



KENDRIYA VIDYALAYA, NAD, VISAKHAPATNAM-9
MONTHLY TEST FOR SEPTEMBER: 2021-2022
MARKING SCHEME

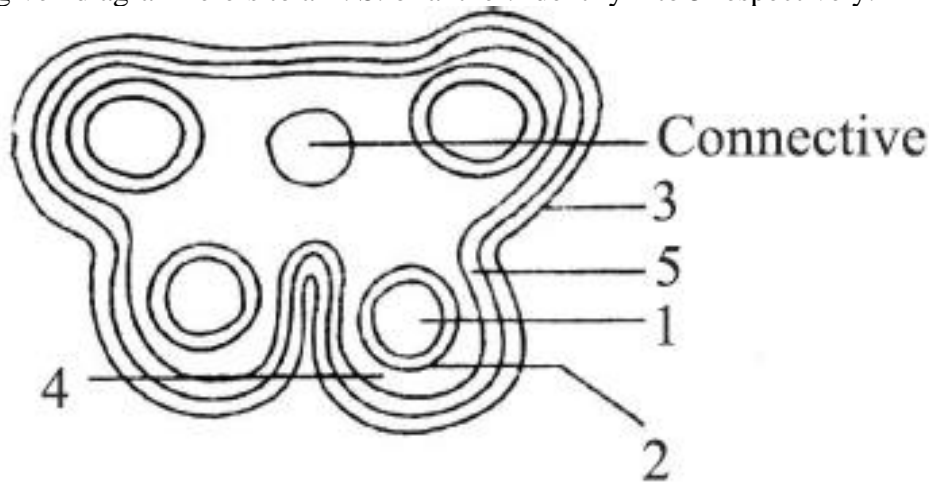
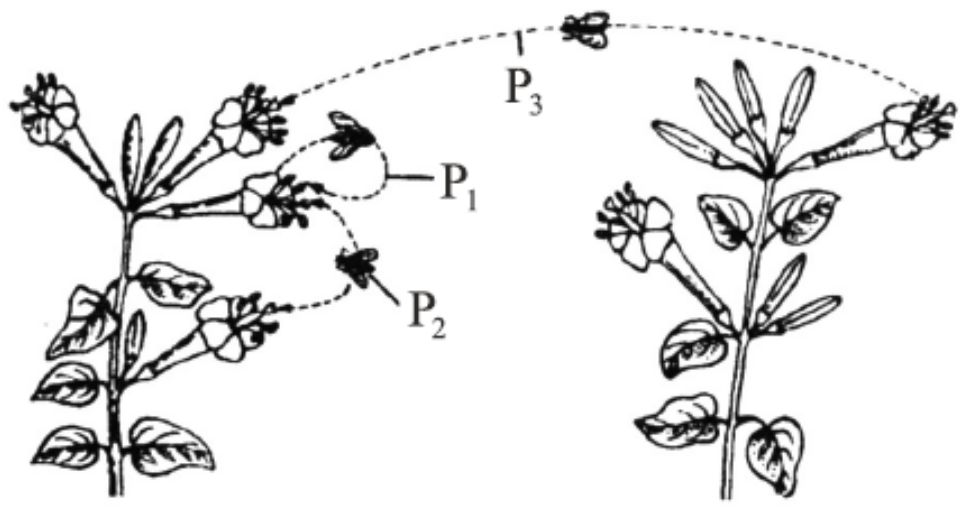
CLASS: XII
SUBJECT: BIOLOGY

MAX. MARKS: 40
TIME: 90 Minutes

General Instructions:

