

KOTHARI INTERNATIONAL SCHOOL, NOIDA
ANNUAL EXAMINATION, SESSION: 2023-24
GRADE: 11 SUBJECT: BIOLOGY (044)
SET A

DAY&DATE: 09th FEBRUARY, 2024

MAXIMUM MARKS:70

TIME ALLOTTED: 3 HOURS

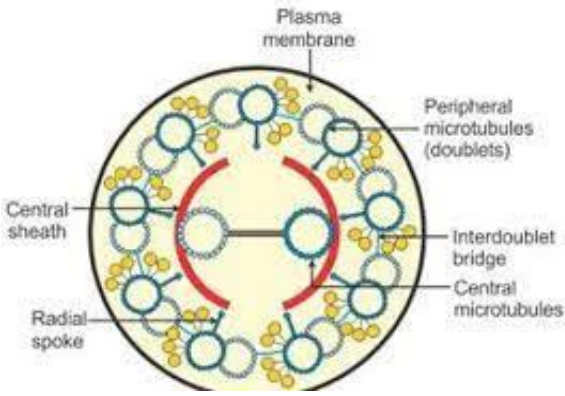
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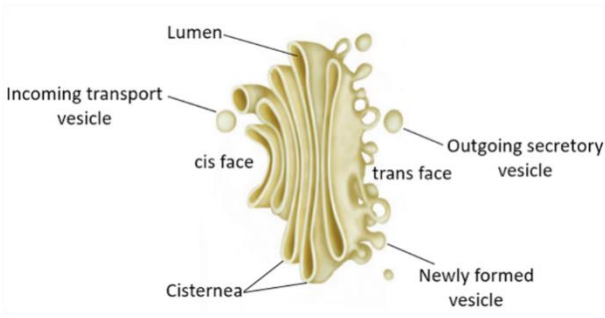
GENERAL INSTRUCTIONS:

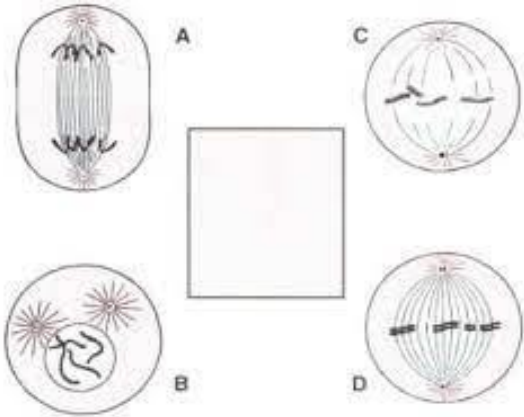
- (i) All questions are compulsory.
- (ii) The question paper has five sections and 33 questions. All questions are compulsory.
- (iii) Section–A has 16 questions of 1 mark each; Section–B has 5 questions of 2 marks each; Section–C has 7 questions of 3 marks each; Section– D has 2 case-based questions of 4 marks each; and Section–E has 3 questions of 5 marks each.
- (iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- (v) Wherever necessary, neat and properly labeled diagrams should be drawn.

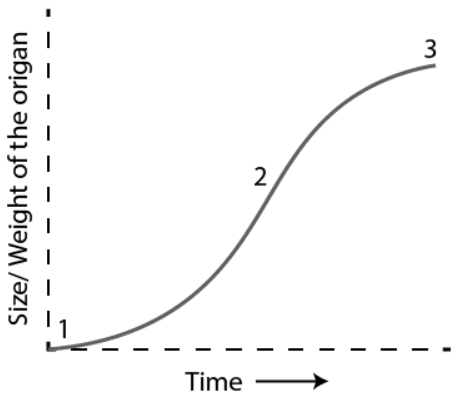
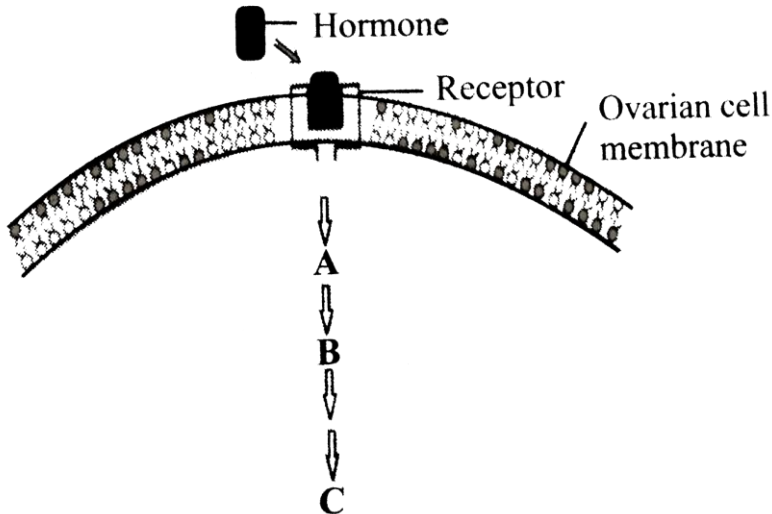
SECTION – A		
Q1.	Which is less general in characters as compared to genus? a) Family b) Division c) Class d) Species	(1)
Q2.	Centriole takes part in the formation of _____? a) Nucleus b) Spindle c) Cell plate d)To start cell division	(1)


