



**INDIAN SCHOOL AL WADI AL KABIR
SAMPLE PAPER 2 (2021-2022)
TERM I-BIOLOGY (044)**

CLASS: XII

**Max. Marks: 35
Time: 90 Minutes**

General Instructions:

- 1. The Question Paper contains three sections.**
- 2. Section A has 13 questions.**
- 3. Section B has 13 questions.**
- 4. Section C has 9 questions.**
- 5. All questions are compulsory and carry equal marks.**

SECTION A	
	Section – A consists of 13 questions.
1	What would be the sequence of bases of an mRNA molecule that was transcribed from the sequence of DNA bases shown below? GTAGTAGGT (a) GTAGTAGGT (b) CAUCAUCCA (c) UCGUCGUUC (d) AUGAUGAAU
2	Some strains of the bacterium <i>Streptococcus pyogenes</i> secrete poisonous substances called exotoxins. The gene encoding the exotoxins are thought to have originated in bacteriophages, which are viruses that infect bacteria. Which of the following is the most likely mechanism by which the <i>S. pyogenes</i> acquired the ability to produce exotoxins? (a) Bacteriophages engulfed cellular debris from dead bacteria. (b) Bacteriophages in the environment activated bacterial cell division. (c) Bacteriophage DNA became integrated in the bacterial chromosome. (d) Bacteriophage proteins were absorbed into bacterial cells by endocytosis.
3	256 microspores will form by the meiosis of- (a) 512 microspore mother cells (b) 128 microspore mother cells

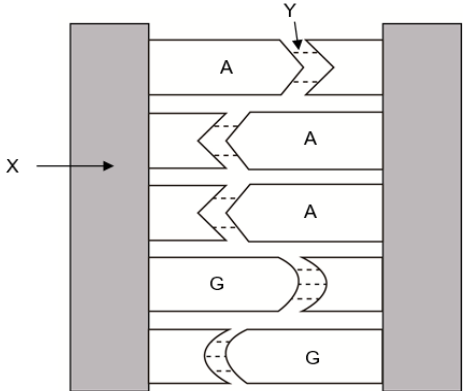
	(c) 64 microspore mother cells (d) 48 microspore mother cells	
4	Why are both the vas deferens cut and tied in vasectomy? (a) To stop the transport of sperms out to the female reproductive tract. (b) To stop the sperm from fertilizing the secondary oocyte in oviduct. (c) To stop sperm production. (d) All the above	
5	DNA replication can be described as (a) semiconservative (b) conservative (c) degenerative (d) dispersive	
6	Which of the following best describes the parents in a testcross? (a) One individual has the dominant phenotype and the other has the recessive phenotype. (b) Both individuals are heterozygous. (c) Both individuals have the dominant phenotype. (d) Both individuals have an unknown phenotype	
7	Aleurone layer is present in (a) The peripheral part of scutellum (b) The peripheral part of coleoptile (c) Cotyledons (d) The peripheral part of endosperm.	
8	Choose the correct statement from the following (a) Cleistogamous flowers always exhibit autogamy (b) Chasmogamous flowers always exhibit geitonogamy (c) Cleistogamous flowers exhibit both autogamy and geitonogamy (d) Chasmogamous flowers never exhibit autogamy	
9	While planning for an artificial hybridization involving dioecious plants, which of the following steps would not be relevant? (a) Bagging of female flower (b) Dusting of pollen on stigma (c) Emasculation (d) Collection of pollen	
10	How many base pairs are there in one full turn of the DNA double helix? (a) 4 (b) 10 (c) 16 (d) 64	
11	How many different trinucleotides can be made using the DNA nucleotides?	