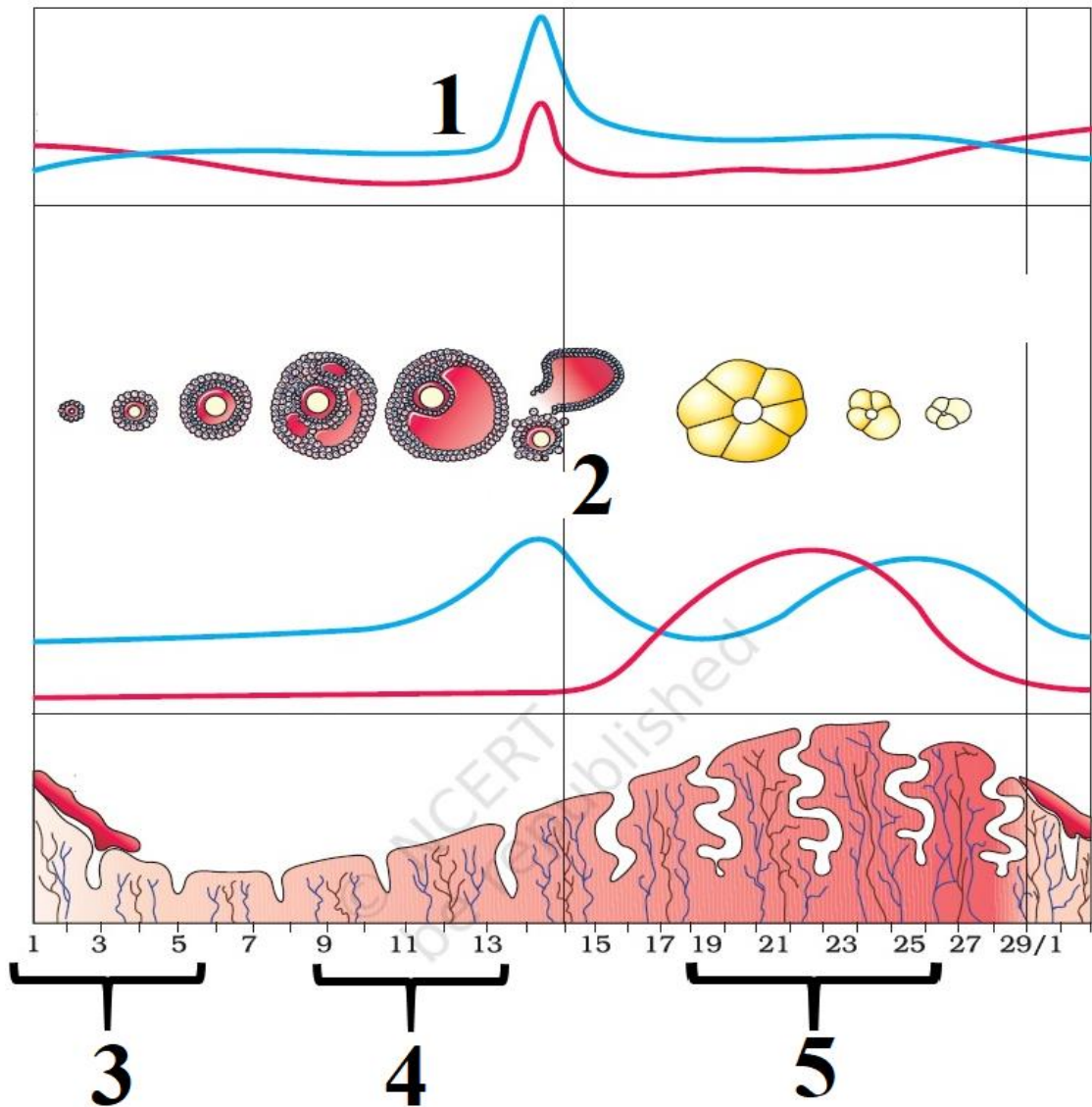
- (i) All questions are compulsory.
- (ii) The Question paper contains three sections.
- (iii) Section-A has 16 questions.
- (iv) Section-B has 16 questions.
- (v) Section-C has 08 questions.
- (vi) All questions carry equal marks.
- (vii) There is no negative marking.

<u>SECTION-A</u>		
1)	<p>The plant parts which consist of two generations one within the other</p> <p>(1) pollen grains inside the anther (2) germinated pollen grain with two male gametes (3) seed inside the fruit (4) embryo sac inside the ovule</p> <p>(a) (1) only (c) (3) and (4)</p> <p>Ans. (d)</p>	1
2)	<p>In water hyacinth and water lily, pollination takes place by</p> <p>(a) insects or wind (c) wind and water</p> <p>Ans. (a)</p>	1
3)	<p>Identify 1, 2, 3, 4 and 5 structures shown in figure of a female gametophyte respectively.</p> <div style="text-align: center;"><p>The diagram shows a longitudinal section of a female gametophyte (embryo sac). At the top, there are three cells labeled 1. Below them are two cells labeled 2. In the middle, there are two cells labeled 3. At the bottom, there are two cells labeled 4. At the very bottom, there is a structure labeled 5.</p></div> <p>(a) Antipodal cells, Central cell, Polar nuclei, Synergids and Acrosome (b) Antipodal cells, Central cell, Polar nuclei, Synergids and Filiform apparatus (c) Synergids, Central cell, Polar nuclei, Antipodal cells and Filiform apparatus</p>	1