Q3.	<p>The diagram given below shows the microtubule.</p>  <p>The centrally located microtubule array in the axoneme is</p> <ol style="list-style-type: none"> 9+1 array 9+2 array 9+0 array 9+2+1 array 	(1)
Q4.	<p>A Prothallus is</p> <ol style="list-style-type: none"> A structure in pteridophytes formed before the thallus develops A sporophytic free-living structure formed in pteridophytes A gametophyte free-living structure formed in pteridophytes A primitive structure formed after fertilization in pteridophytes 	(1)
Q5.	<p>Venation is a term used to describe the pattern of arrangement of</p> <ol style="list-style-type: none"> Floral organs Flower in inflorescence Veins and veinlets in a lamina All of them 	(1)
Q6.	<p>The main water-conducting elements of xylem in gymnosperms are</p> <ol style="list-style-type: none"> Tracheids Fibers Transfusion tissue Vessels 	(1)
Q7.	<p>In comparison with humans, the erythrocytes in frogs are</p> <ol style="list-style-type: none"> nucleated along with the presence of haemoglobin no nucleus but with haemoglobin few and very much small 	(1)

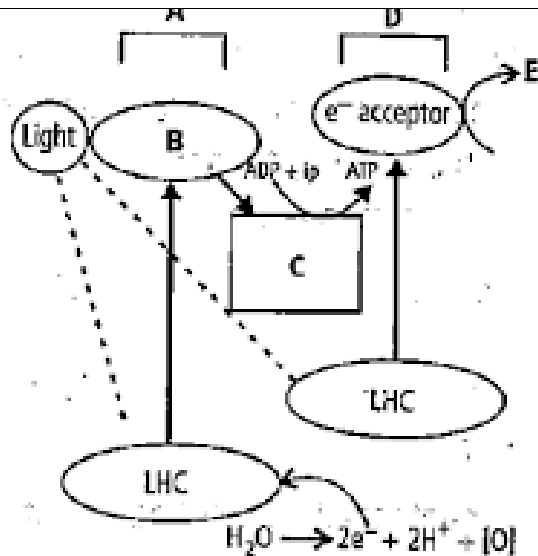
	(d) nucleated and without haemoglobin	
Q8.	The organelle serving as a primary packaging area for molecules that will be distributed throughout the cell is (a) Vacuole (b) Plastids (c) Mitochondria (d) Golgi apparatus	(1)
Q9.	Which membrane protects the eyes of frog in water a) Tympanium b) Skin c) Sebaceous d) Nictitating	(1)
Q10.	Which of the following pigments acts as a reaction-centre during photosynthesis? a) Cytochrome b) P ₇₀₀ c) Carotene d) Phytochrome	(1)
Q11.	Coconut water contains (a) ABA (b) auxin (c) cytokinin (d) gibberellin	(1)
Q12.	It is known that exposure to carbon monoxide is harmful to animals because (a) It reduces CO ₂ transport (b) It reduces O ₂ transport (c) It increases CO ₂ transport (d) It increases O ₂ transport	(1)
<p>Question No. 13 to 16 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:</p> <p>(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion (c) If Assertion is true but Reason is false. (d) If both Assertion and Reason are false.</p>		(1)

