

**Directorate of Education, GNCT of Delhi**

**Mid Term Examination Practice Paper**

**Session: 2025-26**

**Class – XII**

**Biology (Code: 044)**

**Time :3 hours**

**Total marks -70**

General Instructions:

- Please check this question paper contains 33 questions.
- All questions are compulsory. However, internal choices have been provided in some questions.
- Attempt only one of the choices in such questions
- The paper is divided into 5 Sections- A, B, C, D and E.
- Section A consists of 16 questions (1 to 16). Each question carries 1 Mark.
- Section B consists of 5 questions (17 to 21). Each question carries 2 Marks.
- Section C consists of 7 questions (22 to 28). Each question carries 3 Marks.
- Section D consists of 2 case study type questions (29 to 30). Each question carries 4 Marks.
- Section E consists of 3 questions (31 to 33). Each question carries 5 Marks.
- Make a labeled diagram where it is necessary.

<b>Que</b>	<b>SECTION-A</b> All the question of this section are multiple choice based.	<b>Marks</b>
1	<p>1. The intine of a pollen grain is composed of _____ and _____</p> <p>A) Pectin and cellulose</p> <p>B) Lignin and suberin</p> <p>C) Lignin and hemicellulose</p>	1

	D) Pectin and chitin	
2	<p>In homozygous condition, a particular gene has</p> <p>A) different alleles on homologous chromosomes.</p> <p>B) no alleles on homologous chromosomes.</p> <p>C) same alleles on homologous chromosomes.</p> <p>D) same gene on homologous chromosome</p>	1
3	<p>Semen's fluid part is called as seminal plasma ,the composition of this fluid is a mix of</p> <p>I) Seminal vesicles</p> <p>II) Urethra</p> <p>III) Prostrate</p> <p>IV) Bulbourethral gland</p> <p>A) I,ii, and iii</p> <p>B) I,ii</p> <p>C) I,iv</p> <p>D) I,iii and ,iv</p>	1
4	<p>Grain colour of wheat is determined by three pair of genes as AABBCC is the darkest and aabbcc is the lightest .this is an example of the phenomenon</p> <p>A) Pleiotropy and codominance</p> <p>B) Pleiotropy and incomplete dominance</p>	1

	C) Polygenic and quantitative inheritance D) Polygenic and qualitative inheritance							
5	which of the following amino acid residue will constitute the histone core  A) Lysine and Arginine B) Asparagine and arginine C) Glutamine and lysine D) Aspargine and glutamine	1						
6	At a particular locus the frequency of allele B is 0.8 and that of allele b is 0.3 what would be the frequency of heterozygotes in a population: (1)  A)0.32 B)0.48 C)0.44 D)0.24	1						
7	Match the following <table><tr><td>Column 1</td><td>Column 2</td></tr><tr><td>K)cytokine barrier</td><td>i)yellow fever</td></tr><tr><td>L)Aedes</td><td>li)acid in stomach</td></tr></table>	Column 1	Column 2	K)cytokine barrier	i)yellow fever	L)Aedes	li)acid in stomach	1
Column 1	Column 2							
K)cytokine barrier	i)yellow fever							
L)Aedes	li)acid in stomach							

	M)innate immunity	lii)virus infected cell	
	N)cancer	IV)contact inhibition	
	<p>Codes:</p> <p>K    L        M        N</p> <p>A) li    I        iv        iii</p> <p>B) iv    li        I        iii</p> <p>C) lii    I        ii        iv</p> <p>D) I    iii        ii        iv</p>		
8	<p>Read the following statements:</p> <p>(A) BOD and polluting potential are inversely related.</p> <p>(B) BOD and polluting potential are directly related.</p> <p>(C) More the BOD, the easier it is to treat the water.</p> <p>(D) More the BOD, more will be the harm if released in a water body.</p> <p>Which of these is true?</p> <p>A. (A) and (C) are true and (C) is the reason for (A)</p> <p>B. (B) and (C) are true and (C) is not related to (B)</p> <p>C. (B) and (D) are true and (D) is the reason for (B)</p> <p>D.(A) and (D) are true and (D) is not related to (A)</p>		1
9	A pharmaceutical industry aims to develop a chemical that can induce immune system modulation in patients with autoimmune		1