	(d) Synergids, Megaspore mother cell, Polar nuclei, Synergids and Acrosome Ans. (b)	
4)	<p>The given diagram refers to a T. S. of anther. Identify 1 to 5 respectively.</p>  <p>(a) Sporogenous tissue, tapetum, epidermis, middle layer, endothecium. (b) Sporogenous tissue, epidermis, tapetum, middle layer, endothecium. (c) Sporogenous tissue, epidermis, middle layer, tapetum, endothecium. (d) Sporogenous tissue, tapetum, middle layer, epidermis, endothecium.</p> Ans. (a)	1
5)	<p>The given diagram shows 2 plants of the same species. Identify the types of pollination indicated as P₁, P₂ and P₃ respectively.</p>  <p>(a) Allogamy, Chasmogamy, Cleistogamy (b) Autogamy, Xenogamy, Geitonogamy (c) Autogamy, Geitonogamy, Xenogamy (d) Geitonogamy, Allogamy, and Autogamy</p> Ans. (c)	1
6)	<p>Persistent nucellus in the seed is known as</p> <p>(a) tegmen (b) chalaza (c) perisperm (d) hilum.</p> Ans. (c)	1
7)	<p>Meiotic division of the secondary oocyte is completed</p> <p>(a) prior to ovulation (b) at the time of copulation (c) after zygote formation (d) at the time of fusion of a sperm with an ovum.</p> Ans. (d)	1

8) The figure given below shows the various events occurring during a menstrual cycle with few events marked as 1, 2, 3, 4 and 5. Which of the following options shows the correct events?

1



- (a) 1 – LH, 2 – Ovulation, 3 – Menstruation, 4 – Proliferative phase, 5 – Luteal phase
- (b) 1 – FSH, 2 – Implantation, 3 – Follicular Phase, 4 – Menstruation phase, 5 – Luteal phase
- (c) 1 – Estrogen, 2 – Parturition, 3 – Luteal Phase, 4 – Menstruation phase, 5 – Follicular phase
- (d) 1 – Progesterone, 2 – Fertilisation, 3 – Menstruation, 4 – Secretory phase, 5 – Luteal phase

Ans. (a)

9) Select the hormone-releasing Intra-Uterine Devices.

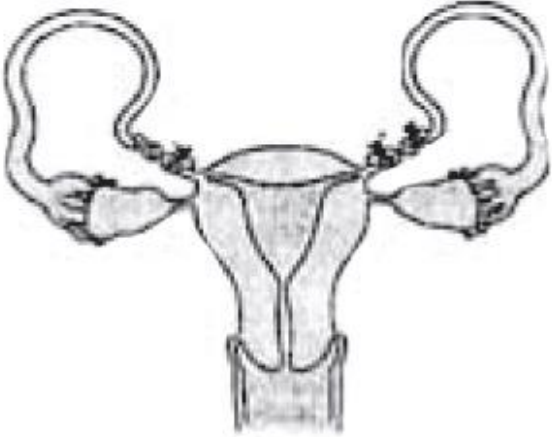
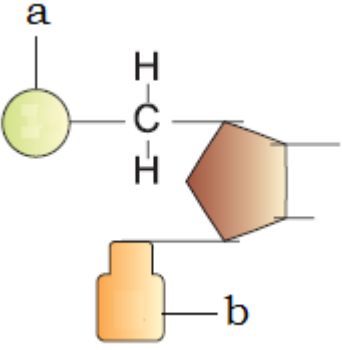
- (a) Lippes Loop, Multiload 375
- (b) Vaults, LNG-20
- (c) Multiload 375, Progestasert
- (d) Progestasert, LNG-20

Ans. (d)

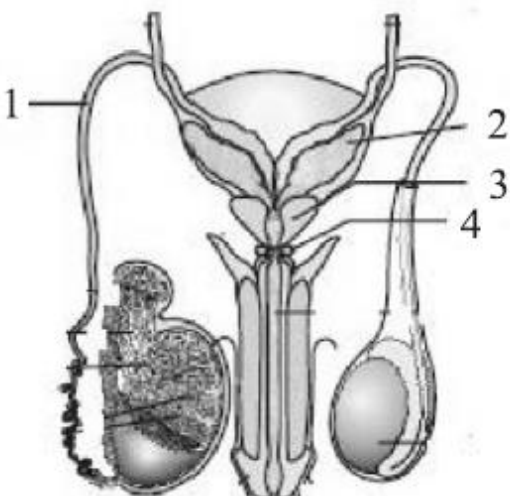












1

10) What is the figure given below showing in particular?

1

	 <p>(a) Ovarian cancer (b) Uterine cancer (c) Tubectomy (d) Vasectomy Ans. (c)</p>	
11)	<p>How many different blood groups are possible in a diploid species with ABCO blood grouping system involving I^A, I^B, I^C and I^O alleles (I^O is recessive and others are co-dominant)?</p> <p>(a) 4 (b) 6 (c) 7 (d) 8 Ans. (c)</p>	1
12)	<p>Which of the following situations in which the independent assortment of genes results in 50% recombination?</p> <p>(i) Genes situated on different/separate chromosomes (ii) Genes situated far apart on the same chromosome (crossing over always occurs) (iii) Genes present nearer to each other on the same chromosome.</p> <p>(a) i, ii, iii (b) ii, iii (c) i, iii (d) i, ii Ans. (d)</p>	1
<p>13) What are ‘a’ and ‘b’ in the nucleotide with purine represented below:</p>  <p>(A) Phosphate Adenine (B) Phosphate Guanine (C) Pentose Sugar Adenine (D) Phosphate Either Adenine or Guanine Ans. (d)</p>		
14)	<p>Name the enzyme that facilitates opening of DNA helix during transcription.</p> <p>(a) DNA ligase (b) DNA helicase (c) DNA polymerase (d) RNA polymerase Ans. (d)</p>	1
15)	<p>If the distance between two consecutive base pairs is 0.34 nm and the total number of base pairs of a DNA double helix in a typical mammalian cell is 6.6×10^9 bp, then the length of the DNA is approximately:</p>	1

