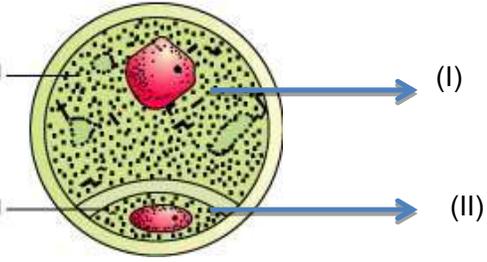


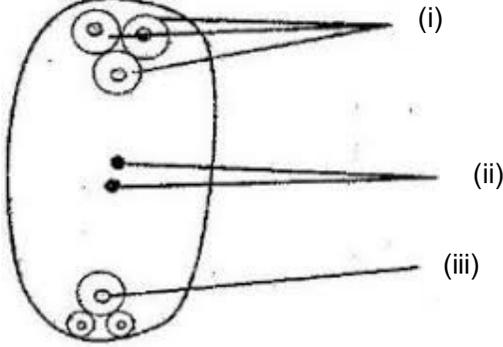
KENDRIYA VIDYALAYA SANGATHAN, JAIPUR REGION
PRE BOARD PAPER (TERM I) 2021-2022
CLASS XII
BIOLOGY (044)

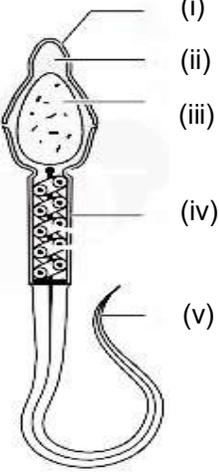
Time: 90 Minutes Max .Marks : 35

General Instructions:

1. The Question Paper contains three sections.
2. Each question carry 0.70 marks.
3. Section A has 24 questions. Attempt any 20 questions.
4. Section B has 24 questions. Attempt any 20 questions.
5. Section C has 12 questions. Attempt any 10 questions.
6. All questions carry equal marks.
7. There is no negative marking.

SECTION - A	
Section – A consists of 24 questions (Sl. No.1 to 24). Attempt any 20 questions from this section. <u>The first attempted 20 questions would be evaluated.</u>	
1	In a flower ,if the megaspore mother cell forms megaspores without undergoing meiosis and if one of the megaspore develops into an embryo sac , its nuclei would be A. Haploid B. Diploid C. A few haploid and a few diploid D. With varying ploidy
2	 <p style="text-align: center;">Statements:</p> <p>(a). (I) is Generative cell, (II) is Vegetative cell (b).(I) is Vegetative cell, (II) is Generative cell (c).Generative cell produce 2 Male Gamete (d).Vegetative cell produce 2 Male Gamete</p> <p>Choose the correct:</p> <p>A. a) & (c) B. (b) & (c) C. (a) & (d) D. (b) & (d)</p>

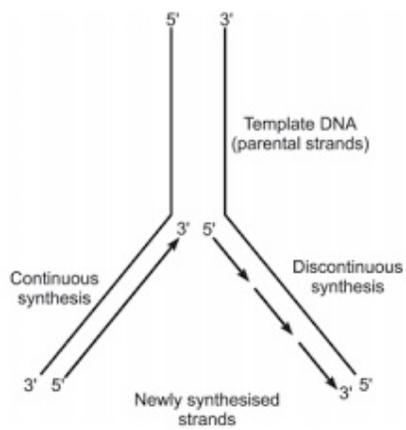
3	<p>If the central cell is missing, the embryo sac will not be able to produce?</p> <p>A. zygote. B. endosperm. C. both zygote and endosperm. D. free nuclear embryo.</p>										
4	<p>Match the items in column I with the items in column II.</p> <table border="1" data-bbox="365 409 1356 703"> <thead> <tr> <th>Column I</th> <th>Column II</th> </tr> </thead> <tbody> <tr> <td>I) Remains of nucellus in a seed</td> <td>a) Scutellum</td> </tr> <tr> <td>II) Formation of seed without fertilization</td> <td>b) Perisperm</td> </tr> <tr> <td>III) Cotyledon in the seeds of grasses</td> <td>c) Polyembryony</td> </tr> <tr> <td>IV) Occurrence of more than one embryo in a seed</td> <td>d) Apomixis</td> </tr> </tbody> </table> <p>A. I-a, II-b, III-c, IV-d B. I-b, II-a, III-d, IV-c. C. I-b, II-d, III-a, IV-c D. I-d, II-c, III-a, IV-b</p>	Column I	Column II	I) Remains of nucellus in a seed	a) Scutellum	II) Formation of seed without fertilization	b) Perisperm	III) Cotyledon in the seeds of grasses	c) Polyembryony	IV) Occurrence of more than one embryo in a seed	d) Apomixis
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5	 <p>the following statement is correct:</p> <p>(i) –Antipodal cell, (ii)-Egg Apparatus , (iii) Polar Nuclei (i) –Antipodal cell, (ii)- Polar Nuclei, (iii) Egg Apparatus (i) –Antipodal cell, (ii)- Central Cell, (iii) Egg Apparatus D (i) – Egg Apparatus, (ii)- Central Cell, (iii) Antipodal cell</p>										

