



COMMON PRE-BOARD EXAMINATION

BIOLOGY–Code No. 044

CLASS-XII-(2025-26)

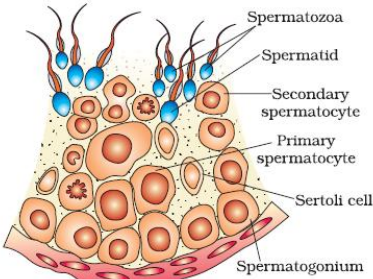


SET:1 MARKING SCHEME

Time allowed: 3 Hrs.

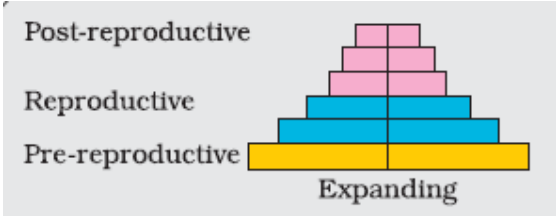
Maximum Marks: 70

SECTION A			
1	D. Epidermis and tapetum		1
2	C. Emasculation		1
3	A. Parthenocarpy		1
4	B. A-iv, B-iii, C-i, D-ii		1
5	B. DNA dependent DNA polymerase catalyses polymerisation only in one direction (5' → 3')		1
6	B. 5' – U A C U U A C – 3'		1
7	D. water to land		1
8	B. they share a common ancestor		1
9	C. life can arise from non-living things only		1
10	B. IgA type		1
11	A. Nicotine		1
12	C. Alkaline pH of gut		1
Assertion and Reason Type Questions			
13	A. Both Assertion and Reason are true and the Reason is correct explanation of the Assertion.		1
14	C. Assertion is true but the Reason is false.		1
15	A. Both Assertion and Reason are true and the Reason is correct explanation of the Assertion.		1
16	C. Assertion is true but the Reason is false.		1
SECTION-B			
17	One a male gamete fuses with the female gamete, results in the formation of a zygote. The other male gamete fuses with the two polar nuclei located in the central cell and produce a triploid primary endosperm nucleus.	1+1	2
18	(a) 'A' transports amino acid Serine 'B' transports amino acid tyrosine. (b) AUG acts as chain initiating codon and UAA, UAG, UGA act as chain terminating codons.	1+1	2

19			4x ½	2
	Drugs	Medicinal Use		
	Atropine	Dilating pupil of eye during eye test		
	Belladonna	Diuretic and Antispasmodic		
	Morphine	Sedative and painkiller used during surgery		
	Barbiturates	Treating depression and insomnia		
20	In the absence of antibiotic, both transformants and non-transformants will be produced. It would result in the production of poor-quality yield. The non-transformants might outgrow the transformants resulting in less product formation and wastage of nutrients and culture media.		1+1	2
21	Crop field and aquarium. The man-made ecosystem involves a few organisms as compared to the natural ecosystem, which leads to lower productivity than natural ecosystem. In artificial ecosystem, the maintenance will be artificially done by regular feeding and cleaning while natural ecosystems are self-sustainable.		1	2
	Any one point		1	
SECTION-C				
22	<p style="text-align: center;">Diagram-2, Labelling-1</p>  <p style="text-align: center;">Figure 3.5 Diagrammatic sectional view of a seminiferous tubule (enlarged)</p>		2+1	3
23	(i) Condoms: They block the entry of sperms and microbes in the cervix. (ii) Surgical methods such as tubectomy or vasectomy as they are highly effective but irreversible methods. (iii) Oral pills containing progestogens or progestogen – estrogen combination are very effective and can be repeated as long as the female desires to prevent conception.		3x1	3
24	Autosomal Recessive Trait skips generations Males and females are equally affected Unaffected parents (carriers) can have affected children Carriers occur at heterozygous condition Sickle cell anemia, Cystic fibrosis, Phenylketonuria (PKU)		1 Any two reasons 1 1 Any two diseases	3
25	(a) Lac Operon (b) Lactose (c) Operator (d) The <i>z</i> gene codes for beta-galactosidase The <i>y</i> gene codes for permease The <i>a</i> gene encodes a transacetylase.		3x ½ 3x ½	3
26	In a population of diploid organisms			