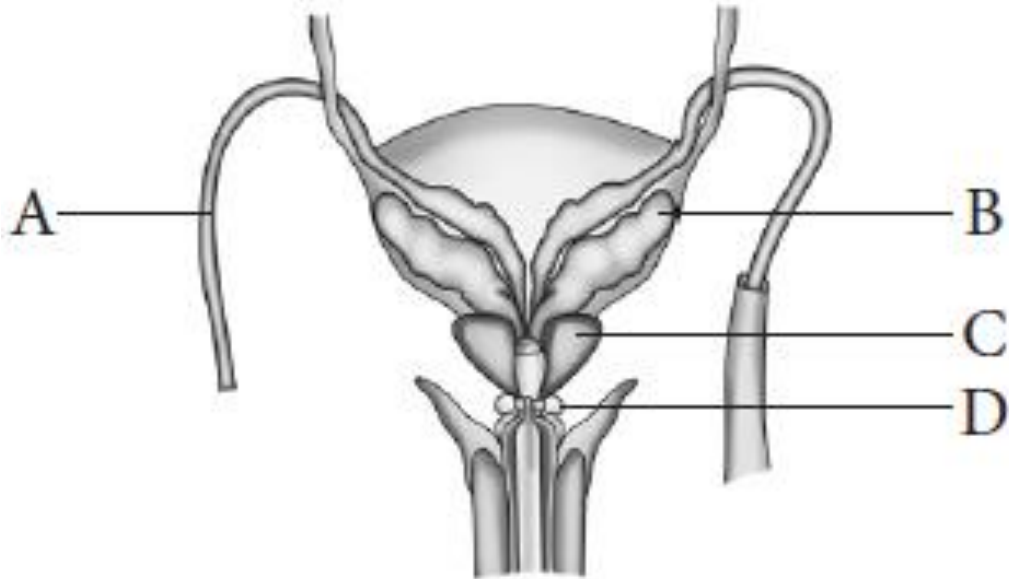
	(a) 2.0 meters (c) 2.2 meters Ans. (c)	(b) 2.5 meters (d) 2.7 meters.													
16)	Match the following RNA polymerase with their transcribed products: <table border="1" data-bbox="384 277 1254 394"> <tbody> <tr> <td>1.</td> <td>RNA polymerase I</td> <td>(i)</td> <td>tRNA</td> </tr> <tr> <td>2.</td> <td>RNA polymerase II</td> <td>(ii)</td> <td>rRNA</td> </tr> <tr> <td>3.</td> <td>RNA polymerase III</td> <td>(iii)</td> <td>hnRNA</td> </tr> </tbody> </table> Select the correct option from the following: (a) 1-i, 2-iii, 3-ii (c) 1-ii, 2-iii, 3-i Ans. (c)	1.	RNA polymerase I	(i)	tRNA	2.	RNA polymerase II	(ii)	rRNA	3.	RNA polymerase III	(iii)	hnRNA	(b) 1-i, 2-ii, 3-iii (d) 1-iii, 2-ii, 3-i	1
1.	RNA polymerase I	(i)	tRNA												
2.	RNA polymerase II	(ii)	rRNA												
3.	RNA polymerase III	(iii)	hnRNA												
	<u>SECTION-B</u>														
	Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: A. Both A and R are true and R is the correct explanation of A. B. Both A and R are true and R is not the correct explanation of A. C. A is true but R is false. D. Both Assertion and Reason are false..														
17)	Assertion: Chasmogamous flowers require pollinating agents. Reason: Cleistogamous flowers do not expose their sex organs. Ans. (b)		1												
18)	Assertion: In morula stage, cells divide without increase in size. Reason: Zona pellucida remains undivided till cleavage is complete. Ans. (a)		1												
19)	Assertion: Phenylketonuria is a recessive hereditary disease caused by body's failure to oxidize an amino acid phenylalanine to tyrosine, because of a defective enzyme. Reason: It results in the presence of phenylalanine acid in urine. Ans. (b)		1												
20)	Assertion: In eukaryotes there are more promoter units as compared to prokaryotes. Reason: Functionally related genes may not be clustered together to form an operon (Polycistronic) in Eukaryotes while it is Monocistronic in Prokaryotes. Ans. (a)		1												
21)	Generative cell as destroyed by laser but a normal pollen tube was still formed because: (a) Vegetative cell is not damaged. (b) Contents of killed generative cell stimulate pollen growth. (c) Laser beam stimulates growth of pollen tube. (d) The region of emergence of pollen tube is not harmed. Ans. (a)		1												
22)	If an angiospermic male plant is diploid and female plant tetraploid, the ploidy level of endosperm will be: (a) Haploid (b) Triploid (c) Tetraploid (d) Pentaploid Ans. (d)		1												
23)	Unisexuality of flowers prevents: (a) Geitonogamy but not xenogamy		1												