6	<p>The immature male germ cells undergo division to produce sperms by the process of spermatogenesis. Choose the correct one with reference to above :</p> <p>A. Spermatogonia have 46 chromosomes and always undergo meiotic cell division</p> <p>B. Primary spermatocytes divide by mitotic cell division</p> <p>C. Secondary spermatocytes have 23 chromosomes and undergo second meiotic division</p> <p>D. Spermatozoa are transformed into spermatids</p>
7	 <p>Choose the correct:</p> <p>A. (i)-Acrosome, (ii)- Plasma membrane, (iii)- Head, (iv)-Neck, (v)-Tail</p> <p>B. (i)- Head, (ii)- Plasma membrane, (iii)- Acrosome, (iv)-Neck, (v)-Tail</p> <p>C. (i)- Plasma membrane, (ii)- Acrosome, (iii)- Nucleus, (iv)-Mitochondria, (v)-Tail</p> <p>D. (i)- Plasma membrane, (ii)- Nucleus, (iii)- Acrosome, (iv)-Mitochondria, (v)-Tail</p>

8	<p>Layers of an ovum from outside to inside is</p> <p>A. corona radiata ,zonapellucida and vitelline membrane.</p> <p>B. zonapellucida , corona radiata and vitelline membrane .</p> <p>C. vitellinemembrane ,zonapellucida and corona radiata.</p> <p>D. zonapellucida ,vitelline membrane and corona radiata.</p>
9	<p>Morula is a developmental stage</p> <p>A. Between the zygote and blastocyst</p> <p>B. Between the blastocyst and gastrula</p> <p>C. Immediately after implantation</p> <p>D. Between implantation and parturition</p>
10	<p>Identify the type of the pollination in the given plant:</p> <p>A. Entomophily</p> <p>B. Anemophily</p> <p>C. Hydrophily</p> <p>D. Ornithophily</p> 
11	<p>Correct order of stages of development of a dicotyledonous embryo is :</p> <p>A. Zygote Embryo.....Globular embryo....Heart shaped embryo.</p> <p>B. ZygoteGlobular embryo....Pro- embryo.</p> <p>C. Embryo.... Pro-embryo.....Mature embryo.....Globular embryo .</p> <p>D. Zygote Pro-embryo.....Globular embryo.....Mature embryo .</p>
12	<p>In a dihybrid cross between RRYy and rryy parents, the number of RrYy genotypes in F2 generation will be</p> <p>A.2</p> <p>C.1</p> <p>B.3</p> <p>D.4</p>

