1. The part of fallopian tube closest to the ovary is

   a) Isthmus b) Infundibulum c) Cervix d) Ampulla

2. Human male ejaculates …A… to …B… million sperm. Atleast …C… should have normal shape and size and …D… should show vigorous motility. Here A,B, C and D refers to

   a) A-100, B-200, C-30%, D-40% b) A-200, B-300, C-60%, D-40%

   c) A-300, B-400, C-60%, D-40% d) A-400, B-500, C-60%, D-40%

3. Acrosome secretes

   a) Hyaluronic acid b) Hyaluronidase c) TSH d) Fertilizin

4. Find out the spermatogonium and spermatozoa in above figure

   a) A and F b) C and D c) F and A d) D and E

5. Second meiotic division in ovum leads to the formation of

   a) Haploid ovum b) Second polar body c) Tertiary polar body d) Both (a) and (b)

6. In implantation the blastocyst attached to the …… wall of uterus

   a) Endometrium b) Myometrium c) Perimetrium d) Mesoderm

7. Which of the following groups of cell in the male gonad, represent haploid cells?

   a) Spermatogonial cells b) Germinal epithelial cells

   c) Secondary spermatocytes d) Primary spermatocytes

8. Parturition is

   a) Child birth

   b) Expulsion of the baby from uterus

   c) Both (a) and (b)

   d) None of the above

9. Several mammary ducts joins to form a wider mammary ampulla, which is connected to

   a) Lactiferous duct b) Seminiferous duct c) Seminiferous tubules d) Lactiferous canal

10. External opening of penis is called

    a) Ureter b) Urinary bladder c) Urethral meatus d) Prepuce

11. Insemination is

    a) A sperm injection to increase male fertility b) A cure of male infertility

    c) Inability of male to produce sperms d) The transfer of sperms by male in to the genital tract of female

12. Sertoli's cells are found

    a) Between these seminiferous tubules b) In the germinal epithelium of ovary

    c) In the upper part of the fallopian tube d) In the germinal epithelium of the seminiferous tubules

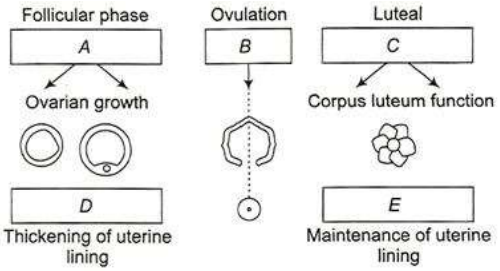
13. The maximum growth rate occurs in

    a) Stationary phase b) Senescence phase c) Lag phase d) Exponential phase

14. Heart is formed is embryo during …… of development

a) 15 days b) One months c) 1.5 months d) 2 months

15. The figure given below illustrates the changes taking place during the human menstruation cycle



Identify hormones A, B, C, D and E from the figures

In the boxes shown in the figure write the name of the hormone (or hormones) controlling the stage in the human menstrual cycle

a) A-FSH, B-LH, C-LH, D-Oestrogen, E-Progesterone

b) A- LH, B- FSH, C-LH, D-Oestrogen, E-Progesterone

c) A-FSH, B-LH, C- FSH, D-Oestrogen, E-Progesterone

d) A-FSH, B-LH, C-LH, D- Progesterone, E- Oestrogen

16. Organogenesis is the formation of

a) Organs b) Tissue c) Ova d) Spinal cord

17. …A… is composed of endoderm inside and splanchonopleuric extraembryonic mesoderm outside. In humans it is small and non-functional except for …B… to placenta. A and B in the statement refers to

a) A-Allantois; B-blood vessel b) A- Blood vessel; B- allantois

c) A-Amnion; B-amniotic cavity d) A-Endoderm; B-ectoderm

18. *In vitro fertilization* is a technique that involves transfer of which one of the following into the fallopian tube?

a) Embryo only, upto 8 celled stage

b) Either zygote or early embryo upto 8 celled stage

c) embryo of32celled stage

d) Zygote only

19. What happens during the follicular phase of menstrual cycle?

a) Proliferation of endometrium wall b) Reduction of endometrium wall

c) Shadding of endometrium wall d) No effect on endometrium wall

20. Adrenal gland is derived from

a) Ectoderm b) Mesoderm

c) Both (a) and (b) d) Ectoderm and endoderm

21. The males of honey bee are produced by

a) Sexually b) Budding c) Spore formation d) Parthenogenesis

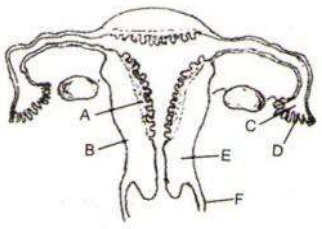
22. During pregnancy which one of the following is excreted?

a) hCG b) FSH c) LH d) Progesterone

23. Identical twins are
    a) Monozygotic b) Isozygotic c) Bizygotic d) All of these
24. If for some, reason, the vasa efferentia in the human reproductive system get blocked, the gametes will not be transported form
    a) Epididymis to vas deferens b) Ovary to uterus
    c) Vagina to uterus d) Testes to epididymis
25. Which one of the following pairs correctly matches a hormone with a disease resulting from its deficiency?
    a) Luteinizing hormone – failure of ovulation b) Insulin - Diabetes insipidus
    c) Thyroxine - Tetany d) Parathyroid hormone - Diabetes mellitus
26. Pouch in which is the testes are suspended outside the abdominal cavity, is
    a) Tunica albuginia b) Inguinal canal c) Epididymis d) Scrotum
27. Hormone which causes the parturition is
    a) Oestrogen b) Oxytocin c) Prostaglandin d) All of these
28. Select the correct statement.
    a) Cleavage follows gastrulation b) Yolk content in egg has no role in cleavage
    c) Cleavage is repeated mitotic division of zygote d) Gastrulation and blastulation are followed by each other
29. Colostrum is important for newly born because
    a) Colostrum have antigen
    b) Colostrum have antibody
    c) Both (a) and (b)
    d) Colostrum have more nutrients than ordinary milk
30. A pair of bulbourethral gland also called …A… gland present on the either side of …B… . It secrets …C… fluid and …D… for lubricating the penis. Here A,B,C and D are
    a) A-Cowper's, B-Urethra, C-Alkaline, D-Mucous
    b) A-Prostate, B-Urethra, C-Acidic, D-Mucous
    c) A-Cowper's B-Scrotum, C-Acidic, D-Mucous
    d) A-Prostate, B-Scrotum, C-Alkaline, D-Mucous
31. ZIFT is
    a) Transfer of zygote into the fallopian tube
    b) Transfer of embryo into the uterus
    c) Transfer of mixture of sperms and ova into the fallopian tube
    d) Transfer of mixture of sperms and ova into the uterus
32. Maturation of sperm before penetration is called
    a) Spermatogenesis b) Spermiogenesis c) Capacitation d) Spermatid
33. Attachment of blastocyst of uterine wall is called

a) Fertilization b) Implantation c) Deplantation d) All of these

34. In testis, the immature germ cells produce sperm by …A… at puberty …B… present on the inside wall of seminiferous tubules multiply by …C… division and increase their number. Identify A,B and C from the above statement
    a) A-secondary spermatocytes, B-primary spermatocytes, C-mitosis
    b) A- primary spermatocytes, B- secondary spermatocytes, C-mitosis
    c) A-spermatogenesis, B-spermatogonia, C-mitosis
    d) A- spermatogonia, B- spermatogenesis, C-meiosis
35. Ovaries are the …A… sex organs which produce ovum and several steroid hormone called …B… Here A and B refers to
    a) A-secondary; B-testosterone
    b) A-tertiary; B-inhibin
    c) A-primary; B-ovarian hormones
    d) A-primary; B-testosterone
36. Ceasation of menstrual cycle at the age of 50 is called
    a) Ovulation b) Gametogenesis c) Menses d) Menopause
37. Programmed cell death is scientifically termed as
    a) Autotomy b) Cell lysis c) Apoptosis d) None of these
38. During spermatogenesis, which stage is the first to contain haploid number of chromosomes?
    a) Spermatogonium
    b) Primary spermatocyte
    c) Secondary spermatocyte
    d) Spermatid
39. The figure given below depicts a diagrammatic sectional view of the female reproductive system of humans. Which one set of three parts out of A-F have been correctly identified?



    a) C-Infundibulum, D-Fimbriae, E-Cervix
    b) D-Oviducal funnel, E-uterus, F-Cervix
    c) A-Perimetrium, B-Myometrium, C-fallopian tube
    d) B-Endometrium, C- Infundibulum, D-Fimbriae
40. Middle piece of sperm contains
    a) Mitochondria, Golgi bodies, centriole
    b) Axial filament, centriole, axial filament
    c) Mitochondria, centriole, axial filament
    d) Golgi bodies, axial filament, centriole
41. Ejaculation is the …A… response. Erection is a …B… response. Here, A and B refers to
    a) A-parasympathetic, B-sympathetic
    b) A-parasympathetic, B-parasympathetic
    c) A-sympathetic, B-parasympathetic
    d) A-sympathetic, B-sympathetic
42. The polar body of human ovum is formed

a) Before birth b) After birth c) During birth d) Both (a) and (b)

43. Find out primary follicle and tertiary follicle in question number 114

a) B and C b) C and D c) D and E d) A and F

44. With increasing age, secretion of which of the following reduces to almost half?

a) GTH b) Melatonin c) hGH d) Oestrogen

45. Soon after implantation, the inner cell mass differentiation into outer ….A…. and inner …B… occurs ….C…. soon appears between ectoderm and mesoderm. A,B and C in the above sentence are

a) A-mesoderm, B-ectoderm, C-endoderm

b) A-ectoderm, B-mesoderm, C-endoderm

c) A-ectoderm, B-endoderm, C-mesoderm

d) A-mesoderm, B-endoderm, C-ectoderm

46. Luteal phase last for how many days?

a) 15-20 days b) 15-28 days c) 15-25 days d) 15-22 days

47. Saheli is a oral contraceptive containing

a) Oestrogen and progesterone b) Oestrogen

c) Progesterone d) Testosterone and FSH

48. What stage of the menstrual cycle is characterized by the event labelled *A* in the figure of previous question?

a) Corpus luteum formation b) Ovulation

c) Flow d) Fertilization

49. Cauda epididymis lead to

a) Vas efferens b) Vas deferens c) Ejaculatory duct d) Rete testis

50. After implantation, finger-like projections on the trophoblast are called …A…. which are surrounded by …B… and maternal blood.