	<p>(b) Autogamy and geitonogamy (c) Autogamy but not geitonogamy (d) Both geitonogamy and xenogamy Ans. (c)</p>																					
24)	<p>Given below is a diagrammatic sketch of a portion of human male reproductive system. Select the correct set of the names of the parts marked as 1 to 4 respectively.</p>  <p>(a) 1 – Ureter; 2 – Seminal Vesicle; 3 – Prostate; 4 – Bulbourethral Gland (b) 1 – Ureter; 2 – Prostate; 3 – Seminal Vesicle; 4 – Bulbourethral Gland (c) 1 – Vas deferens; 2 – Seminal Vesicle; 3 – Prostate; 4 – Bulbourethral Gland (d) 1 – Vas deferens; 2 – Seminal Vesicle; 3 – Bulbourethral Gland; 4 – Prostate Ans. (c)</p>	1																				
25)	<p>Which of the following human developmental stage becomes embedded in the uterine endometrium by a process called implantation and leads to pregnancy?</p> <table border="1" data-bbox="379 1160 1259 1742"> <tr> <td data-bbox="379 1160 464 1507">(a)</td> <td data-bbox="464 1160 826 1507"></td> <td data-bbox="826 1160 922 1507">(b)</td> <td data-bbox="922 1160 1259 1507"></td> </tr> <tr> <td data-bbox="379 1507 464 1742">(c)</td> <td data-bbox="464 1507 826 1742"></td> <td data-bbox="826 1507 922 1742">(d)</td> <td data-bbox="922 1507 1259 1742"></td> </tr> </table> <p>Ans. (c)</p>	(a)		(b)		(c)		(d)		1												
(a)		(b)																				
(c)		(d)																				
26)	<p>Match the following columns and select the correct option.</p> <table border="1" data-bbox="301 1816 1350 2011"> <thead> <tr> <th></th> <th>Column-I</th> <th></th> <th>Column-II</th> </tr> </thead> <tbody> <tr> <td>(A)</td> <td>Placenta</td> <td>(i)</td> <td>Androgens</td> </tr> <tr> <td>(B)</td> <td>Zona pellucida</td> <td>(ii)</td> <td>Human Chorionic Gonadotropin (HCG)</td> </tr> <tr> <td>(C)</td> <td>Bulbourethral glands</td> <td>(iii)</td> <td>Layer of the ovum</td> </tr> <tr> <td>(D)</td> <td>Leydig cells</td> <td>(iv)</td> <td>Lubrication of the penis</td> </tr> </tbody> </table>		Column-I		Column-II	(A)	Placenta	(i)	Androgens	(B)	Zona pellucida	(ii)	Human Chorionic Gonadotropin (HCG)	(C)	Bulbourethral glands	(iii)	Layer of the ovum	(D)	Leydig cells	(iv)	Lubrication of the penis	1
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(A)	Placenta	(i)	Androgens																			
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(C)	Bulbourethral glands	(iii)	Layer of the ovum																			
(D)	Leydig cells	(iv)	Lubrication of the penis																			

- (a) (A) – (iv); (B) – (iii); (C) – (i); (D) – (ii)
 (b) (A) – (i); (B) – (iv); (C) – (ii); (D) – (iii)
 (c) (A) – (iii); (B) – (ii); (C) – (iv); (D) – (i)
 (d) (A) – (ii); (B) – (iii); (C) – (iv); (D) – (i)
Ans. (d)

27) Given below is a diagrammatic sketch of a portion of human male reproductive system. Select the correct set of the names of the parts labelled A, B, C, D.