	<p>If frequency of allele A = p and frequency of allele a = q = ½</p> <p>Expected genotype frequency under random mating are</p> <p>AA = p² (for the AA homozygotes) = ½</p> <p>aa = q² (for the aa homozygotes) = ½</p> <p>Aa = 2pq (for the Aa heterozygotes) = ½</p> <p>In absence of selection, mutation, genetic drift or other forces allelic frequency p and q are constant through generation</p> <p>Therefore p² + 2pq + q² = 1 = 1</p>		3
--	--	--	---

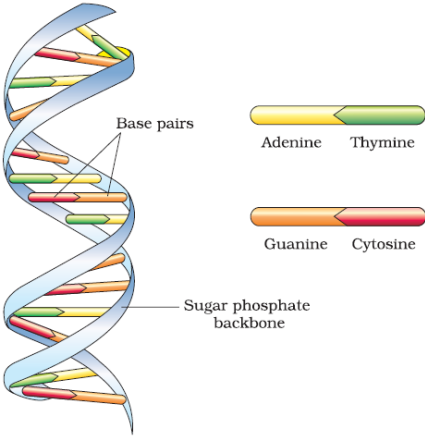
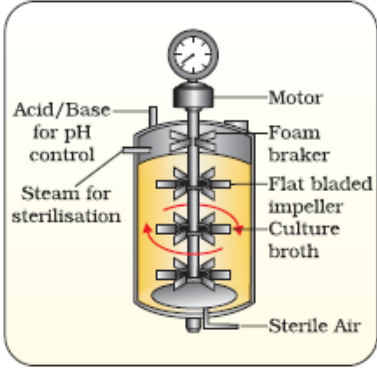
27	<table border="1"> <thead> <tr> <th>Drugs</th> <th>Role</th> </tr> </thead> <tbody> <tr> <td>Cyclosporin A</td> <td>Immuno-suppressive agent</td> </tr> <tr> <td>Statins</td> <td>Lowers blood cholesterol levels</td> </tr> <tr> <td>Streptokinase</td> <td>Clot buster for removing blood clots from the blood vessels of patients of myocardial infarction</td> </tr> </tbody> </table>	Drugs	Role	Cyclosporin A	Immuno-suppressive agent	Statins	Lowers blood cholesterol levels	Streptokinase	Clot buster for removing blood clots from the blood vessels of patients of myocardial infarction	3x1	3
Drugs	Role										
Cyclosporin A	Immuno-suppressive agent										
Statins	Lowers blood cholesterol levels										
Streptokinase	Clot buster for removing blood clots from the blood vessels of patients of myocardial infarction										

28	<p>(a) If the age distribution (per cent individuals of a given age or age group) is plotted for the population the resulting structure is called the age pyramid</p> <p>(b) Planning of health / education / transport / infra-structure / finance / food / employment can depend on the age-pyramid analysis of a population / any other relevant point.</p> <div style="text-align: center;">  <p>Diagram</p> </div> <p style="text-align: center;">OR</p> <p>The pie-charts represent global biodiversity proportionate number of species of major taxa of invertebrates and vertebrates.</p> <p>A-Molluscs B-Insects C-Fishes D-Reptiles</p>	2x1	3
		1	1
		4x ½	

SECTION-D

29	<p>(a) Autogamy is prevented by the flower shown in figure-(A)</p> <p>(b) Xenogamy or cross pollination occurs in figure-(B). It leads to recombination.</p> <p>(c) Pollen-pistil interaction is a dynamic process involving pollen recognition followed by promotion or inhibition of the pollen. If the pollen is of the right type, the pistil accepts the pollen and promotes post-pollination events.</p>	1 ½ + ½ 1 ½	4
----	--	----------------------	---