Here A and B refers to

a) A-chorion; B-foetal cell b) A-chorionic villi; B-uterine tissue

c) A-uterine tissue; B-chorionic villi d) A-foetal cell; B-chorion

51. Ovulation takes place in menses between

a) 9-14 days b) 14-16 days c) 16-28 days d) 20-26 days

52. Male's testes are contained in the scrotal sacs because

a) Other organs do not make space of the testes in the abdominal cavity

b) Testes in the abdomen will hamper maturation of sperms

c) It provides temperature that is slightly lower than body temperature required for formation of functional sperms

d) It facilitates ejaculation

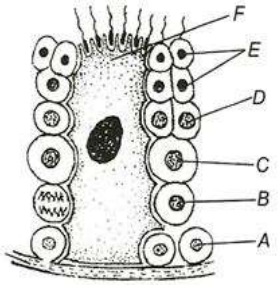
53. Two major entities seen in human testis TS are

a) Sertoli cells and interstitial cells
b) Spermatozoa and Sertoli cells
c) Seminiferous tubules and Leydig cells
d) Seminiferous tubules and Sertoli cells

54. Oviducts are also called
a) Fallopian tubes b) Uterus c) Vagina d) Ovary

55. Seminal plasma in human males in rich in
a) Fructose and calcium
b) Glucose and Calcium
c) DNA and testosterone
d) Ribose and potassium

56. Given a diagram showing a portion of a seminiferous tubule. Identify the marked alphbates



a) A-Sertoli cells, B-Spermatogonium, C-Primary spermatocyte, D-Secondary spermatocyte, E-Spermatids, F-Leydig cell
b) A- Leydig cells, B- Primary spermatocyte, C- Spermatogonium, D-Secondary spermatocyte, E-Spermatids, F- Sertoli cells
c) A- Leydig cells, B-Spermatogonium, C-Primary spermatocyte, D-Secondary spermatocyte, E-Spermatozoa, F- Sertoli cell
d) A- Leydig cells, B-Spermatogonium, C-Primary spermatocyte, D-Secondary spermatocyte, E-Spermatids, F- Sertoli cell

57. The egg of frog is
a) Telolecithal b) Microlecithal c) Alecithal d) centrolecithal

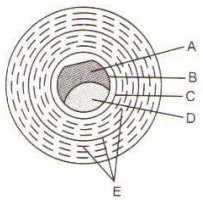
58. Which hormone level reaches peak during luteal phase of menstrual cycle?
a) Luteinizing harmone
b) Progesterone
c) Follicle stimulating harmone
d) Oestrogen

59. Skin epidermis, tooth, enamel, lens and corner of outer ear, brain, spinal cord, skeletal muscles of human head are derived from
a) Ectoderm b) Mesoderm c) Endoderm d) Both (c) and (d)

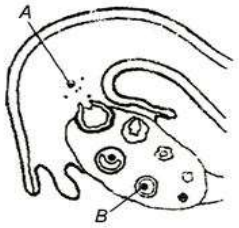
60. Primary sex organ is males is
a) Testes b) Sertoli cells c) Ovum d) Spermatogonia

61. The signals for parturition originates from
a) Placenta only
b) Placenta as well as fully developed foetus
c) Oxytocin released from maternal pituitary
d) Fully developed foetus only

62. Infertility could develop when the sperm cells display
    a) A count of 120 million/mL semen
    b) Increased acrosomal activity
    c) Normal morphology
    d) Count of less than 20 million/mL semen
63. Exact time of human gestation period is
    a) 9 month $\pm$ 15 days b) 9 month $\pm$ 20 days c) 9 month $\pm$ 7 days d) 9 month $\pm$ 1 days
64. Vitellogenesis occurs during the formation of
    a) Primary oocyte in the Graafian follicle
    b) Oogonial cell in the Graafian follicle
    c) Ootid in the fallopian tube
    d) Secondary oocyte in the fallopian tube
65. In mammals, corpus luteum is found in which organ?
    a) Brain b) Ovary c) Liver d) Eyes
66. External genitalia develops in the …… of development
    a) 2nd month b) 5th month c) 3rd month d) 1st month
67. Acrosome is the modified
    a) Mitochondria b) Lysosome c) Golgi body d) Nucleus
68. The following is a diagram of the just spawned frog's egg; with the parts labelled from A to E. identify the parts and choose the correct option from those given figure.



    a) A –cytoplasm, B-plasma membrane, C-vitelline membrane, D-yolk, E-jelly coat
    b) A –cytoplasm, B- vitelline membrane, C-plasma membrane, D-yolk, E-jelly coat
    c) A -yolk, B- plasma membrane, C- vitelline membrane, D- cytoplasm, E- jelly coat
    d) A - yolk, B-jelly coat, C- vitelline membrane, D- cytoplasm, E-plasma membrane
69. The chemical substance released by activated spermatozoa that acts on the ground substances of the follicle cells is known as
    a) Progesterone b) Hyaluronidase c) Relaxin d) Gonadotropin
70. The haemoglobin of a human foetus
    a) Has lower affinity for oxygen than that of the adult
    b) has affinity for oxygen same as that of an adults
    c) Has only two protein subunits instead of four
    d) Has higher affinity for oxygen than that of an adult
71. When did the structure labelled *B* in the given figure starts to form



a) Infancy

b) Before birth

c) At the start of the menstrual cycle

d) At puberty

72. In human, cleavage/divisions are

a) Slow and synchronous b) Fast and synchronous

c) Show and asynchronous d) Fastand asynchronous

73. There is no DNA in

a) An enucleated ovum b) Mature RBCs

c) A mature spermatozoan d) Hair root

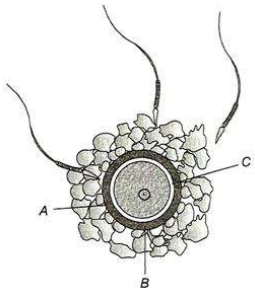
74. Natural parthenogenesis is found in

a) Housefly b) Honey bee c) *Drosophila* d) All of these

75. Inner cell mass contains certain cells called ……, which have the potency to give rise to all the tissues and organs. The suitable word for blank in the above sentence is

a) Stem cell b) Germ cell c) Mesodermal cell d) Special cell

76. The given diagram refers to ovum surrounded by few sperms. Identify *A*, *B* and *C* in the diagram



a) A-Zona pellucida, B-Perivitelline space, C-Corona reticulata

b) A-Zona pellucida, B-Viteline membrane, C-Corona radiata

c) A-Zona pellucida, B-Perivitelline space, C-Corona radiata

d) A-Oolemma, B-Perivitelline space, C-Corona radiata

77. Which chemical event of fertilization involves the presence of hyaluronidase enzyme?

a) Acrosomal reaction b) Cortical reaction c) Amphimixis d) Activation of egg

78. Leydig's cells are concerned with

a) Ovary b) Seminiferous tubule c) Liver d) Pituitary gland

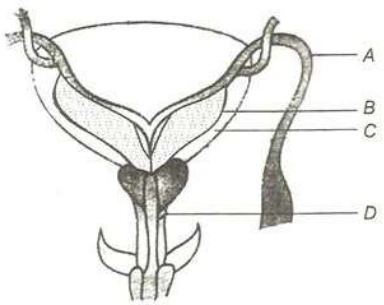
79. Tunica albugenia is the covering of

a) Liver b) Spleen c) Testis d) Penis

80. Which of the following cells present in the mammalian testis and nourishes the sperm?

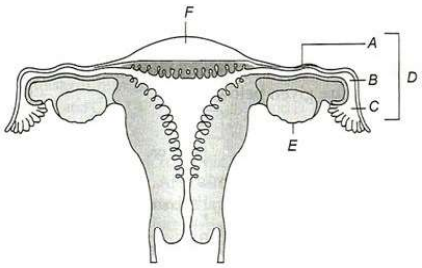
a) Leydig cells b) Oxyntic cells c) Interstitial cell d) Sertoli cell