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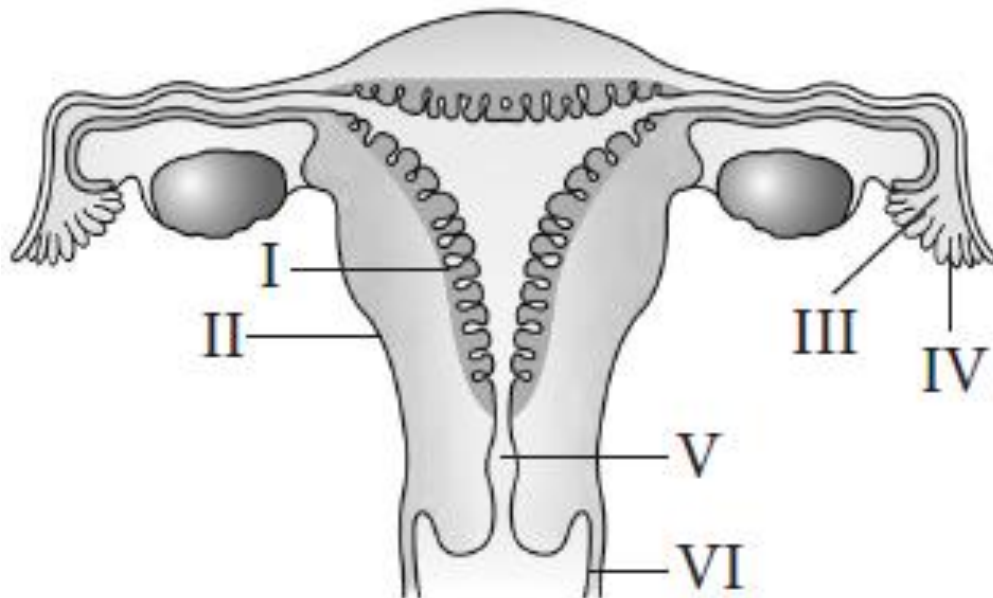


- (a) A-Vas deferens, B-Seminal vesicle, C-Prostate, D-Bulbourethral gland
 (b) A-Vas deferens, B-Seminal vesicle, C-Bulbourethral gland, D-Prostate
 (c) A-Ureter, B-Seminal vesicle, C-Prostate, D-Bulbourethral gland
 (d) A-Ureter, B-Prostate, C-Seminal vesicle, D-Bulbourethral gland

Ans. (a)

28) The figure given below depicts a diagrammatic sectional view of the human female reproductive system. Which set of three parts out of I-VI have been correctly identified?

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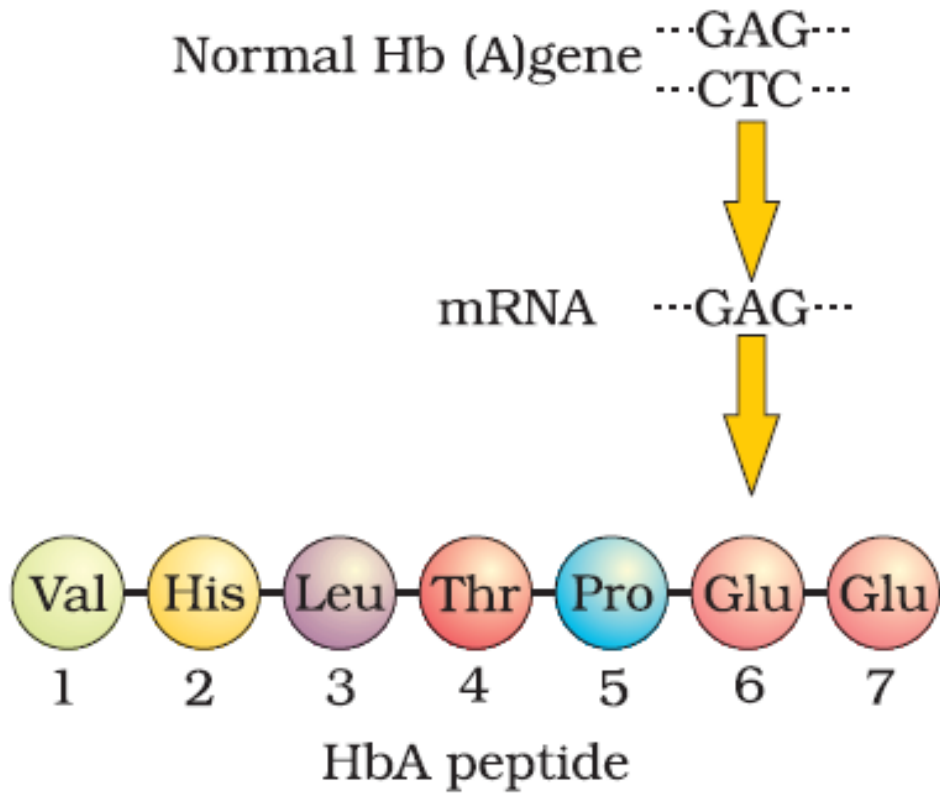


- (a) (II) Endometrium, (III) Infundibulum, (IV) Fimbriae
 (b) (III) Infundibulum, (IV) Fimbriae, (V) Cervix
 (c) (IV) Oviducal funnel, (V) Uterus, (VI) Cervix
 (d) (I) Perimetrium, (II) Myometrium, (III) Fallopian tube

Ans. (b)