13	<p>A marriage between normal visioned man and colour blind woman will produce which of the following types of offsprings?</p> <p>A. Normal sons and carrier daughters</p> <p>B. Colour-blind sons and carrier daughters</p> <p>C. Colour-blind sons and 50% carrier daughters</p> <p>D. 50% colour blind sons and 50% carrier daughters</p>
14	<p>A man of A blood group marries a woman of AB blood group. Which type of progeny would indicate that man is heterozygous?</p> <p>A. O</p> <p>B. B</p> <p>C. A</p> <p>D. AB</p>
15	<p>The Chromosome movement during meiosis has been worked out and noted that behavior of genes was parallel to the behavior of chromosomes</p> <p>A. Schleiden</p> <p>B. Morgan</p> <p>C. Sturtevant</p> <p>D. Sutton and Boveri</p>
16	<p>In fowl , which parent is responsible to determine the sex of off-springs :?</p> <p>A. Male parent</p> <p>B. Female parent</p> <p>C. Both parents</p> <p>D. By environment conditions</p>
17	<p>How many alleles are responsible to determine the skin colour of human beings :</p> <p>A. 2 pairs</p> <p>B. 3 pairs</p> <p>C. 4 pairs</p> <p>D. 5 pairs</p>

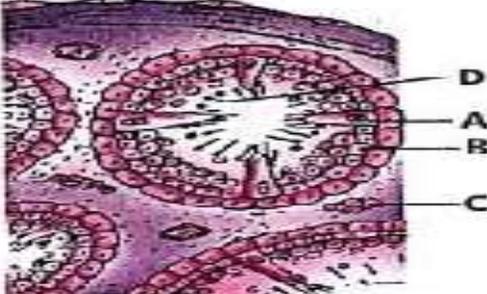
18	<p>What is hnRNA:</p> <p>A. Human RNA</p> <p>B. Hyper Nuclear RNA</p> <p>C. Hetero Nuclear RNA</p> <p>D. Heterogeneous Nuclear RNA</p>
19	<p>Which sentence is correct :</p> <p>A. In eukaryotes both translation and transcription take place simultaneously</p> <p>B. In eukaryotes both translation and transcription take place in cytoplasm</p> <p>C. In prokaryotes both translation and transcription take place in one compartment</p> <p>D. In prokaryotes translation take place in cytoplasm whereas transcription take place in nucleus</p>
20	<p>Give the term for Region in chromatin which are loosely packed and stains lightly</p> <p>A. Heterochromatin</p> <p>B. Euchromatin</p> <p>C. Pseudochromatin</p> <p>D. None of these</p>
21	<p>If the sequence of amino acid coded by an m-RNA is given , we can predict the sequence of nucleotides in the m-RNA . This show's which property the genetic code ?</p> <p>A. Specificity</p> <p>B. Degeneracy</p> <p>C. Triplet nature</p> <p>D. Universal nature of genetic code</p>
22	<p>The base pairs of DNA double helix is given below .Select the suitable mRNAstrand that derived fromtranscription is</p> <p>3'-ATGCATGCAT-5'</p> <p>5'-TACGTACGTA-3'</p> <p>A. 5'-UACGUACGUA-3'</p> <p>B. 3'-UACGUACGUA-5'</p> <p>C. 5'-AUGCAUGCAU-3'</p> <p>D. 3'-AUGCAUGCAU-5'</p>

23	<p>DNA Replication is:</p> <p>A. Continuous and Conservative</p> <p>B. Discontinuous and Semi-conservative</p> <p>C. Semi-discontinuous and Semi-conservative</p> <p>D. Conservative and Semi-discontinuous</p>	
24	<p>What were the main criteria used by Hershey and Chase in their experiment :</p> <p>A. DNA contains phosphorus , protein contains sulfur</p> <p>B. Protein contains phosphorus , DNA contains sulfur</p> <p>C. Both DNA and protein contains phosphorus</p> <p>D. Both DNA and protein contains sulfur</p>	

SECTION - B

Section - B consists of 24 questions (Sl. No.25 to 48). Attempt any 20 questions from this section. The first attempted 20 questions would be evaluated.