81. Progesterone is needed for the maintenance
    a) Of ovary b) Of ovum
    c) Of endometrium wall d) Of ootid
82. The target ICSH is
    a) Prostate b) Seminiferous tubule c) Interstitial cells d) Seminal vesicle
83. Proliferation of endometrium of uterus is controlled by
    a) Relaxin b) Oxytocin c) Progesterone d) Oestrogen
84. Sugar fructose is present in the secretion of
    a) Bartholin's gland b) Cowper's gland c) Seminal vesicles d) Prostate gland
85. …A… are the certain agents that causes abnormal development in the developing embryo. The most well known is …B… which causes phenomelia is foetus
    a) A-Barbiturates, B-anesthetic
    b) A-Thalidomide, B-teratogens
    c) A-Teratogens, B-thalidomide
    d) A-Aspririn, B-anesthetis
86. The number of autosomes in human primary spermatocyte is
    a) 46 b) 44 c) 23 d) 22
87. Seminal vesicles are present at the base of
    a) Penis b) Bladder c) Testis d) Prostate gland
88. The main function of fimbriae of Fallopian tube is
    a) Help in development of ovary
    b) Help in collection of the ovum after ovulation
    c) Help in development of ova
    d) Help in fertilization
89. Saheli is a
    a) Oral contraceptive for females b) Surgical sterilization method for females
    c) Diaphragm for females d) Surgical method of sterilization in males
90. The nutritive cells found in seminiferous tubules are
    a) Leydig cells b) Sertoli cells c) Spermatogonial cells d) Follicular cells
91. Label A, B, C, D in following diagram



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

92. The following diagram refers to the female reproductive system of human. Identify *A* to *F*



a) A-Ampulla, B-Isthums, C-Infundibulum, D-Fallopian tube, E-Ovary, F-Uterine fundus
b) A- Isthums, B- Infundibulum, C- Ampulla, D-Fallopian tube, E-Ovary, F-Uterine fundus
c) A- Isthmus, B- Ampulla, C-Infundibulum, D-Fallopian tube, E-Ovary, F-Uterine fundus
d) A-Ampulla, B- Infundibulum, C-Isthmus, D-Fallopian tube, E-Ovary, F-Uterine fundus

93. Identify the odd one
a) Labia minora b) Fimbriae c) Infundibulum d) Isthmus

94. FSH is given to a rat which don't have anterior lobe of pituitary. What will not happen in rat?
a) Proliferation of endometrium
b) Development of corpus luteum
c) Maturation of Graafian follicle
d) Build-up of oestrogen in blood stream

95. Ejaculatory duct contains
a) Sperms
b) Secretion of seminal vesicles
c) Both (a) and (b)
d) Androgen

96. At what stage in test tube babies, the zygote is implanted in human female?
a) 32-celled stage b) 64-celled stage c) 100-celled stage d) 164-celled stage

97. Notochord, skeletal system and dermis of the skin are the derivatives of
a) Mesoderm b) Endoderm c) Ectoderm d) All of these

98. Chorionic villi are formed by the modification of
a) Outer layer of trophoblast
b) Inner layer of trophoblast
c) Inner mass cell
d) Blastocyst

99. Male pronucleus is
I. Head of sperm
II. Neek of sperm
III. Middle piece of sperm
IV. Tail of sperm
a) I and III b) III and IV c) I d) II and IV

100. Hormones plays a very significant role in puberty. …A… secreted by …B… stimulates …C… lobe of pituitary to secrete …D… and …E… hormones. Testosterone brings developmental of secondary sex organs and secondary characters.

A,B,C,D and E in the above statement are

a) A-FSH, B-hypothalamus, C-posterior, D-LH, E-ICSH

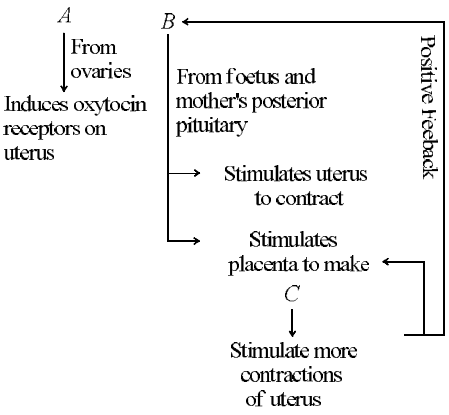
b) A-GnRH, B-hypothalamus, C-anterior, D-LH, E-FSH

c) A- GnRH, B- anterior, C- hypothalamus, D-LH, E- FSH

d) A- GnRH, B-hypothalamus, C-posterior, D-LH, E- FSH

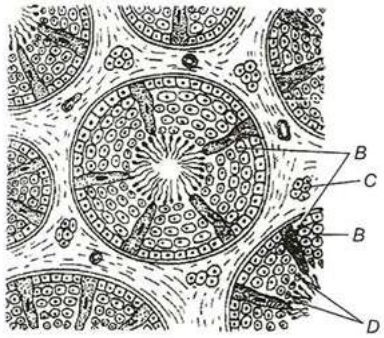
IMPORTANT PRACTICE QUESTION SERIES FOR NEET EXAM – 2

1. Follicular phase is also called
   a) Secretory phase b) Luteal phase c) Proliferative phase d) Menstrual phase
2. Name A, B, C chormones in the given figure



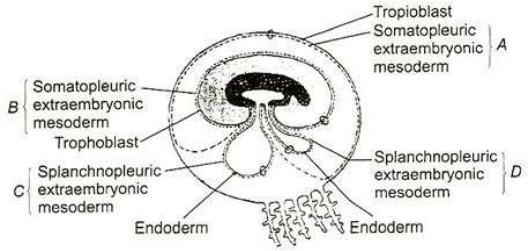
a) A-Prostaglandin, B-Oxytocin, C-Oestrogen
b) A- Oestrogen, B-Oxytocin, C- Prostaglandin
c) A- Oestrogen, B- Prostaglandin, C- Oxytocin
d) A-Prostaglandin, B- Oestrogen, C- Oxytocin

3. The vasa efferentia leave the testis and opens into the …A…, located along the …B… surface. Here A and B refers to
   a) A-rete testis; B-epididymis
   b) A-epididymis; B- rete testis
   c) A-epididymis; B-posterior
   d) A-epididymis; B-anterior
4. Where do sperms get matured?
   a) In seminal vesicle
   b) Seminiferous tubules
   c) In epididymis
   d) Vasa efferentia
5. Sertoli cells are also called
   a) Subtentacular cells b) Sperm cells c) Interstitial cells d) Leyding cells
6. Given below the diagram refers to the TS of testis showing sectional view of a few seminiferous tubules



   a) A-Sertoli cells, B-Secondary spermatocyte, 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
7. Lobules contain cluster of cells called …A… which secretes …B… . Alveoli opens into mammary tubules, which joins to form ….C…
   A,B and C here, refers to
   a) A-milk, B-alveoli, C-mammary duct
   b) A- mammary duct, B-alveoli, C- milk
   c) A- mammary duct, B- milk, C- alveoli
   d) A- alveoli, B- milk, C-mammary duct
8. Female pronucleus is
   a) Cytoplasm of ovum
   b) Nucleus of ovum
   c) Nucleus of quaternary oocyte
   d) Both (b) and (c)

9. Correct statement with reference to a test tube bay is
   a) The fertilized egg is placed in the womb of the mother where the gastrula period is completed
   b) Unfertilized egg is placed in the womb and allowed to grow parthenogenetically
   c) A prematurely born baby is reared in an incubator
   d) Fertilized egg is taken out and grown in a large test tube
10. Accessory sexual character in female is promoted by
   a) Androgen b) Progesterone c) Oestrogen d) Testosterone
11. Uterine endometrium, epithelial glands and connective tissue are broken in menstrual phase. This is due to
   a) Over secretion of FSH b) Lack of oestrogen
   c) Lack of progesterone d) Over production of progesterone
12. Which one of the following statements is incorrect about menstruation?
   a) During normal menstruation about 40 mL blood is lost b) The menstrual fluid can easily clot
   c) At menopause in the female, there is especially abrupt increase in gonadotropic hormones d) The beginning of the cycle of menstruation is called menarche
13. Ovulatory phase lasts for
   a) 1 day b) 2 days c) 3 days d) 4 days
14. In the beginning of menstruation what will happen?
   a) Ovulation takes place b) Corpus luteum degenerates
   c) Levels of LH and FSH increases d) Progesterone and oestrogen land increase
15. Type of cell division taking place at I, II and III stages of previous question are
   a) I-meiosis, II-mitosis, III-mitosis-II
   b) I- mitosis, II-mitosis, III- meiosis
   c) I-meiosis-I, II- meiosis-II, III-mitosis
   d) I- mitosis, II-mitosis-I, III- meiosis -II
16. Fusion of dissimilar gametes is known as
   a) Fertilization b) Dichogamy c) Autogamy d) Allogamy
17. Identify *A*, *B*, *C* and *D* in the figure given below

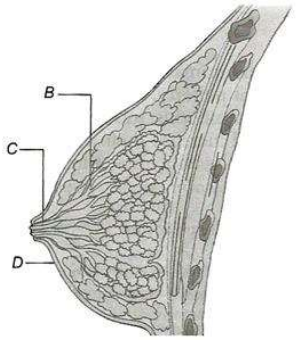


   a) A-Yolk sac, B-Amnion, C-Allantois, D-Chorion
   b) A-Chorion, B-Amnion, C- Yolk sac, D- Allantois
   c) A-Chorion, B-Amnion, C-Allantois, D- Yolk sac
   d) A-Chorion, B- Allantois, C- Amnion, D- Yolk sac