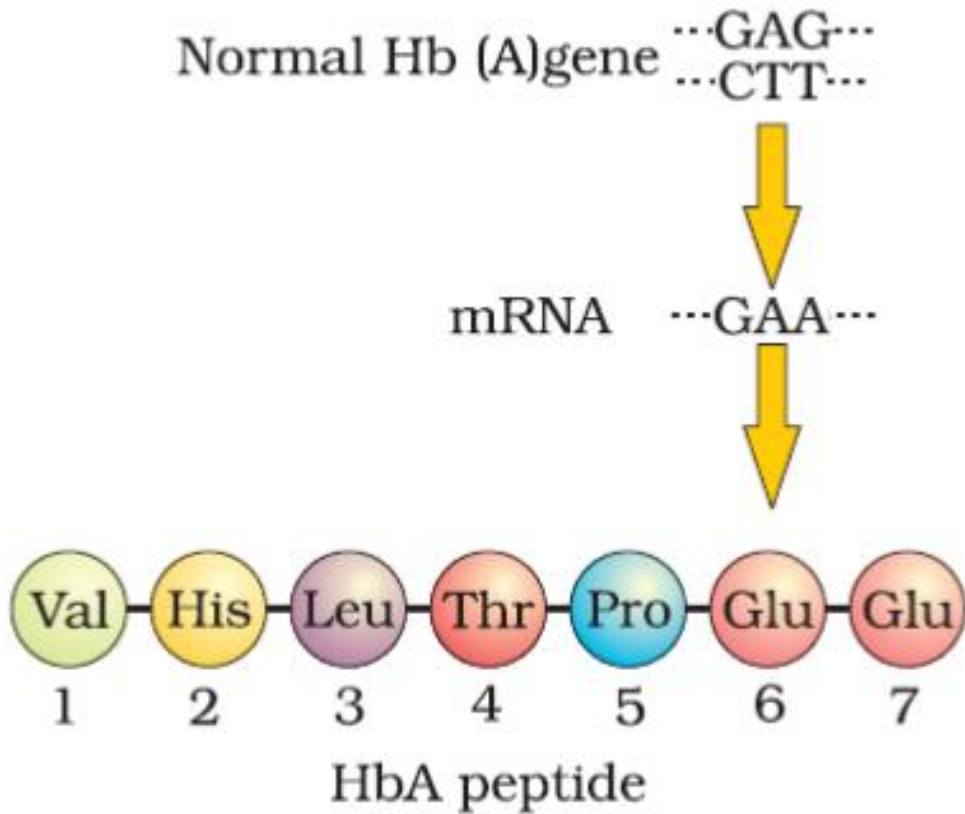
29)	<p>Select the correct match.</p> <p>(a) Haemophilia – Y linked (b) Phenylketonuria – Autosomal dominant trait (c) Sickle cell anaemia – Autosomal recessive trait, chromosome -11 (d) Thalassaemia – X linked</p> <p>Ans. (c)</p>	1
30)	<p>Select the incorrect statement.</p> <p>(a) Human males have one of their sex-chromosome much shorter than other. (b) Male fruit fly is heterogametic. (c) In male grasshoppers, 50% of sperms have no sex-chromosome. (d) In domesticated fowls, sex of progeny depends on the type of sperm rather than egg.</p> <p>Ans. (d)</p>	1
31)	<p>In the following human pedigree, the filled symbols represent the affected individuals. Identify the type of given pedigree.</p> <div style="text-align: center;"> </div> <p>(a) Autosomal recessive (b) X-linked dominant (c) Autosomal dominant (d) X-linked recessive</p> <p>Ans. (a)</p>	1
32)	<p>What will be the sequence of <i>mRNA</i> produced by the following stretch of DNA?</p> <p>3' ATGCATGCATGCATG5' Template Strand 5' TACGTACGTACGTAC3' Coding Strand</p> <p>(a) 3'AUGCAUGCAUGCAUG5' (b) 5'UACGUACGUACGUAC 3' (c) 3' UACGUACGUACGUAC 5' (d) 5' AUGCAUGCAUGCAUG 3'</p> <p>Ans. (b)</p>	1
<u>SECTION-C</u>		
Section-C consists of two cases followed by 4 questions linked to each case (Q.No.33 to 40).		
<u>Case</u>	A relevant portion of β - chain of haemoglobin of a normal human is as follows.	