	<p>(a) 4</p> <p>(b) 20</p> <p>(c) 16</p> <p>(d) 64</p>	
12	<p>The research of Erwin Chargaff was essential in the discovery of the structure of DNA by Crick and Watson. Chargaff analysed the base composition of DNA from a wide range of organisms. He reported his findings using the initial letter of each base to stand for the number of that base found in an organism's genome.</p> <p>A=number of adenine bases G=number of guanine bases C =number of cytosine bases T=number of thymine bases</p> <p>Which of these relationships did he find within the genome of each organism he studied?</p> <p>(a) $A = G$ $C = T$</p> <p>(b) $A+T = C+G$</p> <p>(c) $A+G = T+C$</p> <p>(d) $A = C$ $G = T$</p>	
13	<p>Embryo sac of an angiosperm is homologous to</p> <p>(a) Megaspore</p> <p>(b) Female gametophyte</p> <p>(c) Sporangium</p> <p>(d) None of above.</p>	
	SECTION B	
	Section - B consists of 13 questions	
14	<p>Assertion: Maize is an albuminous seed.</p> <p>Reason: Its endosperm is completely absorbed by its growing embryo.</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>	
15	<p>Assertion: Emergency contraceptives are used to avoid pregnancy due to casual unprotected sex or due to rape.</p> <p>Reason: These are very effective if given within 72 h</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. (d) Both assertion and reason are false</p>	
16	<p>Assertion: - The non-disjunction of the homologous chromosome, is resulting as non-proper distribution of the chromosomes. Reason: - Down 's Syndrome disease is caused due to the non-disjunction of the chromosomes.</p> <p>(a) Both assertion and reason are true, and reason is the correct explanation of assertion. (b) Both assertion and reason are true, but reason is not the correct explanation of assertion. (c) Assertion is true but reason is false. (d) Both assertion and reason are false</p>	
17	<p>Starting from the innermost part, the correct sequence of parts in an ovule is</p> <p>(a) egg, nucellus, embryo sac, integument (b) egg, embryo sac, nucellus, integument (c) embryo sac, nucellus, integument, egg (d) egg, integument, embryo sac, nucellus</p>	
18	<p>The function of germ pore in pollen grain is</p> <p>(a) Emergence of radicle (b) Absorption of water for seed germination (c) Initiation of pollen tube (d) All of these</p>	
19	<p>Which of the following is not a characteristic feature of Diaphragms, cervical caps and vaults?</p> <p>(a) These are used by females (b) These are reusable (c) These block the entry of sperms through the cervix (d) These are effective only when used with spermicidal creams, jellies and foams.</p>	
20	<p>Multiple allelism is the concept which tells us: -</p> <p>(a) One gene control several traits (b) Several genes control one trait (c) One gene control one trait (d) Several genes control several traits</p>	
21	<p>What percentage of homozygous and heterogeneous populations are produced in F2 generation in a Mendelian monohybrid cross: -</p> <p>(a) 25% and 25% (b) 50% and 50% (c) 25% and 75% (d) 25 % and 50%</p>	
22	<p>Mother 's blood group is A and father 's blood group is B and the daughter 's blood group is O. What will be the blood group of other children? -</p> <p>(a) A</p>	

	<p>(b) B</p> <p>(c) AB</p> <p>(d) All of the above</p>	
23	<p>There are certain feminine features develop in an individual with XXY chromosomes configuration, then what is the suitable term can be given to the situation: -</p> <p>(a) Gynecomastia</p> <p>(b) Gynaecophoria</p> <p>(c) Gynaecoinducia</p> <p>(d) Gynaecoblastia</p>	
24	<p>If a person has VNTR of 10 nucleotides in his satellite DNA of chromosome no 8 then what will be the VNTR of his son and daughter of that chromosome?</p> <p>(a) both son and daughter will have the same.</p> <p>(b) son will have 8 but daughter will have 4.</p> <p>(c) it can't be determined.</p> <p>(d) daughter will have 8 but son will have 4.</p>	
25	<p>In E-coli, the lac operon gets switched on when</p> <p>(a) lactose is present and it binds to the repressor</p> <p>(b) repressor binds to operator region</p> <p>(c) RNA polymerase binds to the operator.</p> <p>(d) lactose is present and it binds to RNA polymerase</p>	
26	<p>Which are the two components of part X?</p>  <p>(a) ribose and phosphate</p> <p>(b) guanine and phosphate</p> <p>(c) deoxyribose and thymine</p> <p>(d) deoxyribose and phosphate</p>	
SECTION C		

