Zoology
Inside
1marks,2marks,
3marks&5marks

UNIT - I

CHAPTER - 1. REPRODUCTION IN ORGANISMS

ONE MARK

1. Reproduction is the fundamental feature of all living organisms
2. Reproduction is a biological process by which organisms produce their young ones.
3. Reproduction results in continuation of species and introduces variations in organisms
4. Variations are essential for adaptations and evolution of their own kind.
5. Reproduction by a single parent without the involvement of gamete formation is asexual Reproduction
6. Offspring produced by asexual reproduction are genetically identical.
7. Asexual reproduction is also known as Somatogenic or blastogenic reproduction.
8. When two parents participate in the reproductive process involving two types of gametes, it is called sexual Reproduction
9. Asexual Reproduction is common in members of protista, Bacteria, Archaea and in multicellular organisms with relatively simple organisation.
10. The offsprings of asexual reproduction show uniparental inheritance without any genetic variation.

11. Fission is the division of the parent body into two or more identical daughter individuals.

12. Simple binary fission is seen in Amoeba where the plane is division is hard to observe.

13. Transverse binary fission is seen in paramoecium and planaria, where the plane of division is running along the transverse axis of the individual.

14. Longitudinal binary fission is seen in flagellates where the cytoplasm and the nucleus divides in the longitudinal axis of the organisms.

15 Oblique binary fission is seen in dinoflagellates - ceratium where the plane of division is oblique.

16. Multiple repeated division is seen in vorticella.

17. When the multiple fission occurs in the schizont, the process is called schizogony and the daughter individuals are called merozoites.

18. When the multiple fission occurs in the oocyte, it is called sporogony and the daughter individuals are called sporozoites.

19. A special type of transverse fission called strobilation occurs in metazoan animals.

20. plasmotomy is the division of multinucleate daughter individuals with the division of nuclei.

21. plasmotomy occurs in opalina and plasmodium (Giant amoeba).

22 When buds are formed on the outer surface of the parent body, it is known as exogenous budding.

23. Exogenous budding occurs in Hydra.

24. Buds are formed inside the cytoplasm and remain within the body of the parent is said to be endogenous budding.

25 Endogenous budding occurs in Noctiluca

26. The parent body breaks into fragments and each fragment has the potential to develop into new individual. is called fragmentation.

27. Fragmentation is otherwise known as pedal laceration

28 pedal laceration occurs in many genera of sea anemones.

29. In freshwater sponges and in some marine sponges, asexual reproduction occurs by internal buds called gemmules.

30. The primary host of Taenia solium tape worm is Man.

52. The male and female gametes are produced by the same cell or same and both the gametes fuse together to form a zygote organisms is said to be Autogamy

53. Example for autogamy - Actinosphaerium and paramaecium

54 The male and female gametes are produced by different parents and they fuse to form a zygote is said to be exogamy.

55. Example for Exogamy is Human.

56. Entire mature organisms do not form gametes, but they themselves behave as gametes and the fusion of such mature individuals is known as hologamy.

57. The sexual union of young individuals produced immediately after the divisio of the adult parent cell by mitosis is paedogamy.

58. The fusion of small sized and morphologically different gametes is said to be merogamy.

59. The fusion of morphological and physiological identical gametes is called isogamy.

60. Example for isogamy is Monocystis.

61. Fusion of dissimilar gametes is anisogamy

62. Anisogamy occurs in higher animals.

63. Temporary union of the two individuals of the same species is called conjugation

64. conjugation is common in ciliates.-

65 Example for conjugation is paramoecium, vorticella and bacteria.

66. Organisms have 3 phases in their life cycle.

67. period of growth between the birth of the individual upto reproductive maturity is called Juvenile phase/vegetative phase

68. The organisms reproduce and their offsprings reach maturity period is called reproductive phase/maturity phase.

69. Senescent phase begins at the end of reproductive phase when degeneration sets in the structure and functioning of the body.

70. Seasonal breeders reproduce at particular period of time.

71. Example for seasonal breeders - Frog, lizard. birds, deers.

72. Continuous breeders continue to breed throughout their sexual maturity.

73. Example for seasonal breeders - Honey bee, poultry, rabbit.

74. Development of an egg into a complete individual without fertilization is known as parthenogenesis.

75. parthinogenesis was first discovered by Charles Bonnet in 1745.

76. Two types of parthenogenesis are Natural parthenogenesis and Artificial parthenogenesis.

77. If parthenogenesis occurs regularly, constantly and naturally in their life cycle and is known as Natural parthenogenesis.

78. Only males are produced by parthenogenesis said to be Arrhenotoky.

79. Example for Arrhenotoky Honey bee

80. Only females are produced by parthienogenesis is said to be Thelytoky

81. Example for Thelytoky is Solenobia.

82. Egg may develop into individuals of any sex is Amphitoky.

83. Example for Amphitoky is Aphis.

84. Two types of Natural parthenogenesis are complete parthenogenesis and Incomplete parthenogenesis.

85. There is no biparental reproduction and no male organism in complete parthenogenesis

86. Both sexual reproduction and parthenogenesis occurs in incomplete parthenogenesis

87. Example for incomplete parthenogenesis is Honey bees.

88. In honey bees, fertilized eggs develop into queen and workers.

89. In honey bees, unfertilized eggs develop into drones - (males)

90. The larvae produce a new generation of larvae by parthenogenesis in paedogenetic parthenogenesis parthenogenesis

91. paedogenesis occurs in sporocysts and Radia larvae of liver fluke.

