

		Diagram-1				
8.	<p>Tubectomy:</p> <ul style="list-style-type: none"> ❖ Tubectomy is the surgical sterilization in women. ❖ In this procedure, a small portion of both fallopian tubes are cut and tied up through a small incision in the abdomen or through vagina. ❖ This prevents fertilization as well as the entry of the egg into the uterus. 	1 1				
9.	<p>Heterogametic Females:</p> <ul style="list-style-type: none"> ❖ In this method of sex determination the females are heterogametic producing dissimilar gametes while males are homogametic producing similar gametes. To avoid confusion with the XX-XO and XX-XY types of sex determination, the alphabets 'Z' and 'W' are used here instead of X and Y respectively. ❖ Heterogametic females are of two types, ZO-ZZ type (eg. Moths, butterflies and domestic chickens) and ZW-ZZ type (eg. Gypsy moth, fishes, reptiles and birds). 	1 1				
10.	<p>Examples for X-linked gene inheritance:</p> <ul style="list-style-type: none"> ❖ Red-green colour blindness or daltonism, haemophilia and Duchenne's muscular dystrophy are examples of X-linked gene inheritance in humans. 	2				
	<p>Section - C III. Answer any 3 questions:</p>	3x3=9				
11.	<p>Hologamy:</p> <ul style="list-style-type: none"> ❖ In lower organisms, sometimes the entire mature organisms do not form gametes but they themselves behave as gametes and the fusion of such mature individuals is known as hologamy. E.g: <i>Trichonympha</i>. 	2 1				
12.	<p>Inhibin and State its functions.</p> <ul style="list-style-type: none"> ❖ Inhibin is a hormone secreted by sertoli cells of seminiferous tubule. ❖ Function : It is involved in the negative feedback control of sperm production 	1 ½ 1 ½				
13.	<p>Differentiate foeticide and infanticide.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Foeticide</th> <th style="width: 50%; text-align: center;">Infanticide</th> </tr> </thead> <tbody> <tr> <td>Female foeticide refers to 'aborting the female in the mother's womb';</td> <td>female infanticide is 'killing the female child after her birth'.</td> </tr> </tbody> </table>	Foeticide	Infanticide	Female foeticide refers to 'aborting the female in the mother's womb';	female infanticide is 'killing the female child after her birth'.	1 ½ +1 ½
Foeticide	Infanticide					
Female foeticide refers to 'aborting the female in the mother's womb';	female infanticide is 'killing the female child after her birth'.					
14.	<p>SRY:</p> <ul style="list-style-type: none"> ❖ SRY stands for sex determining region Y. ❖ It is a gene found in the euchromatin regions of the Non-combining region of Y chromosome. ❖ It codes for testes determining factor (TDF) present in testes of Males. This gene does not occur in X chromosome. 	1 1 1				

15.	<p>Differentiate - Leading strand and lagging strand During DNA replication, One acts as the leading strand and the other is the lagging strand.</p> <table border="1" data-bbox="204 241 1278 663"> <thead> <tr> <th data-bbox="204 241 715 286">Leading Strand</th> <th data-bbox="719 241 1278 286">Lagging Strand</th> </tr> </thead> <tbody> <tr> <td data-bbox="204 286 715 472">1. During DNA replication among the two strands of DNA one strand acts as the template strand in which the replication continuous and called leading strand.</td> <td data-bbox="719 286 1278 472">1. During DNA replication amount the two strands of DNA one strand acts as the coding strand and replication, is discontinuous in this strand known as lagging strand.</td> </tr> <tr> <td data-bbox="204 472 715 551">2. The polarity of this strand is 3→5</td> <td data-bbox="719 472 1278 551">2. The polarity of this strand is 5→3</td> </tr> <tr> <td data-bbox="204 551 715 663">3. No okazaki fragments are formed.</td> <td data-bbox="719 551 1278 663">3. Discontinuous fragments called okazaki fragments are formed which are joined by the enzyme DNA ligase.</td> </tr> </tbody> </table>	Leading Strand	Lagging Strand	1. During DNA replication among the two strands of DNA one strand acts as the template strand in which the replication continuous and called leading strand.	1. During DNA replication amount the two strands of DNA one strand acts as the coding strand and replication, is discontinuous in this strand known as lagging strand.	2. The polarity of this strand is 3→5	2. The polarity of this strand is 5→3	3. No okazaki fragments are formed.	3. Discontinuous fragments called okazaki fragments are formed which are joined by the enzyme DNA ligase.	<p>1</p> <p>1</p> <p>1</p>
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SECTION -D		1x5=5								
IV. Answer the following questions										
16.	<p>Parthenogenesis with its type.</p> <p>Parthenogenesis:</p> <ul style="list-style-type: none"> ❖ Development of an egg into a complete individual without fertilization is known as parthenogenesis. ❖ It was first discovered by Charles Bonnet in 1745. Parthenogenesis is of two main types namely, <ul style="list-style-type: none"> • Natural Parthenogenesis • Artificial Parthenogenesis. <p>Natural Parthenogenesis:</p> <ul style="list-style-type: none"> ❖ In certain animals, parthenogenesis occurs regularly, constantly and naturally in their life cycle and is known as natural parthenogenesis. ❖ Natural parthenogenesis may be of two types, viz., <ul style="list-style-type: none"> • complete parthenogenesis • incomplete parthenogenesis Ⓢ Complete parthenogenesis is the only form of reproduction in certain animals and there is no biparental sexual reproduction. These are no male organisms and so, such individuals are represented by females only. Ⓢ Incomplete parthenogenesis is found in some animals in which both sexual reproduction and parthenogenesis occurs. e.g. In honeybees; fertilized eggs (zygotes) develop into queen and workers, whereas unfertilized eggs develop into drones (male). <p>Paedogenetic parthenogenesis:</p> <ul style="list-style-type: none"> ❖ In paedogenetic parthenogenesis (paedogenesis) the larvae produce a new generation of larvae by parthenogenesis. It occurs in the sporocysts and Redia larvae of liver fluke. It is also seen in the larvae of some insects. e.g. Gall fly. <p>Artificial parthenogenesis:</p> <ul style="list-style-type: none"> ❖ In artificial parthenogenesis, the unfertilized egg (ovum) is induced to develop into a complete individual by physical or chemical stimuli. e.g., Annelid and sea urchin eggs. 	<p>1</p> <p>1</p> <p>1</p> <p>1</p>								