18. At the time of birth, the oocyte have the stage
   a) Prophase-I b) Prophase-II c) Meiosis-II d) Mitosis
19. Vaginal orifice, urethral orifice are open in
   a) Vulva b) Labia majora c) Labia minora d) Cervix
20. The extra-embryonic membranes of mammalian embryo are derived from
   a) Trophoblast b) Follicle cells c) Formative cells d) Inner cell mass
21. Relaxin (a hormone) is secreted by
   a) Placenta b) Ovary

c) Anterior lobe of pituitary d) Posterior lobe of pituitary

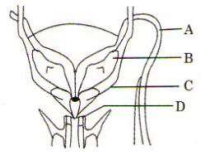
22. Leydig cells secretes …. hormone
    a) Testosterone b) Inhibin c) Oxytocin d) FSH
23. Which of the following is correct about mammalian testes?
    a) Graafian follicles, sertoli's cells, Leydig's cells b) Graafianfollicles, sertoli's cells, seminiferous tubules
    c) Sertoli's cells, seminiferous tubules, Leydig's cells, d) Graafian follicles, Leydig's cells, seminiferous tubules
24. Given the diagrammatic sectional view of mammary gland. Identify *A*, *B*, *C* and *D*



    a) A-Alveolus, B-Mammary duct, C-Lactiferous duct, D-Areola b) A-Alveolus, B- Lactiferous duct, C- Mammary duct, D-Areola
    c) A-Alveolus, B-Mammary duct, C-Lactiferous duct, D-Lactogenic spot d) A- Mammary gland, B-Mammary duct, C-Lactiferous duct, D-Areola
25. During oogenesis, the small structure separated from egg is
    a) Polar bodies b) Secondary endosperm
    c) Herring bodies d) Hela cells
26. Structure connecting the foetus to placenta is
    a) Umbilical cord b) Amnion c) Yolk sac d) Chorion
27. Sperm is a microscopic structure composed of head, neck, …A… and …B… Sperm head contains elongated haploid nucleus, which is covered by cap like structure called …C… .
    A, B and C in the above statement refers to
    a) A-middle piece, B-tail, C-acrosome
    b) A- tail, B- middle piece, C-acrosome
    c) A- tail, B- acrosome, C- middle piece
    d) A-middle piece, B- acrosome, C- tail
28. Which part of the sperm is motile?
    a) Head b) Neck c) Middle d) Tail
29. Cytoplasm of ovum does not contain
    a) Golgi complex b) Centrosomes c) Mitochondria d) Ribosomes
30. Appearance of hair on head is observed during …… of development
    a) 2nd month b) 3rd month c) 4th month d) 5th month
31. A. Humans reproduces…..
    B. Humans are……..
    C. Fertilization is …. in humans
    D. Male and female gametes are…..
    E. Zygote is…..
    F. The process of release of ovum from a mature follicle is called…..
    G. Ovulation is induced by a hormone called……
    H. The fusion of male and female gametes is called…….
    I. Zygote divides to form… which is implanted in uterus
    J. The structure which provides vascular connection between foetus and uterus is called……
    Blanks in the statements A to J in the above statement is

a) A-asexually, B-viviparous, C-external, D-diploid, E-haploid, F-ovulation, G-LH, H-fertilisation, I-blastocyst, J-placenta
b) A-sexually, B-viviparous, C-external, D- haploid, E- diploid, F-ovulation, G-LH, H-fertilisation, I-blastocyst, J-placenta
c) A-asexually, B-viviparous, C-internal, D- haploid, E- diploid, F-ovulation, G-LH, H-fertilisation, I-blastocyst, J-placenta
d) A-sexually, B-viviparous, C-internal, D- haploid, E- diploid, F-ovulation, G-LH, H-fertilisation, I-blastocyst, J-placenta

32. 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.



	A	B	C	C
a)	Ureter	prostate	seminal vesicle	bulbourethral gland
c)	Vas deferens	seminal vesicle	bulbourethral gland	prostate

b)	Vas deferens	Seminal vesicle	prostate	bulbourethral gland
d)	Ureter	seminal vesicle	prostate	bulbourethral gland

33. Blastopore is found in
a) Blastula and is opening of archenteron
b) Blastula and is opening of blastocoels
c) Gastrula and is opening of archenteron
d) Gastrula and is opening of blastocoels

34. Seminal vesicle secretes 60% of semen content, these contents are
a) Glucose, prostaglandin, clotting protein
b) Cellulose, prostaglandin, clotting factor
c) Fructose, prostaglandin, clotting protein
d) Glyceraldehyde 3-phosphate, prostaglandin, clotting factor

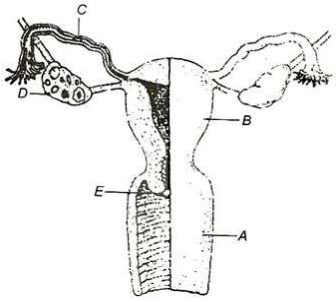
35. A sectional view of mammary gland shows
I. Nipple areola
II. Mammary lobes (alveolus) and duct
III. Antibody and ribs
IV. Ampulla and lactiferous duct
Choose the correct option from the above
a) I,II,IV
b) I,II,III
c) III,IV,II
d) I,IV,III

36. The Bartholin glands of female resembles the male's
a) Cowper's gland
b) Vastibular gland
c) Seminal vesicles
d) Prostate gland

37. Cleavage in frog's zygote is
a) Diplobalstic
b) Heteroblastic
c) Holoblastic
d) Meroblastic

38. Post-embryonic period is also called
a) Prenatal
b) Postnatal
c) Embryonal period
d) None of the above

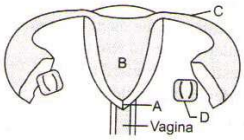
39. Match each function below with its associated part (or parts) of the human female reproductive system shown in the figure



I. Where is the egg produced?
II. Where does fertilization occur?
III. Where would implantation of a fertilized egg take place?
IV. Where are oestrogen and progesterone produced?
V. What part receives the penis during copulation?

a) I-D, II-C, III-B, IV-E, V-A
b) I-D, II-C, III-B, IV-A, V-E
c) I-D, II-C, III-B, IV-D, V-A
d) I-E, II-C, III-B, IV-D, V-A

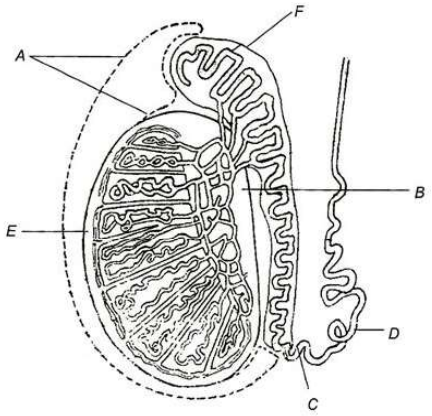
40. Spermatogenesis starts at puberty due to
a) GnRH b) Lactin c) Testosterone d) Oestrogen
41. Mark the odd one
a) Acrosome b) Endometrium c) Corpus luteum d) Graafian follicle
42. Name the hormone, which stimulates growth and development of breast in preparation for lactation?
a) Oestrogen
b) Human placental lactogen
c) Progesterone
d) Chorionic gonadotropin
43. At which stage of the development, ovum is released from the ovary of human female?
a) Primary oocyte b) Oogonium c) Secondary oocyte d) Ootid
44. The 60% of semen is produced by the
a) Prostate gland b) Seminal vesicle c) Cowper's gland d) Testes
45. Choose the correct combination of the labelling for the following structure.



a) A-Oviduct, B-Uterus, C-Cervix, D-Ovary
b) A- Cervix, B-Uterus, C-Ovary, D- Tumor
c) A- Uterus, B-Uterus cavity, C-Oviducal funnel, D-Ovary
d) A- Cervix, B- Uterine cavity, C-Fallopian tube, D-Ovary

46. Foetus develops limbs and digits in its … of development
a) 2nd month b) 3rd month c) 4th month d) 5th month
47. Spermatogenesis is induced by
a) FSH b) ACTH c) ICSH d) ATH

48. Identify *A*to*F* in the diagram given below



a) A-Tunica vaginalis, B-Rete testis, C-Caput epididymis, D-Vas deferens, E-Septa of testis, F-Cauda epididymis
b) A-vaginalis, B-Rete testis, C- Cauda epididymis, D-Mediastinum testis, E- Vas deferens, F-Caput epididymis
c) A-Tunica vaginalis, B-Rete testis, C- Cauda epididymis, D-Vas deferens, E-Tunica albuginea, F-Caput epididymis
d) A-Tunica vaginalis, B-Rete testis, C-Caput epididymis, D- Mediastinum testis, E- Vas deferens, F-Cauda epididymis

49. Sertoli's cells are nourishing cells in the testis. They also secrete a hormone. Identify the same
a) Gonadotropin b) Testosterone c) Relaxin d) Inhibin

50. Through invagination of which of the following, mesoderm is formed?
a) Primitive streak b) Inner mass of cell c) Endoderm d) Ectoderm