	<p>If the pollen is of the wrong type, the pistil rejects the pollen by preventing pollen germination on the stigma or the pollen tube growth in the style.</p> <p style="text-align: center;">OR</p> <p>Flowers with exposed anthers and stigma are called chasmogamous flowers.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Autogamy</th> <th style="width: 50%; text-align: center;">Geitonogamy</th> </tr> </thead> <tbody> <tr> <td>Autogamy is the transfer of pollen grains from anther to stigma of the same flower.</td> <td>Geitonogamy is the transfer of pollen grains from anther to stigma of different flowers of the same plant.</td> </tr> </tbody> </table>	Autogamy	Geitonogamy	Autogamy is the transfer of pollen grains from anther to stigma of the same flower.	Geitonogamy is the transfer of pollen grains from anther to stigma of different flowers of the same plant.	<p>½</p> <p>1</p> <p>1</p>	
Autogamy	Geitonogamy						
Autogamy is the transfer of pollen grains from anther to stigma of the same flower.	Geitonogamy is the transfer of pollen grains from anther to stigma of different flowers of the same plant.						
30	<p>(a) Viruses having RNA as genetic material. HIV</p> <p>(b) Replication of viral RNA into viral DNA</p> <p>(c) New viruses are formed by the assembly of viral protein and RNA. Macrophages act as HIV factory.</p> <p style="text-align: center;">OR</p> <p>The progeny viruses attack helper T-lymphocytes and decrease their number. Hence immunity is reduced.</p> <p>Enzyme Linked Immuno-Sorbent Assay (ELISA).</p>	<p>½ + ½</p> <p>1</p> <p>1+1</p> <p>1+1</p>	4				
SECTION-E							
31	<p>(a) Alec Jeffreys</p> <p>(b) Suspect 3 is the culprit</p> <p>(c) Steps involved in DNA fingerprint technology</p> <p>(i) Isolation of DNA.</p> <p>(ii) Digestion of DNA by restriction endonucleases.</p> <p>(iii) Separation of DNA fragments by electrophoresis.</p> <p>(iv) Transferring (Southern blotting) of separated DNA fragments to synthetic membranes, such as nitrocellulose or nylon.</p> <p>(v) Hybridisation using labelled VNTR probe.</p> <p>(vi) Detection of hybridised DNA fragments by autoradiography.</p> <p style="text-align: center;">OR</p> <p>A=T (Adenine pairs with Thymine) If A= 520 (Adenine containing nucleotides) A+T = 520+520 =1040 Adenine = 520, Thymine = 520 =1</p> <p>Guanine pairs with Cytosine Therefore G+C = 2000-1040 = 960 G=C So, C=960/2 = 480 Guanine = 480, Cytosine 480 =1</p> <p>Purines = A+G = 520+ 480 = 1000 Total number of purines = 1000 =1</p>	<p>1</p> <p>1</p> <p>6x ½ =3</p>	5				

	<p>Diagram =2</p> 		
<p>32</p>	<p>(a) PCR is used for early diagnosis of diseases.</p> <p>(b) <i>Thermus aquaticus</i></p> <p>(c) Steps of PCR</p> <p>A- Denaturation: During denaturation, break-down of hydrogen bonds between DNA strands occur to unwind the DNA.</p> <p>B - Annealing: During this step and the primers or oligonucleotides are supplied to bind with the complementary nucleotides of the template strand.</p> <p>C- Extension: During this step extension of DNA is carried out using Taq Polymerase.</p> <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> ➤ Isolation of DNA ➤ Fragmentation of DNA by restriction endonucleases ➤ Isolation of a desired DNA fragment ➤ Ligation of the DNA fragment into a vector ➤ Transferring the recombinant DNA into the host ➤ Culturing the host cells in a medium at large scale and extraction of the desired product 	<p>1</p> <p>1</p> <p>3x1</p> <p>6x ½ =3</p> <p>Diagram 2</p>	<p>5</p>
<p>33</p>	<p>(a) Commensalism: Commensalism is an interaction between two species in which one species gets benefited while the other remains unaffected.</p>		