	<p>Question No. 25 to 28 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:</p> <p>A. Both A and R are true and R is the correct explanation of A</p> <p>B. Both A and R are true and R is not the correct explanation of A</p> <p>C. A is true but R is false</p> <p>D. A is False but R is true</p>	
25	<p>Assertion: Sharing of injection needles between two individuals is not recommended.</p>	<p>Reason: This transmits STDs like AIDS and Hepatitis from the diseased person to the healthy person.</p>
26	<p>Assertion: Pills are very effective contraceptives with many side effects .</p>	<p>Reason: Pills inhibit ovulation and implantation as well as retard entry of sperms.</p>
27	<p>Assertion: Human male ejaculates about 200-300 million sperms during a coitus</p>	<p>Reason: For normal fertility at least 40 percent sperms must have normal shape and size.</p>

28	<p>Assertion: Pairing and separation of pair of chromosomes would lead to segregation of a pair of factors they carried ..</p> <p>Reason: Two alleles of a gene pair are located on similar sites on non-homologous chromosomes.</p>
29	<p>Given below diagram refers to the T. S. of testis showing seminiferous tubules.</p>  <p>A, B, C, and D in the above figure represent</p> <p>A) A- Sertoli cells, B-Secondary spermatocytes , C-Interstitial cells , D-sperms B) A- Interstitial cells , B- Spermatogonia , C- Sertoli cells , D-Sperms C) A-Sertoli cells , B-Spermatozoa , C-- Interstitial cells , D-Sperms D) A-Sertoli cells, B- Spermatogonia , C- Interstitial cells , D-Sperms</p>
30	<p>256 microspores will form by the meiosis of :</p> <p>A. 512 microspore mother cells B. 128 microspore mother cells C. 64 microspore mother cells D. 48 microspore mother cells</p>
31	<p>Among the following situations , choose the one that prevents autogamy and geitonogamy :</p> <p>A. Monoecious plant bearing unisexual flowers B. Dioecious plant bearing only male or female flowers C. Monoecious plant with bisexual flowers D. Dioecious plant with bisexual flowers</p>

32	<p>Match the hormones in Column I with their functions in Column II :</p> <table border="1" data-bbox="370 338 1406 600"> <thead> <tr> <th data-bbox="370 338 893 380">COLUMN I</th> <th data-bbox="893 338 1406 380">COLUMN II</th> </tr> </thead> <tbody> <tr> <td data-bbox="370 380 893 449">FSH</td> <td data-bbox="893 380 1406 449">Develops female secondary sexual characters</td> </tr> <tr> <td data-bbox="370 449 893 518">LH.</td> <td data-bbox="893 449 1406 518">Prepares endometrium wall for implantation</td> </tr> <tr> <td data-bbox="370 518 893 560">Progesterone</td> <td data-bbox="893 518 1406 560">Development of corpus luteum</td> </tr> <tr> <td data-bbox="370 560 893 600">Oestrogen</td> <td data-bbox="893 560 1406 600">Maturation of Graafian follicle</td> </tr> </tbody> </table> <p data-bbox="342 646 695 835"> A. a)-4 ,b)-3, c)-2 , d)-1 B. a)-1 ,b)-3, c)-2 , d)-4 C. a)-4 ,b)-3 , c)-1 , d)-2 D. a)-3 ,b)-1 , c)-2 , d)-4 </p>	COLUMN I	COLUMN II	FSH	Develops female secondary sexual characters	LH.	Prepares endometrium wall for implantation	Progesterone	Development of corpus luteum	Oestrogen	Maturation of Graafian follicle
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FSH	Develops female secondary sexual characters										
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Oestrogen	Maturation of Graafian follicle										
33	<p>Following statements are given regarding MTP. Choose the correct option given below:</p> <p data-bbox="342 957 1138 1104"> i) MTPs are generally advised during first trimester ii) MTPs are used as a contraceptive method iii) MTPs are always surgical iv) MTPs require the assistance of qualified medical professionals </p> <p data-bbox="342 1115 483 1310"> A. ii and iii B. i and iii C. i and iv D. i and ii </p>										
34	<p>The technique called Gamete Intra Fallopian Transfer (GIFT) is recommended for those females</p> <p data-bbox="342 1472 1068 1619"> A. who cannot produce an ovum B. who cannot retain the fetus inside uterus C. who cannot provide suitable environment for fertilization D. all of these </p>										
35	<p>While planning for an artificial hybridization programme involving date palm , which of the following steps would not be relevant :</p> <p data-bbox="342 1730 716 1877"> A. Bagging of female flower B. Dusting of pollen on stigma C. Emasculation D. Collection of pollen </p>										