Q13.	Assertion: WBCs accumulate at the site of wounds by diapedesis. Reason : It is the squeezing of leucocytes from the endothelium.	(1)
Q14.	Assertion: Diabetes insipidus is marked by excessive urination and too much thirst for water. Reason: Anti-diuretic hormone (ADH) is secreted by the posterior lobe of pituitary gland .	(1)
Q15.	Assertion: Each muscle fibre contains a number of muscle bundles. Reason: Each muscle fibre is lined by the plasma membrane called sarcomere.	(1)
Q16.	Assertion: Cerebellum has very convoluted surface in order to provide the additional space for many more neurons. Reason: The medulla oblongata control respiration, cardiovascular reflexes and gastric secretions.	(1)
SECTION – B		
Q17	Why is Neurospora an important genetic tool?	(2)
Q18	Each plant or group of plants has some phylogenetic significance in relation to evolution: Cycas, one of the few living members of gymnosperms is called as the ‘relic of past’. Can you establish a phylogenetic relationship of Cycas with any other group of plants that justifies the above statement?	(2)
Q19	Mention the ploidy of the following: a) protonemal cell of a moss b) primary endosperm nucleus in dicot c) prothallus cell of a fern d) gemma cell in Marchantia	(2)
Q20.	Identify the organelle shown below in the picture and mention two important functions of the organelle. 	(2)
Q21	Explain the advantage of the complete partition of ventricle among birds and mammals and hence leading to double circulation.	(2)

SECTION – C		
Q22	The common name of pea is simpler than its botanical name, <i>Pisum sativum</i> . Why then is the simpler common name not used instead of the complex scientific/botanical name in biology?	(3)
Q23	<p>a) Identify X, Y, Z b) Give an example of each.</p> <pre> graph TD A[Plant body is differentiated into true Roots Stem and Leaves] -- NO --> X[X] A -- YES --> B[Plant possess seeds] B -- NO --> Y[Y] B -- YES --> Z[Z] </pre>	(3)
Q24	<p>a) Identify the stages of mitosis shown in the figure A, B, C and D b) Write the significance of mitotic division.</p> 	(3)
Q25	In the figure of Sigmoid growth curve given below, label segments 1, 2 and 3 and explain all the phases identified by you on the graph.	(3)

		
Q26	The arrangements of ovules within the ovary is known as placentation. What does the term placenta refer to? Name and draw various types of placentations in the flower as seen in T.S. or V.S.	(3)
Q27	What are the three main types of respiration in the frog? What is the procedure for respiration in frogs during hibernation?	(3)
Q28	<p>The given figure shows the diagrammatic representation of the mechanism of protein hormone action.</p>  <p>(a) Name the steps labelled as 'A' and 'C'.</p> <p>(b) What is the role of second messenger in this process?</p> <p>(c) How is this mechanism different from the mechanism of action of steroid hormone?</p>	(3)

Q29.	<p>Case based Question: Read the following passage and answer questions given below</p> <p>Kidneys, filter unwanted substances from the blood and produce urine. Urine formation includes glomerular filtration, selective reabsorption and tubular secretion shown in the figure. These processes occur in Malphigian corpuscle (Glomerulus and Bowman's Capsule) and renal tubules comprising proximal convoluted tubule, loop of Henle, distal convoluted tubule and collecting duct.</p>  <p>1) Which of the following do not pass the lumen of Bowman's capsule during glomerular filtration? (a) Creatinine (b) Glucose (c) Water (d) Proteins</p> <p>2) What does A depict?</p> <p>3) Explain the functions of "B"</p>	(4)
Q30.	<p>Case based Question: Study the given schematic diagram and answer the questions given below.</p>	(4)