1)	**b**	**2)**	**b**	**3)**	**b**	**4)**	**c**
5)	**a**	**6)**	**a**	**7)**	**c**	**8)**	**c**
9)	**a**	**10)**	**c**	**11)**	**d**	**12)**	**d**
13)	**d**	**14)**	**b**	**15)**	**a**	**16)**	**a**
17)	**a**	**18)**	**b**	**19)**	**a**	**20)**	**a**
21)	**d**	**22)**	**a**	**23)**	**a**	**24)**	**d**
25)	**a**	**26)**	**d**	**27)**	**d**	**28)**	**c**
29)	**b**	**30)**	**a**	**31)**	**a**	**32)**	**c**
33)	**b**	**34)**	**c**	**35)**	**c**	**36)**	**d**
37)	**c**	**38)**	**c**	**39)**	**a**	**40)**	**c**
41)	**c**	**42)**	**d**	**43)**	**a**	**44)**	**c**
45)	**b**	**46)**	**b**	**47)**	**a**	**48)**	**b**
49)	**b**	**50)**	**b**	**51)**	**b**	**52)**	**c**
53)	**c**	**54)**	**a**	**55)**	**a**	**56)**	**d**
57)	**a**	**58)**	**b**	**59)**	**a**	**60)**	**a**
61)	**b**	**62)**	**d**	**63)**	**c**	**64)**	**a**
65)	**b**	**66)**	**c**	**67)**	**c**	**68)**	**a**
69)	**b**	**70)**	**d**	**71)**	**b**	**72)**	**a**
73)	**b**	**74)**	**b**	**75)**	**a**	**76)**	**c**
77)	**a**	**78)**	**b**	**79)**	**c**	**80)**	**d**
81)	**c**	**82)**	**c**	**83)**	**d**	**84)**	**c**
85)	**c**	**86)**	**b**	**87)**	**b**	**88)**	**b**
89)	**a**	**90)**	**b**	**91)**	**c**	**92)**	**c**
93)	**a**	**94)**	**b**	**95)**	**c**	**96)**	**a**
97)	**a**	**98)**	**a**	**99)**	**c**	**100)**	**b**

1 **(b)**
The part of fallopian tube closer to the ovary is funnel-shaped infundibulum, which help in collection of the ovum after ovulation.

2 **(b)**
A-200, B-300, C-60%, D-40%

3 **(b)**
Acrosome present in head of sperm, is derived from Golgi complex. It secretes a lytic enzyme hyaluronidase, which helps in the penetration of ovum.

4 **(c)**
In previous Diagram F and A represents spermatogonium and spermatozoa

5 **(a)**
Second meiotic division give rise to haploid ovum ($1n$) and second polar body.
Oogenesis is the process of formation of mature ovum. *It has three phases*
(a) **Multiplication Phase** Oogenesis takes place in embryo stage. A couple of million of gamete mother cells (oogonia) are formed within each foetal ovary. No more oogonia are formed after birth. These cells (oogonia) get into prophase-I of meiotic division. They get temporarily arrested as this stage called primary oocyte
(b) **Growth Phase** Each primary oocyte then gets surrounded by a layer of granulosa cells. This structure is called the primary follicle. A large number of these follicles degenerate during the phase from birth to puberty. At puberty, only 60000 and 80000 primary follicles are left in each ovary. The primary follicles get surrounded by more layers of granulosa cells and a new theca to form secondary follicles
(c) **Maturation Phase** In the first maturation phase, the secondary follicle soon transforms into a tertiary follicle. The primary oocyte within the tertiary follicle grows in size and

completes its first meiotic division to form a large haploid secondary oocyte and a tiny first polar body

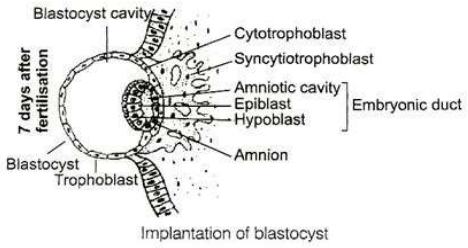
The tertiary follicle changes into a mature follicle-the Graafian follicle which ruptures to release the secondary oocyte (ovum) from the ovary by a process called ovulation. The second maturation phase occurs after fertilization when the meiotic division of the secondary oocyte is complete. This second meiotic division results in the formation of a second polar body and a haploid ovum (ootid)

6 **(a)**

Implantation It is the attachment of the blastocyst to the uterine wall. It occurs after 7 days of fertilization. About 8 days after fertilization, the trophoblast develops into two layers in the region of contact between the blastocyst and endometrium.

These layers are (a) **syncytiotrophoblast** that contains non-distinct cell boundaries and (b) **cytotrophoblast** between the inner cell mass and syncytiotrophoblast that is composed of distinct cells. The portion of the blastocyst where the inner cell mass is located lies against the endometrium of the uterus. The blastocyst sinks into a pit formed in the endometrium and gets completely buried in the endometrium. The embedded blastocyst forms villi to get nourishment.

The cells of the inner cell mass differentiate into two layers (a) a layer of small, cuboidal cells known as the **hypoblast layer**, and (b) a layer of high columnar cells, the **epiblast layer**. Both the hypoblast and epiblast form a flat disc called the embryonic disc



Implantation of blastocyst

7 **(c)**

Secondary spermatocytes are haploid as these are formed after meiosis-I (reductional division).

8 **(c)**

In parturation there is strong uterine contraction leads to the expulsion of baby called child birth

9 **(a)**

Near the nipple mammary duct expand to form mammary ampullae (lactiferous sinuses) where some milk may be stored before going to **lactiferous duct**

10 **(c)**

The urethra originates from the urinary bladder and extends through the penis to its external opening called **urethral meatus**

11 **(d)**

Transfer of sperms by male in genital tract

Gametes. *The major reproductive events in human beings are as follows*

(i) **Gametogenesis** It is the formation of gametes. It includes **spermatogenesis** (formation of sperms) and **oogenesis** (formation of ova/eggs)

(ii) **Insemination** It is the transfer of sperms by the male into the genital tract of the female

(iii) **Fertilization** Fusion of male and female gametes to form zygote is called fertilization

(iv) **Cleavage** It is rapid mitotic divisions of the zygote which convert the single celled zygote into a multicellular structure called blastocyst (blastula)

(v) **Implantation** It is the attachment of blastocyst to the uterine wall

(vi) **Placentation** It involves the formation of placenta which is the intimate connection

between the foetus and uterine wall of the mother to exchange the materials

(vii) **Gastrulation** It is the process by which blastocyst is changed into gastrula with three primary germ layers

(viii) **Organogenesis** It is the formation of specific tissue, organs and organ systems from three primary germ layers

(ix) **Parturition** (child birth) it involves expelling of the baby from the mother's womb (uterus)

12 **(d)**

Sertoli's cells or nurse cells are found in the germinal epithelium of the seminiferous tubles, which nourish the developing sperms.

13 **(d)**

In growth curve, exponential phase or log phase is characterized rapid growth in population, which containues till enough food is available.

14 **(b)**

1st month.

Summary of important development changes in the human embryo

Time from Fertilisation	Organ Formed
Week 1	Fertilisation cleavage starts about 24 hours after fertilisation cleavage to form a blastocyst 4-5 days after fertilisation. More than 100 cells implantataion 6-9 days after fertilisation
Week 2	The three primary germ layers (ectoderm, endoderm and mesoderm) develop
Week 3	Woman will not have a period. This may be the first sign that she is pregnant. Beginning of the backbone. Neural tube develops, the beginning of the brain and spinal cord (first organs)
Week 4	Heart, blood vessels, blood and gut start forming. Umbilical cord developing
Week 5	Brain developing, 'Limb buds', small swelling which are the beginning of the arms and legs. Heart is a large tube and starts to beat, pumping blood. This can be seen an ultrasound scan
Week 6	Eyes and ears start to form
Week 7	All major internal organs developing. Face forming. Eyes have some colour. Mouth and tongue develop. Beginning of hand and feet
Week 12	Foetus fully formed, with all organs, muscles, bones toes and fingers. Sex organs well developed. Foetus is moving
Week 20	Hair beginning to grow including eyebrows and eyelashes. Fingerprints developed. Fingernails and toenails growing. Firm hand grip. Between 16 and 20 weeks baby usually felt moving for first time
Week 24	Eyelids open. Legal limit of abortion in most circumstances
By Week 26	Has a good chance of survival if born prematurely
By Week 28	Baby moving vigorously. Responds to touch and loud noises. Swallowing amniotic fluid and urinating
By Week 30	Usually lying head down ready for birth
40 Weeks	Birth

16 **(a)**

Organogenesis is a formation a of organ, tissue, organ system.

Placentation is a connection between foetus and uterine wall.

Gametes. *The major reproductive events in human beings are as follows*

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17 **(a)**

Extraembryonic or Foetal Membranes

The growing embryo/foetus develops four membranes called the extraembryoic or foetal membranes. These include chorion, aminion, allantois and yolk sac
(i) **Chorion** It is made up of trophoblast outside and somatopleuric extraembryonic mesoderm inside. It completely surrounds the embryo and protects it. It also takes part in the formation of placenta
(ii) **Amnion** It is composed of trophoblast inside and somatopleuric extraembryonic mesoderm outside. The space between the embryo and the amnion is called the amniotic cavity, which is filled with a clear, watery fluid secreted by both the embryo and the membrane. The amniotic fluid prevents dessication of the embryo and acts as a protective cushion that absorbs shocks
(iii) **Allantois** The allantois is composed of endoderm inside and splanchnopleuric extraembryoic mesoderm outside. It is a sac like structure, which arises from the gut of the embryo near the yolk sac. In human the allantois is small and non-functional except for furnishing blood vessels to the placenta
(iv) **Yolk Sac** The primary yolk sac consists of endoderm inside and splanchnopleuric extraembryoic mesoderm outside. The yolk sac is non-functional in human beings except that it functions as the site of early blood cell formation

18 **(b)**

In *in vitro* fertilization, the zygote or early embryos upto 8 blastomeres are transferred into the fallopian tube. If the embryo is more then 8 blastomeres then it is transferred into uterus called as IUD.