36	<p>Frequency of crossing over will be relatively more if</p> <p>A. Distance between two genes is more</p> <p>B. Distance between two genes is less</p> <p>C. Linked genes are more</p> <p>D. Both (b) and (c)</p>
37	<p>What is the probability of a child born to blood group AB mother and blood group O father to have blood group A ?</p> <p>A. 1/2</p> <p>B. 1/4</p> <p>C. 1/8</p> <p>D. 0</p>
38	<p>How many types of genotypes will be produced in the cross AaBb x AaBb ?</p> <p>A. 2</p> <p>B. 9</p> <p>C. 8</p> <p>D. 4</p>
39	<div style="text-align: center;"> <p>The pedigree chart shows the following inheritance pattern:</p> <ul style="list-style-type: none"> Generation I: I-1 (affected male) and I-2 (unaffected female) are parents of II-1, II-2, II-3, and II-4. Generation II: II-1 (affected male) and II-2 (unaffected female) are parents of III-1 and III-2. Generation II: II-3 (unaffected female) and II-4 (unaffected male) are parents of III-3, III-4, and III-5. Generation II: II-5 (unaffected female) is not mated. </div> <p>What is the pattern of inheritance in the above pedigree chart?</p> <p>A. Autosomal dominant</p> <p>B. Autosomal recessive</p> <p>C. Sex -linked dominant</p> <p>D. Sex -linked recessive</p>

40	<p>A male honey bee not has son because :</p> <p>A. The male gametes are not in proper number</p> <p>B. The male gametes are not used to make male off-springs</p> <p>C. The male gametes are yet to be in diploid chromosome number</p> <p>D. The female gamete develop into a male bee directly</p>
41	<p>Organisms phenotypically similar but genotypically dissimilar are due to the phenomenon of :</p> <p>A. Mutations</p> <p>B. Heterozygosity</p> <p>C. Homozygosity</p> <p>D. Monozygosity</p>
42	<p>In DNA double helix , a purine base always paired through hydrogen bonds with pyrimidine base to ensure :</p> <p>A. the antiparallel nature</p> <p>B. the semiconservative nature</p> <p>C. uniform width throughout DNA</p> <p>D. uniform length in a DNA</p>
43	<p>The lac operon of E.coli contains genes involved in lactose metabolism. Its expressed only when lactose is _____ (1) and glucose is _____ (2)</p> <p>A. 1:Present , 2 :Absent</p> <p>B. 1:Absent , 2 : Present</p> <p>C. 1:More , 2 : Less</p> <p>D. 1:Repressed , 2 : Promoted</p>
44	<p>Observe the figure and choose the incorrect:</p> <div data-bbox="609 1360 1101 1711" data-label="Diagram"> </div> <p>A. 23S rRNA catalyse peptide bond formation in prokaryotes.</p> <p>B. UTR present at 3 prime end of mRNA only.</p> <p>C. AUG is start Codon and also code for methionine.</p> <p>D. Protein synthesis starts from 5 prime end of mRNA.</p>