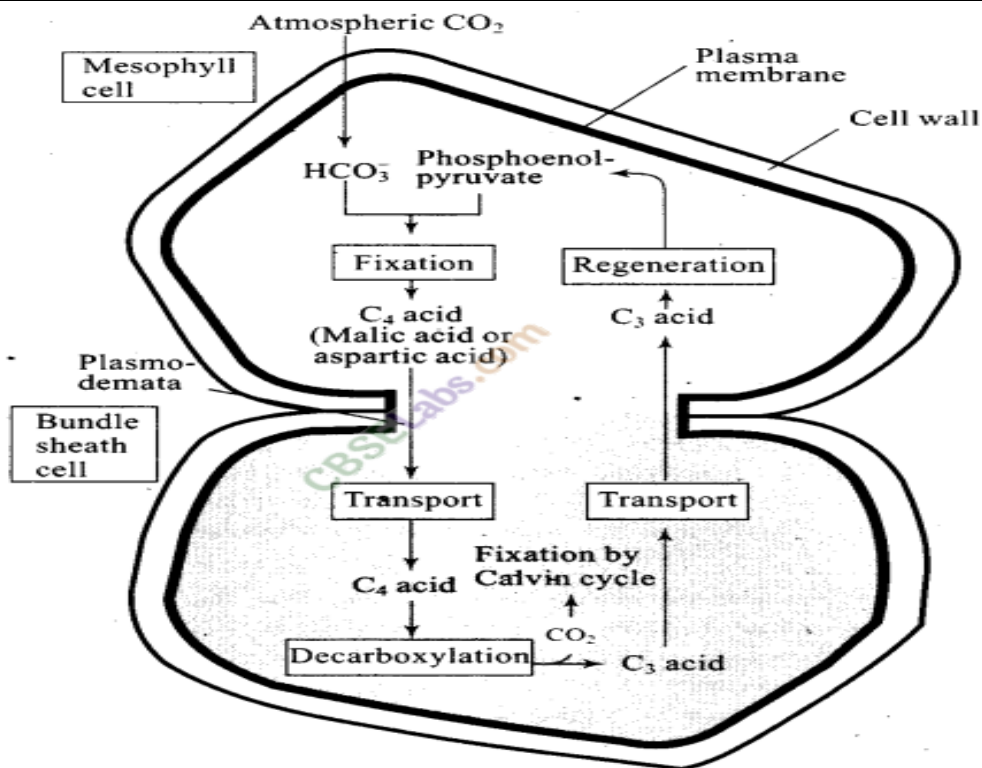


- 1) What do 'B' represents in the given figure?
 - (a) Photosystem I
 - (b) Electron transport system
 - (c) Photosystem II
 - (d) None of these
- 2) Name any two raw materials required for light reactions
- 3) Explain ' LHC'

SECTION – D

Q31. (i) Observe the diagram and answer the following.

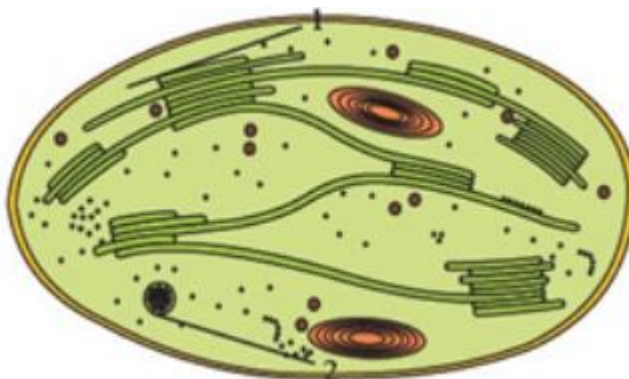
(5)



- Which group of plants exhibits these two types of cells?
- What is the first product of C4 cycle?
- Which enzyme is there in bundle sheath cells and mesophyll cells?

(ii) What conditions enable RuBisCO to function as an oxygenase? Explain the ensuing
OR

(i) Observe the given figure:



	<p>a) Is this composition present in a plant cell or animal cell?</p> <p>b) Can it be inherited by the offspring? How?</p> <p>c) Write the metabolic processes that are occurring at the places marked as (1) and (2) in the figure</p> <p>ii) Answer the following questions based on the equation given below:</p> $2\text{H}_2\text{O} \rightarrow 2\text{H}^+ + \text{O}_2 + 4\text{e}^-$ <p>a) Where in plants does this reaction occur?</p> <p>b) What is the importance of this reaction?</p>	
Q32.	<p>The diagram below represents the changes in the number of chromosomes during several processes that occur in an animal.</p> <p>(i) Name the process of cell division occurring at X and Y.</p> <p>(ii) State the difference in the behaviour of chromosomes between X and Y.</p> <p>(iii) Explain the following terms</p> <p>(a) Synapsis</p> <p>(b) Bivalent</p> <p>(c) Chiasmata</p>	(5)
Q33	<p>Explain the electrical and biochemical events of muscle contraction</p> <p style="text-align: center;">OR</p> <p>(a) Draw a detailed labelled structure of a myofibril showing sarcomere.</p> <p>(b) Differentiate between A-band and I-band.</p>	(5)