19 **(a)**

Proliferation of endometrium.
In the ovulatory phase, both LH and FSH attain a peak level in middle of cycle (about 14 day). Rapid secretion of LH induces rupturing of Graafian follicle and thereby releasing the ovum in human beings (secondary oocyte is released). This is called ovulation. Infact increase level of LH causes ovulation

20 **(a)**

Adrenal glands are paired structures located on the top of the kidneys. Each adrenal gland has two parts external adrenal **cortex** and internal adrenal **medulla**. The adrenal cortex is derived from the **mesoderm** of the embryo. The adrenal medulla develops from the **neuroectoderm** of the embryo.

21 **(d)**

In a bee hive, drones are the fertile males developed parthenogenetically from the

unfertilized eggs. They possess very large eyes, small pointed mandibles and lack wax producing gland. The function of drones is to mate with the queen and fertilize her.

22 **(a)**

Role of Human Chorionic Gonadotropin

The trophoblastic cells secretes human chorionic gonadotropin hormone which has properties similar to those luteinizing hormone (LH) of the pituitary gland. It takes over the function of pituitary LH during pregnancy. HCG maintains the corpus luteum and stimulates it to secrete progesterone. The latter maintains the endometrium of the uterus and causes it to grow throughout pregnancy. This also prevent menstruation. Progesterone also causes increased secretion of mucus in the cervix of the uterus that forms a protective plug during pregnancy

23 **(a)**

Identical or monozygotic twins are siblings that develop from one egg, contain identical genetical information and are usually of very similar appearance. Any physical and mental differences detected between identical twins must arise, therefore, from enviromental difference, both before or after birth.

24 **(d)**

Vasa efferentia (Ductuli efferences) are 10-20 fine tubules which connect rete testis with an epididymis (Ductus epididymis). The latter is a pair of ducts from each testis which is formed by union of its vasa efferentia. If the vasa efferentia get blocked, the sperms will not be transported from testis to epididymis.

25 **(a)**

Ovulation occurs under the influence of LH and FSH of anterior pituitary gland.

26 **(d)**

Scrotum is homologous to labia majora in females. It is pouch of deeply pigmented skin divided into two separate sacs. Each sac contains one testis

28 **(c)**

Fertilized zygote is divided by special type of mitotic divisions, known as **cleavage**. Cleavage increases the number of cells.

29 **(b)**

Colostrum have antibody-A which work against the pathogenicity in newborn. So, it is recommended by doctors to feed new born from breast milk as for as possible

30 **(a)**

A-Cowper's gland
B-Urethra
C-Alkaline
D-Mucous

31 **(a)**

GIFT(Gamete Intra Fallopian Transfer) is the transfer of an ovum collected from a donor into the fallopian tube of another female who can not produce one but can provide suitable environment for fertilization and further development. In the same way ZIFT is used for zygote.

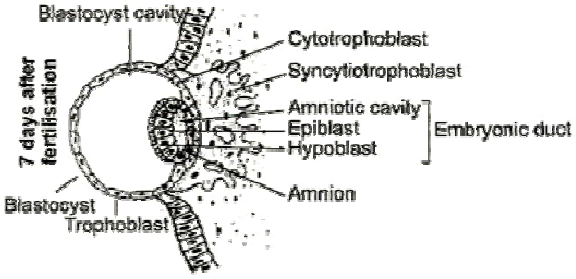
32 **(c)**

Maturation of sperm before penetration of egg is called **capacitation**.
The development of spermatozoa from germinal cells is called **spermatogenesis.**
Spermiogenesis is the differentiation of spermatids into spermatozoa.

33 **(b)**

Implantation.
Implantation It is the attachment of the blastocyst to the uterine wall. It occurs after 7 days

of fertilization. About 8 days after fertilization, the trophoblast develops into two layers in the region of contact between the blastocyst and endometrium.
These layers are (a) **syncytiotrophoblast** that contains non-distinct cell boundaries and (b) **cytotrophoblast** between the inner cell mass and syncytiotrophoblast that is composed of distinct cells. The portion of the blastocyst where the inner cell mass is located lies against the endometrium of the uterus. The blastocyst sinks into a pit formed in the endometrium and gets completely buried in the endometrium. The embedded blastocyst forms villi to get nourishment.
The cells of the inner cell mass differentiate into two layers (a) a layer of small, cuboidal cells known as the **hypoblast layer**, and (b) a layer of high columnar cells, the **epiblast layer**. Both the hypoblast and epiblast form a flat disc called the embryonic disc



Implantation of blastocyst

34 **(c)**
A-Spermatogenesis, B-Spermatogonia, C-Mitosis

35 **(c)**
A-primary; B-ovarian hormones

36 **(d)**
Menopause (Gr. *Men*-month; *pausis*;-*N*-cessation)It is a phase in woman's life when ovulation and menstruation stops. Is occurs between 45-55 years of age. Some woman have irregular cycles for months or years prior to menopauses other simply stops menstruating abruptly. Decline in oestrogen and progesterone level leads to menopause

37 **(c)**
Apoptosis is an active process of programmed cell death, characterized by cleavage of chromosomal DNA, chromatin condensation and fragmentation of both the nucleus and the cell.

38 **(c)**
Secondary spermatocytes. The first stage in spermatogenesis in which the chromosome number becomes half
Spermatogenesis Formation of spermatozoa from spermatogonia
Spermatogenesis has four phase
(i)**Multiplication Phase** Male germ cells (spermatogonia) present on the inside wall of seminiferous tubules multiply by mitotic division and increase their number.
(ii)**Growth Phase** One spermatogonia stop dividing and increase its size called primary spermatocytes, which is diploid.
(iii)**Multiplicative Phase** Primary spermatocytes divide by meiosis to give four haploid spermatids.
(iii)**Differanation Phase** Changing of spermatids to spermatozoa by the process called spermatogenesis. Releasing of sperm from seminiferous tubules called spermiation

39 **(a)**
The fallopian tube is about 10-20 cm long and extends from the periphery of each ovary to the uterus. The part closer to the ovary is the funnel shaped and is called infundibulum. The edged of the infundibulum possess finger-like projections called **fimbriate**, which help in

collection of the ovum after ovulation. The uterus opens into vagina through a narrow cervix.

40 **(c)**

Middle piece of sperm contains mitochondria,centriole, axial filament

41 **(c)**

Ejaculation is the sympathetic response while erection is a parasympathetic response. Sympathetic and parasympathetic both are the part of autonomic nervous system.

Somatic Nervous System	Automatic Nervous System
Conscious or voluntary regulation	Functions without conscious awareness (involuntary)
Fibres do not synapse after they leave the CNS (single neuron from CNS to effector organ)	Fibres synapse once at a ganglion after they leave the CNS (two neuron chain motor control
Innervates skeletal muscle fibres, always stimulatory	Innervates smooth muscle, cardiac muscle and glands either stimulates or inhibits

42 **(d)**

There are two types of polar bodies found in oogenesis in meiosis-I the first polar body is formed and in meiosis-II the 2nd type of polar body is formed. Meiosis-I takes place before birth and meiosis-II after birth of female

43 **(a)**

B to C represents primary and tertiary follicles respectively.

Ovary is internally differentiated into four parts, *i.e.,* outer **germinal epithelium** of cubical cells, a delicate sheath of connective tissue or **tunica albuginea**, a cortex of dense connective tissue with reticular fibres, spindle-shaped cells, ovarian follicles and a few blood vessels while the central part of **medulla** is made of less dense connective tissue with elastic fibres, smooth muscles, a number of blood vessels and a few nerves.

Maturation of secondary oocyte is completed in mother's oviduct after the sperm entry into it for fertilization. 2° oocyte stops advancing further after the completion of metaphase-II. Sperm entry restart the cell cycle by breaking down MPF (Maturation Promoting Factor) and truning on APF (Anaphase Promoting Factor)

44 **(c)**

According to endocrine theory, the level of human growth hormone (hGH) declines to about half of adults with passage of time.

45 **(b)**

A-Ectoderm, B-Mesoderm, C-Endoderm

46 **(b)**

Luteal phase last for 15-28 days

Menstrual cycle

Phases	Days	Events
Menstrual phase	1-5	Endometrium breaks down, menstruation begins. The cells of endometrium, secretions, blood and the unfertilized ovum

		constitute the menstrual flow. Progesterone and LH production is reduced
Follicular phase (proliferative phase)	6-13	Endometrium rebuilds, FSH secretion and oestrogen's secretion increase
Ovulatory phase	14	Both LH and FSH attain a peak level. Concentration of oestrogen in the blood is also high and reaches its peak, Ovulation occurs
Luteal phase (secretory phase)	15-28	Corpus luteum secretes progesterone. Endometrium thickens and uterine glands become secretory

47 **(a)**

Saheli is the oral contraceptive contained oestrogen and progesterone

48 **(b)**

In diagram event labelled 'A' clearly indicates the releasing of ova. This takes place in menstrual cycle called ovulation

49 **(b)**

Vas deferens is large duct that arises from cauda epididymis and reach up to seminal vesicles.

50 **(b)**

A-Chorionic villi; B-Uterine tissue

51 **(b)**

Ovulation takes place in the menses between 14-16 days.

