowers based on the position of ovary with respect to other floral whorls mentioning one example each.
32. Write a note on the vascular bundles of root and stem.
33. Name the enzyme involved;
 - a) Breaking of C – C or P – N bonds
 - b) Hydrolysis of substrates by leaving double and triple bonds
 - c) Catalyse the joining of C – O, C – S bonds
34. Meiosis involves two sequential cycles of nuclear and cell division called meiosis I and meiosis II but only a single cycle of DNA replication. With reference to this in which sequential cycle of meiosis
 - a) Synopsis and recombination occur
 - b) '2n' number of chromosomes becomes 'n' number
 - c) 4C DNA becomes 1C
35. What is oxygen dissociation curve? Which factors result in the dissociation of oxyhaemoglobin?
36. Draw a labeled diagram of axon terminal and synapse and label the following; Presynaptic membrane, synaptic cleft, post synaptic membrane, receptors, neurotransmitters, axon terminal

PART - D Section - I

Answer any FOUR of the following questions in about 200 – 250 words each wherever applicable: 5 x 4 = 20

37. a) What is heterospory? Briefly comment on its significance. b) Both gymnosperms and angiosperms bear seeds, then why are they classified separately?
38. Compare the characters of non-chordates and chordates
39. Draw a neat labeled diagram of the Chloroplast and Cilia and label the following that are related to chloroplast and cilia: Plasma membrane, outer membrane, Thylakoid, Central sheath, peripheral microtubules, Stroma lamellae, Interdoublet bridge, Stroma, Granum, Inner membrane.
40. a) Name the five complexes that are involved in Electron Transport System of inner mitochondrial membrane.
 - b) Mention the cytochromes that are present in the complex III and IV and the number of protons that are pumped through these complexes.
41. The role of Absciscic acid and Ethylene is both positive and negative. Justify the statement
42. Draw a neat labeled diagram of functional units of kidney.
43. a) Differentiate between A – band and I – band present in the myofibril
 - b) Name the joints present between; i) humerus and pectoral girdle ii) carpal and metacarpal of thumb
 - iii) atlas and axis

44. a) Mention the three layers of adrenal cortex and the corticoids secreted by them.
b) Thyrocalcitonin and Parathormone play a significant role in calcium balance in the body. Comment

Section – II

Answer any ONE of the following questions in about 200 – 250 words each wherever applicable: 5 x 1= 5

45. “Each of membranous organelles is distinct in terms of its structure and function, many of these are considered together as endomembrane system because their functions are coordinated”. Substantiate.
46. What special anatomical features are displayed by leaves of C₄ plants? How do they provide advantage over the structure of C₃ plants?
47. The sequential events in the heart which is cyclically repeated is called the cardiac cycle. Explain these sequential events that in turn responsible for double circulation.

Question Paper Part	Question type	Number of questions	Marks
PART - A I	MCQ	15	15
PART - A II	FILL IN THE BLANKS	05	05
PART - B III	SHORT ANSWERS (2 MARKS)	08	16
PART - C IV	SHORT ANSWERS (3 MARKS)	08	24
PART - D V	LONG ANSWERS (5 MARKS)	08	40
PART - D VI	LONG ANSWERS (5 MARKS)	03	15
	TOTAL	47	115

Chapter/ Content domain/ Unit/ Theme	No. of periods	Marks	Remember			Understand			Application			HOTS		
			MCQ	SA	LA	MCQ	SA	LA	MCQ	SA	LA	MCQ	SA	LA
1. The Living World	3	2		1										
2. Biological Classification	5	4	1	1										
3. Plant Kingdom	6	6	1					1						
4. Animal Kingdom	9	9	1		1		1							
5. Morphology of Flowering Plants	6	5	2	1										
6. Anatomy of Flowering plants	4	4	1	1										
7. Structural Organisation in Animals	3	3	1	1										
8. Cell: The Unit of Life	11	12		1				1						1
9. Biomolecules	7	6		1		1	1							
10. Cell Cycle and Cell Division	6	6	2				1		1					
11. Photosynthesis in Higher Plants	7	6							1					1
12. Respiration in Plants	7	6									1	1		
13. Plant Growth and Development	8	8	1				1	1						
14. Breathing and Exchange of	6	6	1	1			1							

Gases														
15. Body Fluids and Circulation	7	6	1											1
16. Excretory Products and their Elimination	6	6	1					1						
17. Locomotion and Movement	7	7					1				1			
18. Neural Control and Coordination	5	5		1			1							
19. Chemical control and Integration	7	8	3					1						
Total	120	115	16	09	01	01	07	05	02	00	02	01	00	03

I P U QUESTION PAPER PATTERN

1. The Question paper consists of Four parts; A, B, C and D
2. Part A - I consists of 15 Multiple choice questions, Part A – II consists of 5 fill up the blanks questions
3. All the questions of Part A – I and II are to be answered compulsorily
4. Part B consists of 8 short answer type questions carrying 2 marks each, out of which 5 questions to be answered
5. Part C consists of 8 short answer type questions carrying 3 marks each, out of which 5 questions to be answered
6. Part – D consists of V and VI. Part D – V consists of 8 long answer type questions carrying 5 marks each, out of which 4 questions to be answered. Part D – VI consists of 3 long answer type questions carrying 5 marks each, out of which 1 question to be answered.

GENERAL GUIDELINES FOR SETTING THE QUESTION PAPER

1. The questions should be simple and unambiguous
2. The answers for the questions should be available in the prescribed text book or can be derived from the concepts of text book for application/reasoning/analytical questions
3. The question paper should be prepared on the individual blue print on the basis of weightage of marks fixed for each chapter and units
4. At least one question carrying 1mark, 2 marks, 3 marks and 5 marks have to be derived from each chapter wherever possible
5. When a question carrying 3 or 5 marks is split the sub questions should be derived from the same concept or different concepts of same chapter
6. Please avoid questions like explain with a neat labeled diagram. Frame questions only to expect neat labeled diagram to express skill
7. A variation of 1% weightage per objective of questions is allowed
8. Variation of 1 mark in each chapter or unit weightage is permitted while preparing the blue print and the total marks should not exceed 115.