17.	<p>Human genome project is called a mega project:</p> <ul style="list-style-type: none"> ❖ The international human genome project was launched in the year 1990. It was a mega project and took 13 years to complete. ❖ The human genome is about 25 times larger than the genome of any organism sequenced to date and is the first vertebrate genome to be completed. Human genome is said to have approximately 3×10^9 bp. ❖ HGP was closely associated with the rapid development of a new area in biology called bioinformatics. ❖ The methodologies of the Human Genome Project involved two major approaches. One approach was focused on identifying all the genes that are expressed as RNA (ETSS – Expressed Sequence Tags). The other approach was sequence annotation. ❖ Here, sequencing the whole set of genome was taken, that contains all the coding and non-coding sequences and later assigning different regions in the sequences with functions. ❖ These sequences were subsequently annotated and are assigned to each chromosome. ❖ The genetic and physical maps on the genome are assigned using information on polymorphism of restriction endo nuclease recognition sites and some repetitive DNA sequences, called microsatellites. ❖ The latest method of sequencing even longer fragments is by a method called Shotgun sequencing using super computers, which has replaced the traditional sequencing methods. ❖ Scientists have identified about 1.4 million locations where single base DNA differences (SNPs – Single nucleotide polymorphism – pronounce as ‘snips’) occur in humans. Identification of ‘SNIPS’ is helpful in finding chromosomal locations for disease associated sequences and tracing human history. 	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
18.	<p>Reason: The genetic code is universal.</p> <ul style="list-style-type: none"> ❖ The genetic code is universal. ❖ It means that all known living systems use nucleic acids and the same three base codons (triplet codon) direct the synthesis of protein from amino acids. ❖ For example, the mRNA (UUU) codon codes for phenylalanine in all cells of all organisms. ❖ Some exceptions are reported in prokaryotic, mitochondrial and chloroplast genomes. ❖ However similarities are more common than differences. 	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>



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BIO-ZOOLOGY**Marks: 25****5×1=5****I. Choose the correct answer:**

- 1) Parthenogenesis was first discovered by _____.
a) Weismann b) Charles Bonnet c) Abraham Trembley d) Darwin
- 2) The site of embryo implantation is the _____.
a) Uterus b) Peritoneal cavity c) Vagina d) Fallopian tube
- 3) A contraceptive pill prevents ovulation by _____.
a) blocking fallopian tube
b) inhibiting release of FSH and LH
c) stimulating release of FSH and LH
d) causing immediate degeneration of released ovum
- 4) What can be the blood group of offspring when both parents have AB blood group?
a) AB only b) A, B and AB c) A, B, AB and O d) A and B only
- 5) Choose the odd man out with respect to genetic code _____.
a) Marshall Nirenberg b) Severo ochoea
c) Hargobind Khorana d) Wilkins

II. Answer any three of the following:**3×2=6**

- 1) Which type of reproduction is effective - Asexual or Sexual and why?
- 2) Describe the structure of the human ovum with a neat labelled diagram.
- 3) What is called tubectomy?
- 4) What is female heterogamety?
- 5) Give examples for X linked gene inheritance.

III. Answer any three of the following:**3×3=9**

- 1) What is called Hologamy?
- 2) What is inhibin? State its function.
- 3) Differentiate foeticide and infanticide.
- 4) Write about the nature of SRY.
- 5) Differentiate - Leading strand and Lagging strand.

IV. Answer any one of the following:**1×5=5**

- 1) Elaborate the process and types of parthenogenesis.
- 2) Why the human genome project is called a mega project?
- 3) Give reason - Genetic code is universal.