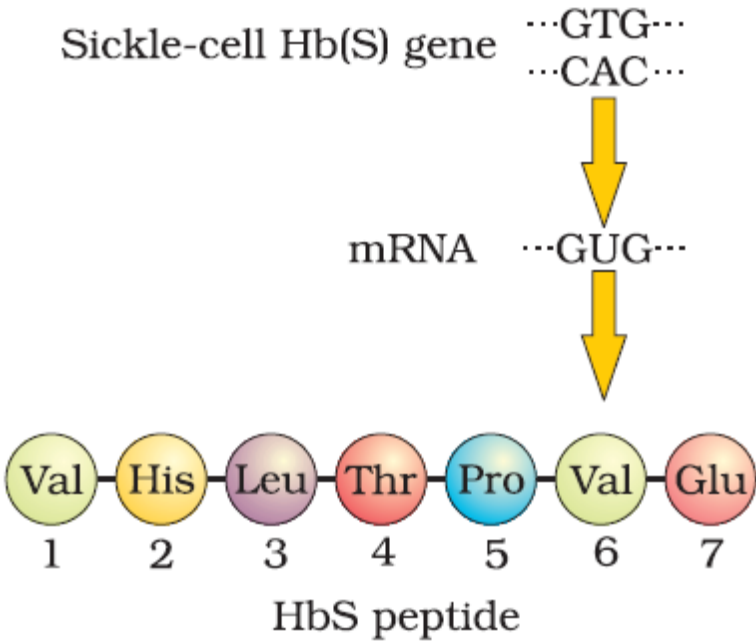
Normal Haemoglobin









The codon for the sixth amino acid is GAG. The sixth codon GAG mutates to GAA as a result of mutation X and into GUG as a result of mutation Y.




Mutation-A



	<p><u>Mutation-B</u></p> <p>Sickle-cell Hb(S) gene ...GTG... ...CAC...</p> <p style="text-align: center;">↓</p> <p>mRNA ...GUG...</p> <p style="text-align: center;">↓</p>  <p style="text-align: center;">HbS peptide</p>	
33)	<p>Which of the following is incorrect statement?</p> <p>(a) Mutation X carries no change in shape of red blood cells. (b) Mutation Y causes change in shape of red blood cell shape. (c) Both mutations X and Y causes change in shape of red blood cell shape. (d) Both (a) and (b). Ans. (b)</p>	1
34)	<p>Due to mutation Y the shape of RBCs under oxygen tension will be</p> <p>(a) biconcave disc like (b) elongated and curve (c) circular (d) spherical Ans. (b)</p>	1
35)	<p>GUG is code for</p> <p>(a) Valine (b) Proline (c) Glutamic acid (d) Leucine Ans. (a)</p>	1
36)	<p>Which of the following genotype shows diseased phenotype due to mutation Y?</p> <p>(a) $HB^S HB^S$ (b) $HB^A HB^S$ (c) $HB^A HB^A$ (d) Both (a) and (b) Ans. (a)</p>	1
Case	<p>The process of translation required transfer of genetic information from a polymer of nucleotides to synthesise polymer of amino acids. The relationship between the sequence of amino acids in a polypeptide and nucleotide sequence of DNA or mRNA is called genetic code. George Gamow suggested that in order to code for all the amino acids, code should be made up of three nucleotides.</p>	
37)	<p>What is a codon?</p> <p>(a) A length of DNA which codes for a particular protein.</p>	1

	<p>(b) A part of the tRNA molecule to which a specific amino acid is attached.</p> <p>(c) A part of the tRNA molecule which recognizes the triplet code on the mRNA.</p> <p>(d) A part of the mRNA molecule that has a sequence of bases coding for an amino acid.</p> <p>Ans. (d)</p>											
38)	<p>Three consecutive bases in the DNA molecule provide the code for each amino acid in a protein molecule. What is the maximum number of different triplets that could occur?</p> <p>(a) 16</p> <p>(b) 20</p> <p>(c) 24</p> <p>(d) 64</p> <p>Ans. (d)</p>	1										
39)	<p>Listed below are some amino acids and their corresponding mRNA triplets.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Amino acid</th> <th>mRNA triplet</th> </tr> </thead> <tbody> <tr> <td>Phenylalanine</td> <td>UUU</td> </tr> <tr> <td>Lysine</td> <td>AAG</td> </tr> <tr> <td>Arginine</td> <td>CGA</td> </tr> <tr> <td>Alanine</td> <td>GCA</td> </tr> </tbody> </table> <p>Which DNA sequence would be needed to produce the following polypeptide sequence?</p> <p style="text-align: center;">Alanine – Arginine – Lysine – Phenylalanine</p> <p>(a) CGT GCT TTC AAA</p> <p>(b) CGT GCT TTC TTT</p> <p>(c) CGU GCU UUC AAA</p> <p>(d) CGU GCU UUC TTT</p> <p>Ans. (b)</p>	Amino acid	mRNA triplet	Phenylalanine	UUU	Lysine	AAG	Arginine	CGA	Alanine	GCA	1
Amino acid	mRNA triplet											
Phenylalanine	UUU											
Lysine	AAG											
Arginine	CGA											
Alanine	GCA											
40)	<p>Identify the non-sense codon among the following:</p> <p>(a) AUG</p> <p>(b) GUG</p> <p>(c) UAA</p> <p>(d) UGG</p> <p>Ans. (c)</p>	1										




Do Well and Excel







End of exam