92. The unfertilized egg is induced to develop into a complete individual by physical or chemical stimuli in Artificial parthenogenesis

93. Example for artificial parthinogenesis is Annelid and sea urchin eggs.

94. The young hatch from eggs laid outside the mother's body is oviparous.

95. Example for oviparous is Reptiles & birds.

96. The animals give birth to young ones are said to be viviparous,

97. Viviparity is a type of development in which the young ones are born alive after being nourished in the uterus through the placenta.

98. Example for viviparity Mammals.

99. The embryo develops inside the egg and remains in the mother's body until they are ready to hatch is ovoviviparous

100. The embryos have no placental connection with the mother and receive their nourishment from the yolk sac in Oviviparity.

101. Oviviparity is seen in fishes like Shark

102. The viviparous lemon shark gives birth to a young one, which is still attached by its placental cord

103. Development of the whole body of an organism from a small fragment is Regeneration.

2/3 MARKS

1. Define reproduction. 1
2. What is the significance of reproduction? 1
3. Mention the different stages in life cycle of living organisms. 1
4. Write the some basic features of reproduction. 1
5. Define asexual reproduction. 1
6. Define sexual reproduction 1
7. Asexual reproduction is also known as somatogenic or blastogenic reproduction. Why? 1
8. Mention the different modes of asexual reproduction. 2
9. Define fission. 2
10. Mention the different types of fission. 2
11. Define binary fission. 2
12. Mention the different types of binary fission. 2
13. Define simple binary fission. 2
14. Define transverse binary fission. 2
15. Define longitudinal binary fission. 2
16. Define oblique binary fission. 3
17. Define multiple fission 3
18. What is repeated fission? 3
19. What is schizogony? 3

20. What is sporogony? 3
21. What are sporozoites? 3 and Merozoites 4
22. What is encystment? 3
23. What is amoebulae (or) pseudopodiospore?
24. Draw the diagram showing irregular simple binary fission in Amoeba 3
25. Draw the diagram showing longitudinal binary fission in Euglena 3
26. Draw the diagram showing multiple fission in plasmodium 3
27. What is strobilation? 3
28. Draw Multiple fission in encysted Amoeba 4
29. Draw strobilation in Aurelia 4
30. What is plasmotomy? 4
31. What is sporulation? 4
32. What is budding? 4
33. What is exogenous budding? 5
34. What is endogenous budding? 5
35. What is fragmentation? / pedal laceration
36. What is morphallaxis? 6
37. What is epimorphosis? 6
38. What is regeneration? 6
39. What is reparative regeneration? 6
40. What is restorative regeneration? 6
41. What is sexual reproduction? 7
42. What are gemmules? 5
43. What is syngamy? 7

44. What is external fertilization? 7
45. What is internal fertilization? 7
46. What is autogamy? 7
47. What is exogamy? 7
48. What is hologamy? 7
49. What is paedogamy? 7
50. What is merogamy? 7
51. What is isogamy? 7
52. What is anisogamy? 7
53. What is Coryngation? 7
54. Mention the three phases in the life cycle of an organisms. 7
55. What is juvenile phase? / vegetative phase. 7
56. What is reproductive phase / Maturity phase? 7
57. What is Senescent phase? 7
58. What are seasonal breeders? 7
59. What are continuous breeders? 7
60. What is parthenogenesis? 7
61. What is Natural parthenogenesis? 7
62. What is complete parthinogenesis? 8
63. What is incomplete parthinogenesis? 8
64. What is Arrhenotoky? 8
65. What is Thelytoky? 8
66. What is Amphitoky? 8
67. What is paedogenetic parthenogenesis / paedogenesis? 8
68. What is artificial parthenogenesis? 8

69. Depending on the site of development of embryo, how the animals are Classified? 8

70. What are oviparous animals? 8

71. What are viviparous animals? 8

72. What are ovoviviparous animals? 8

73. What is apolysis?

74. Draw the diagram showing apolysis in Taenia Solium

75. Diagrammatically represent Regeneration in Hydra

5 MARK ANIMALS

76 Diagrammatically represent Reparative regeneration in Star fish. 6

77. Draw sporulation in Amoeba 5

78. Draw budding in Leucosolenia (sponge) 5

79. Draw budding in Hydra. 5

80. Draw Gemmule in sponges. 5

5 MARK ANSWERS

1. Explain the types of binary fission with a neat labelled diagram. 2, 3
2. Explain multiple fission in plasmodium. 3
3. Explain multiple fission in Amoeba. 4
4. Explain sporulation in Amoeba. 4, 5
5. Explain the process of budding in Hydra. 4, 5
6. Explain the process of budding in Noctiluca. 5
7. Explain gemmule formation in Sponges. 5
8. Explain the process of fragmentation in Taenia solium in 5.
9. Explain the types of regeneration in animals 6.
10. Describe the different types of Syngamy. 7
11. Describe the different phases of life cycles in organisms 7
12. Describe different types of parthenogenesis 7, 8.
13. Classify the animals based on the site of development of embryo. 8, 9