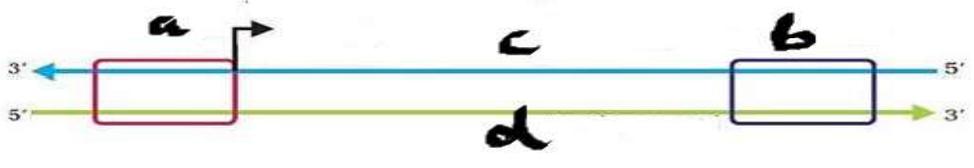
45	<p>Which among the following does not confer stability to the helical structure of DNA ?</p> <p>A. Phosphodiester bond</p> <p>B. H-bond</p> <p>C. N-glycosidic linkage</p> <p>D. All of these</p>
46	<p>Cytidine is a :</p> <p>A. Nucleotide</p> <p>B. Nitrogen base</p> <p>C. Nucleoside</p> <p>D. Common dinucleotide in DNA and RNA</p>
47	<p>Genome of following organisms are sequenced except:</p> <p>A. <i>Drosophila</i></p> <p>B. <i>Arabidopsis</i></p> <p>C. <i>Macaca</i></p> <p>D. <i>Homosapiens</i></p>
48	<p>Observe the following and choose the correct:</p> <div data-bbox="440 1050 1097 1396" data-label="Diagram"> <p>The diagram illustrates the process of transcription. A DNA double helix is shown partially unwinding to form a transcription bubble. Inside the bubble, the DNA strands are separated. RNA polymerase, represented by a blue multi-subunit complex, is moving along the DNA in the direction of transcription, indicated by a red arrow. As it moves, it synthesizes a complementary RNA strand (shown in red) using one of the DNA strands as a template. The RNA strand is being released from the polymerase. Labels include 'DNA', 'RNA', 'RNA polymerase', and 'Direction of transcription'. A note at the bottom of the diagram states 'DNA double helix unwinds partially'.</p> </div> <p>A. RNA polymerase capable of initiating transcription.</p> <p>B. Rho factor helps in initiation.</p> <p>C. Sigma factor helps in termination.</p> <p>D. In Eukaryotes RNA polymerase I transcribe 28S,18S,5.8S rRNA.</p>

SECTION - C

Section-C consists of **one case** followed by 6 questions linked to this case (Q.No.49 to 54). Besides this, 6 more questions are given. Attempt any 10 questions in this section. The first attempted 10 questions would be evaluated.

Case	<p>Study the process of oogenesis represented below :</p> <div style="text-align: center; margin: 20px 0;"> <p style="text-align: center;"> $2n$ Oogonium ↓ C $2n$ Primary oocyte (arrests in prophase I) ↓ D $1n$ Secondary oocyte (arrests in metaphase II) ↓ E $1n$ ↓ Meiosis, fertilization $2n$ Fertilized Egg F $1n$ </p> </div> <p style="margin-left: 100px;"> ↑ A ↓ B Polar body $1n$ </p>
49	<p>F (1n) represents :</p> <ul style="list-style-type: none"> A. Polar nuclei B. Polar body C. Egg cell D. Sperm cell
50	<p>'A' can be correctly labeled as:</p> <ul style="list-style-type: none"> A. After puberty B. Before birth C. During ovulation D. During menstruation

51	<p>Which of the letters (A-E) represents Meiosis</p> <p>A. A B. C C. D D. E</p>
52	<p>During oogenesis each diploid cell produces</p> <p>A. 4 functional eggs B. 2 functional eggs and two polar bodies C. 1 functional egg and 2 polar bodies D. 4 functional polar bodies</p>
53	<p>Which of the following is INCORRECT with regard to the process depicted above :</p> <p>A. The meiotic division of the Oocyte is arrested in its progress in the first prophase stage. B. At the time of birth, all future eggs are in prophase I C. The primary oocyte divides equally. D. The secondary oocyte is released and travels toward the oviduct.</p>
54	<p>Which of the labels can be marked correctly, as ‘Ovulation’</p> <p>A. A B. B C. D D. E</p>

58	<p>Choose the correct labellings of the transcription unit from the given options</p>  <p>A. a- terminator, b- promoter, c- template strand, d-coding strand B. a- promoter, b- terminator, c- template strand, d-coding strand C. a- terminator, b- promoter, c- coding strand, d-template strand D. a- promoter, b- terminator, c- coding strand, d-template strand</p>
59	<p>DNA is genetic material because of following reasons , except :</p> <p>A. It can generate its replica B. It is chemically stable C. It provide scope for slow changes D. It does not follow Mendelian inheritance principle</p>
60	<p>Choose the steps involved in DNA fingerprinting in the correct sequence.</p> <p>(i) Separation of DNA fragments by electrophoresis (ii) Transferring (blotting) of separated DNA fragments to synthetic membranes, such as nitrocellulose or nylon (iii) Digestion of DNA by restriction endonucleases (iv) Detection of hybridised DNA fragments by autoradiography</p> <p>A. ii, i,iv and iii B.i,iii,ii and iv C.iii,i,ii and iv D.iv,i,iii and ii</p>

* * *