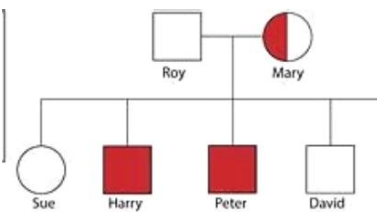
	<p>diseases and help in alleviating symptoms. Which of the following microbes should they consider utilizing?</p> <p>A. <i>Aspergillus niger</i></p> <p>B. <i>Trichoderma polysporum</i></p> <p>C. <i>Staphylococcus aureus</i></p> <p>D. <i>Saccharomyces cerevisiae</i></p>	
10	<p>The key tools for recombinant DNA technology are</p> <p>I) Restriction enzyme</p> <p>II) DNA polymerase</p> <p>III) Ligases</p> <p>IV) Cloning vector</p> <p>V) Antibiotic resistance</p> <p>VI) Helicase</p> <p>A) I,ii,iii, &amp;vi</p> <p>B) I,ii,iii &amp; iv</p> <p>C) I,ii,iii &amp; v</p> <p>D) I,ii,&amp; iii</p>	1
11	<p>What is the primary function of DNA polymerase in the process of DNA replication?</p> <p>A) To unwind the double helix structure of DNA</p> <p>B) To synthesize new DNA strands by adding nucleotides</p> <p>C) To repair damaged DNA molecules</p>	1

	D) To cut DNA molecules at specific	
12	<p>Which of the following is an application of biotechnology in medicine?</p> <p>A) Production of biofuels</p> <p>B) Development of genetically modified crops</p> <p>C) Production of insulin through recombinant DNA technology</p> <p>D) Bioremediation of pollutants</p>	1
	<p><b>For Question No.-13 to 16: A statement of Assertion is followed by a statement of Reason. Mark the correct choice as:</b></p> <p>(a)Both assertion and reason are true and reason is the correct explanation of assertion.</p> <p>(b)Both assertion and reason are true but reason is not the correct explanation of assertion.</p> <p>(c)Assertion is true but reason is false.</p> <p>(d)Both assertion and reason are false</p>	
13	<p>Assertion(A): Lichens are an excellent indicators of pollution.</p> <p>Reason(R): A polluted environment accelerates the growth of lichens by providing them enormous amount of nutrition.</p>	1
14	<p>Assertion:(A) Morgan coined the term linkage to describe the physical association of genes on a chromosome.</p>	1

	Reason(R): Linkage shows less frequency of parental type combination of genes	
15	<p>Assertion (A): Gene therapy is a method of treating a disorder but cannot cure it.</p> <p>Reason (R): In gene therapy, cells are drawn from a patient and the functional gene is introduced into these cells and transferred back to the patient.</p>	1
	<p>Assertion: Family planning is an action plan to attain reproductive health among people.</p> <p>Reason: Improved programmes covering reproduction related areas were propagated by RCH to create awareness among people.</p>	1
	<b>Section -B</b>	
17	<p>i)How is parturition induced at the end of pregnancy in a human female?</p> <p>ii)Label the parts 1, and 2 in given diagram</p> <div> <p>The diagram illustrates a human egg cell. It features a central nucleus, a surrounding cytoplasm, and an outer layer of cortical granules. A blue line labeled '1' points to the outermost layer (zona pellucida), and a blue line labeled '2' points to the cortical granules.</p> </div> <p>Or</p>	2