CHAPTER - 2 HUMAN REPRODUCTION

ONE MARK ANSWER

1. Every organ system in the human body works continuously to maintain Homeostasis for the survival of the individual.
2. _____ is inevitable for the existence of a species.
3. Gametogenesis is the formation of gametes by spermatogenesis and oogenesis
4. Transfer of sperms by the male into the female genital tract is Insemination.
5. Fertilization is the fusion of male and female gametes to form zygote.
6. Rapid mitotic divisions of the zygote which convert the single celled zygote into a multicellular structure called blastula is cleavage.
7. Implantation is the attachment of blastocyst to the uterine wall.
8. Gastrulation is a process by which blastocyst is changed into a gastrula with three primary germ layers.
9. Expulsion of the foetus from the mother's womb is parturition.

10. The primary Reproductive organs are testes and ovary

11. Testis produces Sperm.

12 ovary produces ovum

13. Hormones secreted by the pituitary and gonads help in the development of the secondary sexual characteristics.

14. The accessory organs help in transport and to sustain the gametes and to nurture the developing embryo.

15. Testes are the primary male sex organs.

16. The scrotum acts as a thermoregulator for spermatogenesis.

17. Testes is covered by outermost layer called tunica albuginea

18. Tunica albuginea is divided by septa into about 200-250 lobules.

19. Seminiferous tubule is made of two types of cells sertoli cells or nurse cells and spermatogonic cells or male germ cells.

20. Sertoli cells secretes a hormone called inhibitin.

21 Inhibitin is involved in the negative feedback control of sperm production.

22. Leydig cells or Interstitial cells secrete androgens namely testosterone.

23. Testosterone initiates the process of Spermatogenesis.

24. The epididymis is single coiled tube that temporarily stores the Spermatozoa.

25. The epididymis leads to the Vas deferens.

26. The Urethra is the terminal portion of the male reproductive system.

27 The Urethra originates from the Urinary bladder

28. The Urethra extends through the penis by an external opening called Urethral meatus.

29. The Seminal Vesicles secrete an alkaline fluid called Seminal plasma

30. Seminal plasma contains coagulating enzyme called Vesiculase which enhances Sperm motility.

31. prostate gland secretes acidic fluid. Contains citrate, enzymes and prostate Specific antigens.

2. Seminal fluid is a milky white fluid which contains sperms.

3. Seminal fluid act as a transport medium, provides nutrients, contains chemicals, facilitate their movement.

4. The penis is the male external genitalia functioning as a copulatory organ.

35. The enlarged end of the penis called glans penis is covered by a loose fold of skin called foreskin or prepuce.

36. ovaries are the primary female sex organs produce female gamete ovum.

37. Innermost layer of ovaries are tunica albuginea.

38 The ovary remains attached to the pelvic wall and the uterus by an ovarian ligament called mesoovarium

39. The proximal part of the fallopian tube bears funnel shaped infundibulum

40. The edges of the infundibulum has many finger like projections called fimbriae.

41 The infundibulum leads to a wider central portion called ampulla

42. The last part of the oviduct is the isthmus

43. Isthmus is short and thick walled connecting the ampulla and infundibulum to the uterus.

44. The major portion of the uterus is the body

45. The rounded region superior to uterus is the fundus.

46. The uterus opens into the vagina through a narrow cervix.

47. The outermost layer of the uterus is perimetrium.

48. The middle thick muscular layer called myometrium.

49. The inner glandular layer is called endometrium.

50 The endometrium undergoes cyclic changes during the menstrual cycle.

51 Myometrium exhibits strong contractions during parturition.

52 Vagina is a large fibromuscular tube, extends from cervix to the exterior.

53. Vagina is a female organ of copulation.

54. Bartholins glands are located posterior to the left and right of the opening of the vagina.

55. Bartholin's glands are also called greater vestibular glands.

56. The Skene's glands are located on the anterior wall of the vagina

57. The external opening of the vagina is parially closed by a thin ring of tissue called the hymen.

58. The hymen is often torn during the first coitus.

59. The mammary glands are modified sweat glands present in both sexes.

60. Mammary glands are rudimentary in the males and functional in the females

61. The pigmented area around the nipple is areola

62. Mammary glands coorsists of 2-25 lobes.

63. The lobes of mammary glands contains acini or alveoli.

64. The alveoli opens into mammary tubule
65. The mammary tubules opens into mammary duct.
66. The several mammary ducts join to form a wider mammary ampulla.
67. Mammary ampulla connected to Lactiferous duct in the nipple.
68. Under the nipple, each lactiferous expands to form Lactiferous sinus
69. Lactiferous sinus serves as a reservoir of milk.
70. Normal development of the breast begins at puberty.
71. Gametogenesis is the process of formation of gametes.
72. Meiosis plays the most significant role in the process of gametogenesis.
73. primary Spermatocytes undergo First meiotic to form secondary Spermatocytes.
74. Secondary Spermatocytes undergo Second meiotic division to form Spermatids.
75. Spermatids are transformed into mature spermatozoa by the process Spermiogenesis

76. Sperms are finally released into the cavity of seminiferous tubules by a process called Spermiation.

77. The whole process of spermatogenesis takes place about 64 days.

78 The sperm production remain nearly constant at a rate of about 200 million sperms per day.

79. Spermatogenesis starts at the age of puberty

80. Spermatogenesis is initiated due to the increase in the release of Gonadotropin Releasing Hormone by the hypothalamus.