Menstrual cycle

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52 **(c)**

In mammals, the primary male sex organs, testes are located in the extra-abdominal scrotal sacs. Scrotum maintains a low temperature of 2 — 4°C below the temperature of abdominal cavity. As higher abdominal temperature kills the spermatogenic tissue So, testes in mammals are contained scrotal sacs present outside the abdominal cavity to have the low temperature that is needed for the formation and maturation of functional sperms.

53 **(c)**

Two major entities of testes are seminiferous tubules and Leydig cells (or interstitial cells). Sertoli cells and spermatozoa are contained in seminiferous tubules only. Rest of the portion of testis is covered by connective tissue

54 **(a)**

Oviducts are also called Fallopian tubes. These (two) terms are used interchangeability

55 **(a)**

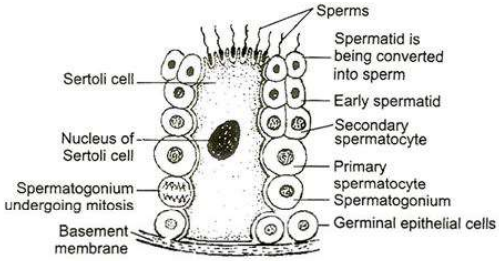
Seminal plasma is composed of the fluid and sperms from the vas deferens (about10% of the total), fluid from the seminal vesicles (almost 60%), fluid from the prostate gland

(about 30%) and small amount of mucous gland secretions, especially the bulbourethral glands secretions. It contains calcium, citrate ion, phosphate ion a clotting enzyme, profibrinolysin, fructose, citrate, inositol, prostaglandins, several proteins, etc.

56 **(d)**

A- Leydig cells, B-Spermatogonium, C-Primary spermatocyte, D-Secondary spermatocyte, E-Spermatids, F- Sertoli cell.

Wall of each seminiferous tubules is formed of single layered germinal epithelium. Majority of cells in this epithelium are cuboidal called male germ cells (also called spermatogonia). At certain places there present tall Sertoli or substentacular cells, which functions as nurse cells for differentiating spermatozoa



TS of a part of seminiferous tubule showing Sertoli cell and stages of spermatogenesis

57 **(a)**

Frog is in amphibian, which possesses **telolecithal** eggs. In telolecithal eggs, the amount of yolk is concentrated in the one half of the egg to form the vegetative pole of the egg and thus makes polarity along the axis of yolk distriution.

58 **(b)**

During luteal phase of menstrual cycle, corpus luteum begins to secrete hormone called **progesterone**. The latter reaches its peak about 22nd day after the beinning of cycle. In this phase uterus linning thickens further and becomes secretory. This stages is meant for receiving the fertilized ovum (implantation)

59 **(a)**

Ectoderm.

Fate of three germ layers

Mesoderm Dermis of skin, circulatory system, muscles, bones (except facial)

Endoderm Lining of Gl tract, lining of lungs, kidney ducts and bladder, thymus, thyroid tonsils

Ectoderm Epidermis of skin, tooth enamel, lens and cornea of the eye outer ear Brain and spinal cord, facial bones skeletal muscles in the head

60 **(a)**

Testes.

Differences between primary and secondary sex organs

Primary sex organs	Secondary sex organs
They produce gametes.	They do not produce gametes. They are concerned with the conduction of gametes.
They secrete sex hormones.	They do not secrete sex hormones.
Testes in males and ovaries in female are	Epididymis, vasa deferentia, penis, etc., are secondary

examples of primary sex organs.	sex organs in male and oviducts, uterus, etc., are examples of secondary sex organs in female.

61 **(b)**

The signals for parturition originates from the fully developed foetus and the placenta, which induce mild uterine contraception called foetal ejection reflex.

62 **(d)**

One time of ejaculation contains about 200 to 300 million sperms. If the sperm become less than 20 million then, it causes infertility

63 **(c)**

The duration of pregnancy in human being is about 9 month ± 7 days, which is called gestation period. Infact, the gestation period is the time from conception till birth

64 **(a)**

During growth phase of oogenesis, an egg nest forms ovarian follicle (Graafin follicle), one central oogonium grows and functions as primary oocyte. The others from the covering follicular cells. The later provide nourishment to primary oocyte. Yolk is deposited in this state. This phenomenon is called vitellogenesis.

65 **(b)**

Corpus luteum is a yelloow glandular mass in the ovary formed by the cells of ovarian follicle that has matured and discharged its ovum.

66 **(c)**

3rd month.

Summary of important development changes in the human embryo

Time from Fertilisation	Organ Formed
Week 1	Fertilisation cleavage starts about 24 hours after fertilisation cleavage to form a blastocyst 4-5 days after fertilisation. More than 100 cells implantataion 6-9 days after fertilisation
Week 2	The three primary germ layers (ectoderm, endoderm and mesoderm) develop
Week 3	Woman will not have a period. This may be the first sign that she is pregnant. Beginning of the backbone. Neural tube develops, the beginning of the brain and spinal cord (first organs)
Week 4	Heart, blood vessels, blood and gut start forming. Umbilical cord developing
Week 5	Brain developing, 'Limb buds', small swelling which are the beginning of the arms and legs. Heart is a large tube and starts to beat, pumping blood. This can be seen an ultrasound scan
Week 6	Eyes and ears start to form
Week 7	All major internal organs developing. Face forming. Eyes have some colour. Mouth and tongue develop. Beginning of hand and feet
Week 12	Foetus fully formed, with all organs, muscles, bones toes and fingers. Sex organs well developed. Foetus is moving
Week 20	Hair beginning to grow including eyebrows and eyelashes. Fingerprints developed. Fingernails and toenails growing. Firm hand grip. Between 16 and 20 weeks baby usually felt moving for first time
Week 24	Eyelids open. Legal limit of abortion in most circumstances
By Week 26	Has a good chance of survival if born prematurely
By Week 28	Baby moving vigorously. Responds to touch and loud noises. Swallowing amniotic fluid and urinating

By Week 30	Usually lying head down ready for birth
40 Weeks	Birth

67 **(c)**

Golgi body.

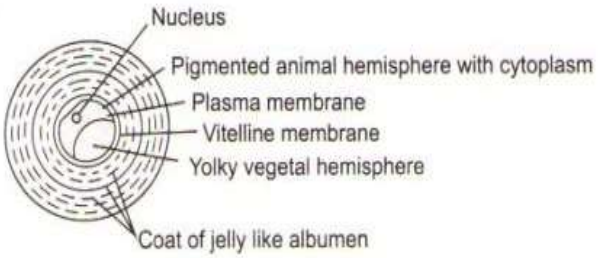
Acrosome is the part of sperm, which is found at the head region. It is the modified Golgi body that contain many enzymes for the penetration to ovum.

Acrosome contains hyaluronidase proteolytic enzymes, which is popularly known as sperm lysin as it is used to penetrate egg (ovum) at the time of fertilisaton

68 **(a)**

Frog's egg is spherical and about 1.6 mm in diameter with a convering of vitelline memrane and three concentric layers of albuminous jelly. The roughly one half blackish brown animal hemisphere containing most of the cytoplasm and large nucleus is uppermost, whereas the whitish vegetal hemisphere is lowermost.

An unfertilized ripe egg of frog is shown in the diagram below.



69 **(b)**

The acrosome of sperm contains large quantities of proteolytic enzymes, particularly hyaluronidase, which digests the hyaluronic acid, a constituent of the extracellular matrix. It allows the sperm to digest a path through the zona pellucida to the oocyte.

70 **(d)**

Foetal haemoglobin does not sickle even in those destined to have sickle cel anaemia, *i.e.,* haemoglobin of foetus has a higher affinity of oxygen than that of an adult.

71 **(b)**

Structure B in the diagram indicates the ova, which is in meiosis-I stage. Before birth all ova have this stage

72 **(a)**

Cleavage in human is simple holoblastic slow and synchronous. Cleavage in mammals ovum takes place during its passage through the fallopian tube to the uterus. The resultant cells of cleavage are called blastomeres.

73 **(b)**

The chromatin material inside the nucleus is composed of DNA, some proteins and RNA. Thus, in an enucleated ovum, DNA will be present in mitochondria.

The mature RBCs, lack nucleus and membrane bound cell organelles, *i.e.,* lack DNA in nucleus and mitochondria.

74 **(b)**

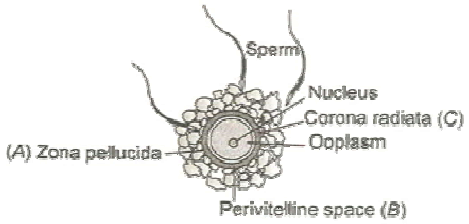
Parthenogenesis refers to the development of unfertilized ovum into a new individual. In honey bee, drones develop parthenogenetically.

75 **(a)**

Stem cells are the specialized cell which can transform or differentiated into any kind of cells

76 **(c)**

Sperm entry stimulates the secondary oocyte to complete the suspended second meiotic division. This produces a haploid mature ovum and a second polar body. The head of the sperm which contains the nucleus separates from the middle piece and tail and becomes male pronucleus. The second polar body and the sperm tail degenerates. The nucleus of the ovum is now called female pronucleus. The male and female pronucleus move towards each other. Their nuclear membrane disintegrates; mixing up of the chromosome of a sperm and an ovum is called *karyogamy* or amphimixis. The fertilized ovum (egg) is now called zygote



Ovum surrounded by few sperm

77 **(a)**

Hyaluronidase enzyme assists in acrosomal reaction. This enzyme acts on the ground substances of follicle cells

78 **(b)**

Leydig's cells or interstitial cells lie between the seminiferous tubules and secrete the male hormone, testosterone that controls spermatogenesis.