	Why endosperm development precedes embryo development ? if the exine of mature male gametophyte in angiosperm is indestructible then how pollen tube formed from it?	
18	Describe difference in polygenic inheritance and pleiotropy by illustration of example.  Or  Honey bees are a social insect. How drones and worker bees development take place in them. Describe the process and its name.	2
19	What are the findings of the Hershey and chase experiment ? Who Discovered a semi conservative mode of replication?	2
20	Explain the role of enzymes in the extraction of DNA from <i>Agaricus (fungus)</i> in its purest form.	2
21	Explain how the insecticidal protein produced by <i>Bacillus thuringiensis</i> does not kill the bacterium but kill the cotton bollworm?	2
	<b>SECTION-C</b>	
22	i)why is follicular phase in menstrual cycle also referred to as proliferative phase?  ii)Name one ovarian and one pituitary hormone name involved in ovulation phase.	3



23	<p>i) How is aneuploidy different from polyploidy?</p> <p>li) Name the chromosomal disorder in which affected females develop rudimentary ovaries?</p> <p>Or</p> <p>Study the given pedigree Chart:</p>  <p>I) How many males are there in this chart and how many males are affected?</p> <p>II) David is a normal son while his brothers are affected, illustrate this with the help of a cross?</p>	3
24	<p>In a population of birds, named as B birds with intermediate wing sizes can effectively fly while birds with either small or large wing sizes find it difficult to fly.</p> <p>(i) Which birds are more likely to be naturally selected?</p> <p>(ii) Based on (i), which type of natural selection does this phenomenon exemplify?</p> <p>lii) What is genetic Drift?</p>	3
25	<p>What happens when:</p> <p>(i) A newborn is not breastfed.</p> <p>(ii) A tumour cell enters the bloodstream.</p>	3



	Suggest two ways other than contraception to prevent population explosion in India?	
30	<p>A crime scene investigation team collected DNA evidence from a suspect's clothing and compared it to DNA samples from several individuals. The team used PCR to amplify the DNA and then performed DNA fingerprinting to analyze the results. The Forensic Department was assigned the responsibility of running the samples.</p> <p>i) What is the primary purpose of using PCR in DNA Fingerprinting?</p> <p>Or</p> <p>What are the advantages of the above mentioned technique?</p> <p>ii) What is the role of primers in PCR?</p> <p>iii) What is basis of DNA fingerprinting Technique?</p>	<p>2</p> <p>1</p> <p>1</p>
	<b>Section :-E</b>	
31	<p>i) Continued self pollination results inbreeding Depression. Suggest any three mechanisms with brief descriptions to prevent such conditions.</p> <p>ii) What is the Final product in sexual reproduction of Angiosperms?</p> <p>lii) What are Ex - albuminous seeds?</p> <p>Or</p> <p>Explain the events that occur during Double fertilization and triple fusion with the help of a diagram?</p>	<p>3</p> <p>1</p> <p>1</p> <p>Or</p> <p>5</p>

32	<p>i)What are transcriptional products of RNA polymerase III ?</p> <p>ii)Why Does DNA replication occur in small forks and not in its entire length?</p> <p>lii)Two mothers gave birth to babies in a maternity clinic but due to some negligence their babies were exchanged . One baby's father doubted the maternity clinic . Name and describe the technique which can help the father to find his real baby?</p> <p>Or</p> <p>I)Describe how Lac Operon operates in presence or absence of an inducer in <u>E. coli</u>?</p> <p>li)Explain Degenerate codon, &amp; Initiator codon?</p>	<p>1</p> <p>1</p> <p>3</p> <p>Or</p> <p>3</p> <p>2</p>
33	<p>I)Explain the role of microbes in water treatment of sewage water?</p> <p>II)Under which condition will the BOD be lowered in the river? How it will affect aquatic life?</p> <p>Or</p> <p>I)How do mycorrhizae act as biofertilisers? Name a genus of fungi that forms a mycorrhizal association with plants ?</p> <p>li)Explain What is IPM? Explain role of ladybird beetle and dragonflies role as biocontrol agent.</p>	<p>3</p> <p>2</p> <p>Or</p> <p>2</p> <p>3</p>