81 GnRH stimulates the secretion of two gonadotropins namely FSH and LH

82 FSH stimulates testicular growth and enhances the production of ABP. Androgen Binding protein.

83 LH acts on the leydig cells and stimulates the synthesis of testosterone

84 Testosterone stimulates the process of Spermatogenesis.

85. Acrosome is a small cap like pointed structure present at the tip of the nucleus of sperm.

86. Spermatids contains hyaluronidase a proteolytic enzyme popularly known as Sperm lysin

87. The middle piece possesses mitochondria spirally twisted around the axial filament called mitochondrial Spiral or nebenkern.

88. Tail of sperm is formed of a central axial filament called axoneme.

89. The human male ejaculates about 200 — 300 million sperms

90. Oogenesis is the process of development of the female gamete.

91. No more oogonia are formed or added after birth.

92. The oogonial cells start dividing and enter into prophase I of meiotic division I to form primary oocytes.

93. A large number of follicles degenerate during the period from birth to puberty.

94. At puberty only 60,000 - 80,000 follicles are left in each ovary.

95. The sperm is the smallest human cell and the ovum or egg cell is the largest human cell.

96. Out of the million eggs women possess during birth, only about 300 - 400 will ovulate before menopause.

97. Males produce more than 500 billion sperms in their life time.

98. At the end of gametogenesis in females each primary oocyte give rise to only one haploid ovum

99. Human ovum is non-cleidoic, alecithal.

100. The cytoplasm of ovum is ooplasm.

101. The ovum is surrounded by inner thin transparent vitelline membrane

102. Middle thick membrane called zona pellucida

103. Outer thick coat of follicular cells called corona radiata.

104. Between the vitelline membrane and zona pellucida perivitelline space is present.

105. Ovarian cycle or menstrual cycle occurs once in every 28/29 days

106. cyclic menstruation is an indicate of normal reproductive phase.

107 Absence of menstration may be a indicator of pregrancy

108. Follicular phase extends from the 5th day of the cycle.

109. Follicular phase is induced by FSH and LH

110. LH and FSH attain peak level in the middle of Ovulatory phase.

111 Ovulatory phase starts at 14th day

112. Release of ovum from graafian follicle is Ovulation

113 Empty graafian follicle is transformed into a transitory endocrine gland called corpus luteum.

114 Corpus luteum secretes progesterone

115 progesterone is essential for maintenance of the endometrium.

116. Luteal phase is also known as secretory phase.

117. In the absence of fertilisation, the corpus luteum degenerates completely and leaves a scar tissue corpus albicans.

118. Absence of menstruation is called amenorrhoea.

119. If menarche does not appear till the age of 18, it is called primary amenorrhoea.

120. polymenorrhoea is a term used to describe a menstrual cycle that is shorter than 21 days.

121 Example for STD Chlamydiasis / Gonorrhoea.

122. pain associated with menstruation is called dysmenorrhoea.

123 pain, or cramps in the uterus is caused primary dysmenorrhoea.

124 Endometriosis or uterine fibroids occur in secondary dysmenorrhoea.

125. Heavy and prolonged menstrual period that disrupts a woman's normal activities is referred menorrhagia

126. Oligomenorrhoea is a condition with infrequent menstrual periods.

127. Oligomenorrhoea occurs in women of childbearing age.

128. Women who regularly goes more than 35 days without menstruating may be diagnosed with oligomenorrhoea.

129. Menopause is the phase in a women's life when ovulation and menstruation stops.

130. The average age of menopause is 45 - 50 years.

131. Menopause indicates the permanent cessation of the primary functions of the ovaries.

132. Menopause is the phase in a womens life when ovulation and menstruation stops.

133. The average age of menopause is 45 - 50 years

134. Fertilisation occurs when a haploid sperm fuses with a haploid ovum to form a fertilized egg or diploid zygote.

135. The sperms deposited in the female reproductive tract undergo capacitation which is a biochemical event.

136. The follicular cells are held together by an adhesive cementing substance called hyaluronic acid.

137. The acrosomal membrane disintegrates releasing the proteolytic enzyme, hyaluronidase during sperm entry through

138. Fertilisation membrane around the ovum prevents the entry of other sperms into the fertilised ovum.

139. The first cleavage produces two identical cells called Blastomeres

140. After 72 hours of fertilisation, a loose collection of cells forms a berry shaped cluster of 16 or more cells called the Morula

141. The dividing embryo takes 4-5 days to move through the fallopian tube into uterine cavity.

142. The embryo consists of a fluid filled hollow ball of about 100 cells called the blastocyst.

143. The blastocyst is composed of a single layer of large flattened cells called trophoblast

144. The blastocyst is composed of a small cluster of 20-30 rounded cells called the inner cell mass.

145. The inner cell mass of a blastocyst develops into the embryo. ~~and~~

146. The embryo embedded in the endometrium of the uterus is called Implantation.

147. Implantation results in pregnancy.

148. If the fertilised ovum is implanted Outside the uterus is called ectopic pregnancy

149. Monozygotic twins are produced when a single fertilised egg splits into two during the first clearage.

150. Monozygotic twins are ~~produced~~ of the same sex, look alike and share the same genes.

151. Dizygotic twins are produced when two separate eggs are fertilised by two separate eggs, are fertilised by two separate sperms.