	Section-C consists of one case followed by 5 questions linked to this case (Q.No.27 to 31). Besides this, 4 more questions are there.	
Case	The average duration of human pregnancy is about 9 months which is called the gestation period. Vigorous contraction of the uterus at the end of pregnancy causes expulsion / delivery of the foetus. This process of delivery of the foetus (childbirth) is called parturition. Parturition is induced by a complex neuroendocrine mechanism. The signals for parturition originate from the fully developed foetus and the placenta which induce mild uterine contractions called foetal ejection reflex. This triggers the release of oxytocin hormone from the maternal pituitary gland. Oxytocin acts on the uterine muscle and causes stronger uterine contractions, which in turn stimulates further secretion of oxytocin. The stimulatory reflex between the uterine contraction and oxytocin secretion continues resulting in stronger and stronger contractions. This leads to expulsion of the baby out of the uterus through the birth canal – parturition. Soon after the infant is delivered, the placenta is also expelled out of the uterus.	
27	The birth of a baby is known as (a) Micturition (b) Parturition (c) Child (d) Oxytocin	
28	When a fully developed baby is not naturally delivered by the mother, it could be due to the – (a) Non-secretion of Oxytocin (b) Excess secretion of Oxytocin (c) Wide birth canal (d) None of the above.	
29	Soon after the infant is delivered, the placenta is also expelled out of the uterus, because (a) The infant requires the placenta to be alive (b) After the birth, there is no role for the placenta (c) Placenta is a part of the infant (d) None of the above	
30	Oxytocin is known as the child birth hormone as well as the (a) Urine regulating hormone (b) Milk ejection hormone (c) Milk producing hormone (d) None of the above	
31	Identify the hormone which is necessary for maintaining pregnancy (a) Progesterone (b) Estrogen (c) Oxytocin (d) FSH	

32	<p>Mention the chromosomes in the male and female bird respectively: -</p>  <p>(a) XY & XX (b) XO & XX (c) ZZ & ZW (d) ZW & ZZ</p>
33	<p>A male fruit fly (<i>Drosophila melanogaster</i>) with red eyes and long wings was mated with a female with purple eyes and vestigial wings. All of the offspring in the F1 generation had red eyes and long wings. These F1 flies were test crossed with purple-eyed, vestigial-winged flies. Their offspring, the F2 generation, appeared as indicated below.</p> <p>F2 Generation 125 red eyes, long wings 124 purple eyes, vestigial wings 18 purple eyes, long wings 16 red eyes, vestigial wings 283 Total</p> <p>If in the F1 and F2 generations the same characteristics appeared in both male and females, it would be safe to assume that these traits for eye color and wing length...</p> <p>(a) are sex-linked (b) vary in dominance according to sex (c) are autosomal characteristics (d) follow the Mendelian rule of independent assortment</p>
34	<p>The three cells found in a pollen grain when it is shed at 3-celled stage are</p> <p>(a) 1 vegetative cell, 1 generative cell, 1 male gamete (b) 1 vegetative cell, 2 male gametes (c) 1 generative cell, 2 male gametes (d) either (a) or (b).</p>
35	<p>Identify the wrong statement regarding post-fertilisation development.</p> <p>(a) The ovary wall develops into pericarp. (b) The outer integument of ovule develops into tegmen. (c) The fusion nucleus (triple nucleus) develops into endosperm. (d) The ovule develops into seed.</p>

ANSWER KEY

Question number	Correct option	Question number	Correct option
1	(b)	19	(d)

2	(c)	20	(c)
3	(c)	21	(c)
4	(a)	22	(d)
5	(a)	23	(a)
6	(a)	24	(c)
7	(d)	25	(a)
8	(a)	26	(d)
9	(c)	27	(b)
10	(b)	28	(a)
11	(a)	29	(b)
12	(c)	30	(b)
13	(b)	31	(a)
14	(c)	32	(c)
15	(a)	33	(c)
16	(a)	34	(b)
17	(b)	35	(b)
18	(c)		