152 Dizygotic twins are produced when two separate eggs are may be of the same sex or different sex and are non-identical.

153, Siamese twins are the conjoined twins who are joined during birth.

154 PCOS is a complex endocrine system

155, Excessive facial or body hair growth is hirsutism.

156. The inner cell mass in the blastula is differentiated into epiblast and hypoblast

157 The hypoblast is the embryonic endoderm

158. The cells remaining inbetween epiblast and endoderm form the mesoderm.

159. The extra embryonic membranes are amnion, yolk sac, allantois and chorion.

160. The extra embryonic membrane protect the embryo from dessication, mechanical shock, helps in the absorption of nutrients and exchanges of gases.

161. The amnion provides a buoyant environment to protect the developing embryo from injury.

162. The yolk sac forms a part of the gut and is the source of the earliest blood cells and blood vessels.

163. The allantois is the structural base

164. The chorion is the outermost membrane which encloses the embryo.

165. The trophoblast cells in the blastocyst send out several finger like projections called chorionic villi

167. Chorionic villi carrying foetal blood.

168. The chorionic villi and the uterine tissue form the disc shaped placenta

169. Placenta is a temporary endocrine organ formed during pregnancy

170. Placenta connects the foetus to the uterine wall through the umbilical cord.

191. The embryo's heart develops during the fourth week

172. Primary germ layers serve as the primitive tissues from which all body organs develop.

173. Human pregnancy lasts for about 280 days or 40 weeks and is called the gestation period.

174 The first trimester is the main period of organogenesis.

175. Face of the foetus is well formed with features at the end of the Second trimester

176. The foetus is (well formed) fully developed and is ready for delivery by the end of nine month - Third trimester

177 Relaxin helps in relaxation of the pelvic ligaments at the time of parturition.

178. The female uterus is about 3 inches long and 2 inches wide.

179. Parturition is the completion of pregnancy and giving birth to the baby.

180. The series of events that expels the infant from the uterus is collectively called labour.

181 Throughout the pregnancy the uterus undergoes strong contractions called Braxton - Hicks contractions. Leads to false labour.

182. The descent of the foetus causes dilation of cervix of the uterus and vaginal canal resulting in neurohormonal reflex called Foetal ejection reflex or Ferguson reflex

183. Lactation is the production of milk by mammary glands.

184. The anterior pituitary responds by secreting prolactin which plays a major role in lactogenesis.

185. Oxytocin causes the Let Down reflex the actual ejection of milk from the alveoli of the mammary gland.

186. The mammary glands secrete a yellowish fluid called colostrum during the initial few days after parturition.

187. colustrum is rich in IgA antibodies.

189. Ig_A antibodies help to protect the infants digestive tract against bacterial infection.

190. Breast milk is the ideal food for infants.

191. Breast milk is fully sufficient till about 6 months of age.

92. Colostrum acts as a natural antimicrobial agent to actively stimulate the maturation of the infants immune system.

93. WABA means World Alliance for Breast feeding Action.

94 WBW means World Breast feeding week - Agust 1st week

95 UNICEF - United Nations International Childrens Emergency Fund.

96 Males are said to Sterile when they fail to produce viable sperms.

97 Entire development of human foetus takes about 280 days (or) 40 weeks

3 MARK QUESTIONS

1. Write the main functions of reproductive system.
2. Mention the major reproductive events in human beings.
3. Define the term- Gametogenesis
4. " " " - Insemination
5. " " " - Fertilisation
6. " " " - cleavage
7. " " " - Implantation
8. " " " - placentation
9. " " " - Gastrulation
10. " " " - organogenesis
11. " " " - parturition
12. How the scrotum act as a Thermoregulator for spermatogenesis?
13. Write the functions of sertoli cells.
14. What is the role of inhibitin?
15. Name the accessory ducts associated with the male reproductive system.
16. Mention the accessory glands of the male reproductive system.
17. What is semen?
18. What is mesovarium?
19. What is infundibulum?
    What is fimbriae?

21 What is ampulla?
22. What is fundus?
23 " " perimetrium?
24 " " myometrium?
25 " " endometrium?
26 Mention the parts of external genitalia
27. What are Bartholin's glands?
28. What is Skene's glands?
29. What is areola?
30 Define Gametogenesis
31 " Spermatogenesis
32 " Oogenesis
33. What is Spermiation?
34 " " Spermiogenesis?
35 Draw the process of spermatogenesis
36 Draw the process of oogenesis.
37. What is axoneme?
38. Draw the structure of human sperm?
39. " " enlarged form of seminiferous tubules.
40. Draw the cross sectional view of seminiferous tubules.
41. Draw the diagrammatic view of female reproductive system.
42. Draw the diagram of Female pelvis showing reproductive system.
43. Draw the male reproductive system.

34. Draw the diagrammatic view of the male reproductive system.
35. Draw the testis showing inner detail
36. Draw the sectional view of the ovary.
37. Draw the diagrammatic view of the human ovum.
38. Draw the different phases of the menstrual cycle.
41. Mention the layers which covers the ovum.
42. Mention the different phases of Menstrual cycle.
43. what happens in menstrual phase?
44. What happens in Follicular/proliferative phase?
45 What happens in Luteal/Secretory phase?
46. Why luteal phase is also known as Secretory phase?
47. What is corpus albicans?
48. What is PCOS? POLY CYSTIC OVARY SYNDROME
49. What is amenorrhoea?
50 " " primary amenorrhoea?
51 " " Secondary amenorrhoea?
52. What is polymenorrhoea?
What is dysmenorrhoea?

54. What is primary dysmenorrhoea?
55. " " Secondary " ?
56. What is menorrhagia?
57. What is oligomenorrhoea?
58. What is Menopause?
59. What is fertilization?
60. What is capacitation?
61. Mention the layers of ovum.
62. What are blastomeres?
63. How is polyspermy prevented?
64. What are trophoblast?
65. What is implantation?
66. What is ectopic pregnancy?
67. What is Monozygotic twin?
68. What is Dizygotic twin?
69. " " Siamese twin?
70. What is placenta?
71. Mention the extra embryonic membrane.
72. Mention the ectodermal derivatives?
73. " " Endodermal "
74. " Mesodermal "
75. What is Gestation?
76. Mention the organs developed during 1st trimester
77. " " " " " 2nd "
78. " " " " " 3rd "
79. Mention the hormones secreted by placenta during pregnancy.

80. what is parturition?

81. what is the function of relaxin?

82. what is lactation?

83. what is "let Down" reflex?

84 what is the role of prolactin? From which part it is secreted?

85. what is colostrum?

86. Expand WBKl.

87 " WABA

88 " UNICEF

CHAPTER: 2 - 5 MARK

1. Write the Major Reproductive events.
2. Explain the structure of male reproductive system.
3. Explain the structure of female reproductive system.
4. explain the process of spermatogenesis
5. Explain the process of Oogenesis.
6. Explain the structure of human sperm with a neat labelled sketch.
7. Explain the structure of human ovum with a neat labelled sketch.
8. Explain the different phases of Menstrual cycle.
9. Explain the events taken place in fertilization.
10. explain how the pregnancy is maintained and explain how embryonic development takes place.
11. Write a note on parturition
12. write a note on Lactation.
13. Explain the role of hormones in parturition.
14. Explain the role of hormones in Lactation.

CHAPTER-3. REPRODUCTIVE HEALTH

ONE MARK

1. India's infant mortality rate was 44 per 1000 live
2. Amniocentesis is a prenatal technique used to detect any chromosomal abnormalities in the foetus.
3. Killing the female child after her birth is infanticide.
4. Aborting the female in the mother's womb is Female foeticide.
5. PCPNDT ACT - preconception and prenatal diagnostic technique ACT 1994
6. POCSO ACT - prevention of children from sexual offences.
7. Sexual harassment at workplace - prevention, prohibition and redressal,
8. Oldest family planning method is coitus interruption.
9. Menstrual cycles resume as early as 6-8 weeks from parturition.
10. Ovulation occurs at about 14th day
11. Simplest and most reliable way to avoid pregnancy is continuous abstinence.

12. Delay in ovarian cycle during breast feeding is lactational amenorrhoea.

13. Condoms are made of polyurethane latex and lambskin.

14. The contraceptive pill prepared by central Drug Research Institute was Sahali.

15. India contains a non-steroid preparation called centchroman.

16. Tubectomy is the surgical procedure for female sterilisation.

17 Vasectomy is the surgical procedure for male sterilisation.

18. Early medical termination is extremely safe upto 12 weeks of pregnancy.

19. Government of India legalized MTP in 1971.

20. According to World Health organisation 2017, more than one million people globally acquires sexually transmitted infections.

21 million people living with HIV.

2

2. TNHSP does free screening for Cervical and breast cancer.

3. Gonorrhoea - bacterial disease caused by Neisseria gonorrhoea. Incubation period - 2-5 days.

4. Syphilis - bacterial disease caused by Treponema palladium. - Incubation period 10-90 days.

5. Chlamydiasis caused by bacteria, Chlamydia trachomatis Incubation period 2-3 weeks or upto 6 weeks

6. Lymphogranuloma venereum caused by bacteria chlamydia trachomatis Incubation period - 2-3 weeks upto 6 week

7. Genital Herps caused by virus Herpes Simplex virus, - 2-21 days Incubation time

8. Genital Warts - caused by Human papilloma Virus. Incubation time 2-21 days.

9. Hepatitis B - caused by HBV - 30-80 days

10. AIDS - HIV - 2-6 weeks or even more than 10 yrs

11. Candidiasis - Fungal disease caused by candida albicans.

12. Trichomoniasis caused by Trichomonas vaginalis 4-28 days

23. Azoospermia is the absence of spermatozoa in the ejaculate semen on atleast two occasions.

24. World AIDS DAY - 1st December

25. World population Day - 11th July

26. NACO is established in 1992

27. International diseases are Syphilis and Gonorrhoea

28. Sex hormones were discovered by Adolf Butenandt.

29. Antisterility vitamin is Vit. K

30. The Average foetal heart beat rate is bet 120 and 160 beats per minute.

31. CVS is a prenatal test that involves taking a sample of the placental tissue to test for chromosomal abnormalities.

31. Foetoscope is used to monitor the foetal heart rate and other functions during late pregnancy and labour.

2

2. Amniocentesis is generally performed between 15th and 20th weeks of pregnancy.

3. In IUT, Embryo with more than 8 blastomeres is inserted into uterus to complete its further development.

4.

2

3 MARK

Mention some of the health care programmes ? 35

Differentiate foeticide and infanticide 35

What is amniocentesis ? 35

What is periodic abstinence ? 36

What is continuous abstinence ? 36

Mention the chemical agents in the chemical barrier method. 36

Write a note on MTP. 37

Write the preventive measures of STD. 38

What is TNHSP. 38

Write a note on IUI ? 41

" " " " IVF ? 41

What is infertility ? - 40

What is ART ? - 41

What is cryopreservation ? - 41

What is ZIFT ? 41

" " GIFT ? - 41

" " IUT ? - 42

" " Surrogacy ? - 42

5 MARK. CHAPTER : 3.

1. Write about the major tasks carried out by RCH programmes.
2. Mention some of the Health care programmes.
3. Explain about birth control methods -
   a. Barrier methods
   b. Natural Methods
   c. permanent birth control methods.
4. Write about sexually transmitted diseases
   a. Bacterial diseases
   b. protozoan diseases
   c. Fungal diseases
   d. Viral diseases.
5. Explain the causes of infertility.
6. Write notes on Assisted Reproductive Technology.
7. How will you detect foetal disorders during early pregnancy.
8. Write a note on cervical Cancer.
9. Write the procedures for Breast self examination and early diagnosis of cancer.

UNIT - II

CHAPTER - 4

ONE MARK

1. Branch of biology deals with the study of heredity and variation is called Genetics.
2. A variation is the degree by which the progeny differs from their parents.
3. The unit of heredity is known as the gene.
4. Gene is the inherited factor that determines the biological factor/ character of an organism.
5. The betterment of human race can be achieved by methods like eugenics eutherics and euphenics.
6. When more alleles of a gene control particular trait occupy the same locus on the homologous chromosomes of an organism, they are called multiple alleles and their inheritance is called as multiple allelism.

7. Multiple allelism occurs in human in the inheritance of different types of blood groups.

8. The rarest blood group AB was discovered in 1902 by the students of Landsteiner, Von De Castelle and Sturli.

9. Bernstein in 1925 discovered that inheritance of different blood groups in human beings is determined by a number of multiple allele series.

10. The three autosomal alleles located on chromosome 9 are concerned with the determination of blood groups in any person.

11. The new world monkey Platyrrhina

12. The secretors can be detected in tears, saliva, urine, semen, gastric juice and in the milk of animals.

Rh antigen is found on the surface of erythrocytes.

Rh factor was discovered in 1940 by Karl Landsteiner and Alexander Wiener in the blood of Rhesus monkey.

The term Rh factor refers to immunogenic D antigen of the Rh blood group system.

The individual having D antigen are RhD positive (Rh^+)

The individual without D antigen are RhD Negative (Rh^-).

Universal donar blood group is O group

Universal recipient blood group is AB group

Co-dominant blood group is AB

From $A\hat{B}$ parental combination, the possible progeny are A, B, AB & O.

From $I^A I^O \times I^A I^B$ parental combination the possible progeny are O

AB x AB combination gives the progeny A, B, AB.

24 Wiener proposed the existence of eight alleles at a single Rh locus.

25 Rh incompatability has great significance in child birth.

26. The condition of haemolysis of foetal RBC resulting in haemolytic jaundice and anaemia is Erythroblastosis foetalis (or) Haemolytic disease of the new born (HDN).

27. The method by which the distinction between male and female is established in a species is said to be Sex determination.

28 The chromosome determines the sex of the individual is Sex chromosome

29. The chromosomes other than the sex chromosomes of an individual are called Autosomes.

30. If sex chromosomes are similar, it is homomorphic.

31. If sex chromosomes are dissimilar, it is heteromorphic.

32. Individuals having homomorphic sex chromosome produce only one type of gametes called as homogametic.

33 Heteromorphic individuals produce two types of gametes called as heterogametic.

34. The size of the human Y chromosome is 60 Mb in size, with 60 functional genes.

35 X Chromosomes are 165 Mb in size with about 1000 genes.

36. The sex of the offspring is determined at the time of fertilization.

37. XX-XO type of sex determination is seen in bugs, some insects like cockroaches and grasshoppers.

38. XX-XY type of sex determination is seen in human beings and in Drosophila.

39. ZO-ZZ Type of sex determination is seen in certain moths, butterflies and domestic chicken.

40. ZW-ZZ type of sex determination occurs in gypsy moth and in vertebrates such as fishes, reptiles and birds.

41. Genes determining sex in human being are located on two sex chromosomes called allosomes.

42. A gene called Sex determining region Y (SRY) are present within the euchromatin regions.

47 The gene product of SRY is present in its adult male

48 Genic balance mechanisms of sex determination in Drosophila was first studied by C. B. Bridges

49. The sex of an individual is determined by ratio of its X chromosomes to that of its autosomes is termed as Sex Index.

50. Sex Index = $\frac{\text{Number of X chromosome}}{\text{Number of Sets of Autosomes}}$ X

51. X chromosome was discovered by Henking (1891)

52. Y chromosome was discovered by Stevens (1902).

53 The Individuals have parts of their body expressing male characters and other parts of the body expressing female characters are said to be Gynandromorphs.

54. Barr body was first discovered by Barr and Bertram.

55 XO Female have no Barr body
XXY males have one Barr body

56. The number of Barr bodies follows N-1 rule.

57. The Hymenopteran insects are honey bees, ants and wasps.

58 Haplodiploidy mechanism is seen in Honey bees, ants and wasps.

59. The Queen constructs the social environment by releasing hormone that suppresses fertility of the workers.

60. The genes present in the different regions of Y chromosomes are called Y linked genes or holandric genes.

61. Sex linked inherited traits are more common in Males than females.

61 The X-linked and Y-linked genes in the different regions do not undergo pairing or crossing over during meiosis.

62. The inheritance of X or Y linked genes is called sex-linked inheritance.

63. Haemophilia is commonly known as bleeder's disease.

64. Haemophilia is more common in men than women.

65. A person with a recessive gene for Haemophilia lacks a normal clotting substance thromboplastin in blood.

66. Haemophilia is a heriditory disease was first reported by John Cotto in 1803.

67 Females are the carriers of the disease Haemophilia.

68 Haemophilia follows the characteristic criss-cross pattern of inheritance.

69 Karyotyping is a technique through which a complete set of chromosomes is separated from a cell and the chromosomes are arranged in pairs.

70 An Idiogram refers to a diagramatic representation of chromosomes.

71 Pedigree is a family tree drawn with standard genetic symbols, showing the inheritance pathway for specific phenotypic characters.

72 Alteration or mutation in a single gene causes Mendelian disorders.

73. Thalassemia is an autosomal recessive disorder.

74 Beta thalassemia is controlled by a single gene on chromosome 11

75 Beta thalassemia is also known as Cooley's anaemia

76. Phenylketonuria is an inborn error of Phenylalanine

77. Phenylketonuria is caused due to mutation in the gene PAH located on chromosome 12.

78 In phenylketonuria phenylpyruvic acid is excreted in the urine.

79 Albinism is an inborn error of metabolism.

80 Pigment melanin is responsible for skin colour.

81. For conversion of dihydroxy phenyl alanine, the enzyme tyrosinase is required.

82. Huntington's Chorea is caused due the autosomal dominant lethal gene.

83. Trisomic condition of chromosome 21 results in Down's Syndrome.

84. Trisomic condition of chromosome 13 results in patau's Syndrome

85 The genetic disorder due to the presence of an additional copy of X chromosome is Klinefelter's Syndrome.

86. The genetic disorder, due to the loss of X-chromosome is Turner's Syndrome.

87. cytoplasmic inheritance in animals can be studied in Shell coiling in Limnaea and Kappa particles in paramecium.

8 Limnaea peregra is a freshwater snail

9. Application of the laws of genetics for the improvement of human race is called Eugenics.

0 The Term Eugenics was coined by Francis Galton in 1885.

1 The symptomatic treatment of disease of man is called Eupheneics

2 The Science of improvement of human race by improving environmental conditions is called Euthenics.

3. Klinfelter's syndrom is characterised by a karyotype of XXY

4. Founder of Modern Eugenics movement is Francis Galton.

5. Improvement of human race by encouraging the healthy persons to marry early and produce large number of children is called positive eugenics.

96. In ~~human~~ ABO blood groups is controlled by multiple factors

97. XO type of sex determination and XY type of sex determination examples of male heterogamy

98. In an accident there is great loss of blood and there is no time to analyse the blood group, which blood can be safely transfused

99. Mongolism is a genetic disease which is caused by the presence of an extra chromosome number 21.

100. Father of a child is colourblind and Mother is carrier for colourblindness, the probability of the child being colourblind is 50%

101. A marriage between a colourblind man and a normal woman produces all carrier daughters and Normal sons.

102.

4. PRINCIPLES OF INHERITANCE AND VARIATION
5. MOLECULAR GENETICS

WHO AM I ?

I discovered two kinds of antigens called antigen 'A' and antigen 'B' on the surface of RBCs of human blood -
(Karl Landsteiner)

I discovered that the inheritance of different blood groups in human beings is determined by a number of multiple allelic series.
(Bernstein in 1925)

We discovered Rh factor in the blood of rhesus monkey.
(Karl Landsteiner and Alexander) (1940)

I proposed the existence of eight alleles at a single Rh locus.
(wiener)

I first studied the Gienic balance mechanism of sex determination in Drosophila.
C.B. Bridges.

We first observed a condensed body in the nerve cells of female..
Barr and Bertram (1949)

7. I suggested that Barr bodies represented an inactive chromosome.
(Mary Lyon)

8. I first reported the heriditary disease Haemophilia which is commonly known as bleeder's disease.
(John Cotto (1803))

9. We described a simple method of culturing lymphocytes from the human blood.
(Tjio and Levan (1960))

10 I and my associates reported the transmission of the cytoplasmic kappa particles in paramoecium aurelia
(Sonneborn)

11. I coined the term Eugenics.
(Francis Galton (1885))

12. I coined the term Euphenics
(Joshua Lederberg (1960))

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