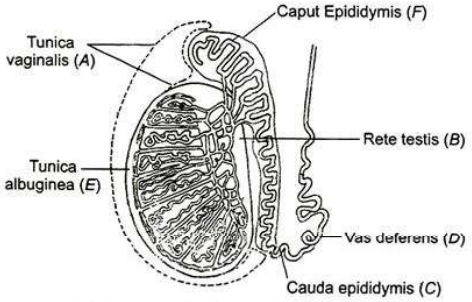
79 **(c)**

Protective Coverings (tunicae) **of Testis** Testis is surrounded by three coverings (layers)

(i)**Tunica Vaginalis** It is the outer covering of the testis

(ii)**Tunica Albuginea** It is the fibrous covering surrounding the testis, situated under tunica vaginalis

(iii) **Tunica Vasculosa** Consist of network of capillaries supported by delicate connective tissue which lines the tunica albuginea.



LS of mammalian testis and different ducts

80 **(d)**

Sertoli cells present in the mammalian testis, nourishes the sperms. That's why Sertoli cells are also called nurse cells. These cells also produces the inhibin hormone which halts spermatogenesis

81 **(c)**

Progesterone hormone is the main hormone, which maintains the endometrium wall. Generally, menstrual cycle have four phases

(i) **Menstrual phase** (a) The soft tissue of endometrial lining of the uterus disintegrates causing bleeding.

(b) The unfertilized egg and soft tissue are discharged.

(c) It lasts 3-5 days.

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c) If ovum is not fertilized, the corpus luteum undergoes degeneration and this causes disintegration of the endometrium leading to menstruation

82 **(c)**
The target of Interstitial Cell Stimulating Hormone (ICSH) is the interstitial cell. Interstitial cells produces testosterone which is responsible for the development of secondary sexual characters

83 **(d)**
Oestrogen hormone is screted by growing ovarian follicles during menstrual cycle. It provokes a thickening of the endometrium (proliferative phase or menstrual cycle).

84 **(c)**
Seminal vesicles secrete and alkaline, nutritive, spermatozoa activating fluid called seminal fluid which forms about 60% part of semen. This fluid contains various substances like fructose, citrate, inositol, prostaglandins and several proteins. Sperms use fructose as an energy source (respiratory substrate).

85 **(c)**
Teratogens, which produces abnormality in the developing embryo.
Thalidomide is a drug which causes no or underdevelopment of the limbs (phoeomelia)

86 **(b)**
Human cell contain 46 chromosomes including 44 autosomes. Primary spermatocyte contain 2n number of chromosome *i.e.,* the number of autosomes, will be 44.

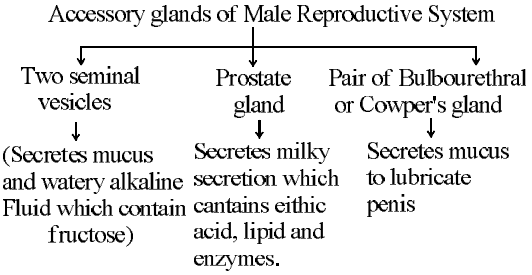
87 **(b)**
Seminal vesicles are present at the base of bladder and joins to the ejaculatory duct. They produces alkaline secretion, which forms 60% of the semen. Their secretion contains, fructose, prostaglandin and clotting factor

88 **(b)**
The part of the Fallopian tubes (oviducts) closer to the ovary is the funnel-shaped infundibulum. The edges of the infundibulum possess finger-like projections called **fimbriae**, which help in collection of the ovum after ovulation

89 **(a)**
Saheli is a new oral contraceptive for the females. It contains a non-steroidal preparation. It is once a weeks' pill with very low side effects and high contraceptive value.

90 **(b)**
Sertoli cells.
Sertoli cells present in the mammalian testis, nourishes the sperms. That's why Sertoli cells are also called nurse cells. These cells also produces the inhibin hormone which halts spermatogenesis

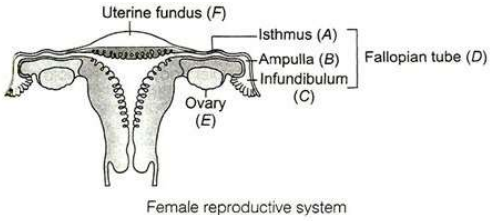
91 **(c)**
A-Vas deferens, B-Seminal vesicle, C-Prostate gland, D-Bulbourethral gland.



External genitalia of humans is called **penis**. Its outer skin, which covers the forehead of penis called foreskin or prepuce. It is the single opening for semen and urine in males

92 **(c)**

A- Isthums, B- Ampulla, C-Infundibulum, D-Fallopian tube, E-Ovary, F-Uterine fundus



Female reproductive system

93 **(a)**

In the given options, only labia minora belongs to the external genitalia of females

94 **(b)**

Development of corpus luteum is done by progesterone and LH not by FSH. Progesterone and LH are secreted by anterior lobe of pituitary

95 **(c)**

Ejaculatory Ducts The ejaculatory ducts are the two short tubes each formed by the union of ducts from seminal vesicle and vas deferens. They pass through the prostate gland and join the prostatic part of the urethra. The ejaculatory ducts are composed of the fibrous, muscular and columnar epithelial tissue. Ejaculatory ducts carry sperms and secretion of seminal vesicles

96 **(a)**

Zygote is implanted in human female at 32-celled stage because fertilized egg in human are not divide beyond 32-celled stage in natural zygote.

97 **(a)**

Notochord, connective tissues including loose areolar tissue, ligaments, tendons, dermis of skin, specialized connective tissue like adipose tissue, reticular tissue, cartilage and bones are mesodermal in origin.

98 **(a)**

Chorionic villi is the modification of outer trophoblast layer of blastocyst, which get attached to the endometrium of uterus. This is called implantation

99 **(c)**

Sperm entry stimulates the secondary oocyte to complete the suspended second meiotic division. This produces a haploid mature ovum and a second polar body. The head of the sperm which contains the nucleus separates from the middle piece and tail and becomes male pronucleus. The second polar body and the sperm tail degenerates. The nucleus of the ovum is now called female pronucleus. The male and female pronucleus move towards each other. Their nuclear membrane disintegrates; mixing up of the chromosome of a sperm and an ovum is called *karyogamy* or amphimixis. The fertilized ovum (egg) is now called zygote

100 **(b)**

A-GnRH, B-Hypothalamus, C-Anterior, D-LH, E-FSH

IMPORTANT PRACTICE QUESTION SERIES FOR NEET EXAM – 2 (ANSWERS)

1)	**c**	**2)**	**b**	**3)**	**c**	**4)**	**a**
5)	**a**	**6)**	**c**	**7)**	**d**	**8)**	**d**
9)	**a**	**10)**	**c**	**11)**	**c**	**12)**	**b**
13)	**b**	**14)**	**b**	**15)**	**d**	**16)**	**a**
17)	**b**	**18)**	**a**	**19)**	**a**	**20)**	**a**
21)	**b**	**22)**	**a**	**23)**	**c**	**24)**	**d**
25)	**a**	**26)**	**a**	**27)**	**a**	**28)**	**c**
29)	**c**	**30)**	**d**	**31)**	**d**	**32)**	**b**
33)	**c**	**34)**	**c**	**35)**	**b**	**36)**	**a**
37)	**c**	**38)**	**b**	**39)**	**c**	**40)**	**a**
41)	**a**	**42)**	**b**	**43)**	**c**	**44)**	**b**
45)	**d**	**46)**	**a**	**47)**	**a**	**48)**	**c**
49)	**d**	**50)**	**a**				

1 **(c)**

Follicular phase is also called the proliferative phase.

Generally, menstrual cycle have four phases

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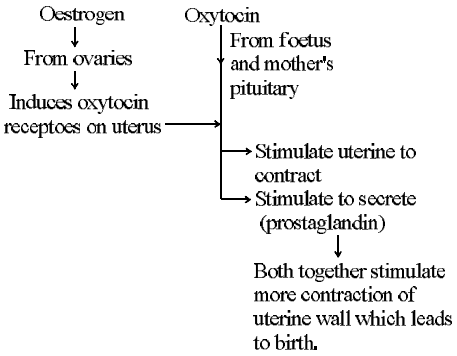
2 **(b)**

A- Oestrogen, B-Oxytocin, C- Prostaglandin.



3 **(c)**

A-epididymis; B-Posterior

4 **(a)**

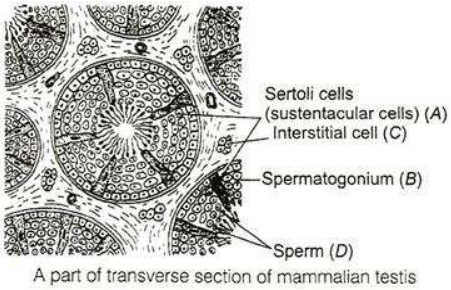
Epididymis is a mass of coiled tubules attached to the posterior surface of the testes. It stores the sperms temporarily. Sperms achieve maturity and motility in epididymis by reabsorption of fluid secreted originally by the seminiferous tubules and by chemicals produced by the lining of epididymal tube.

5 **(a)**

Sertoli cells are also called subtentacular cells

6 **(c)**

Each seminiferous tubules is lined on its inside by two types of cells called **male germ cells** (spermatogonium) and **Sertoli cells**



A part of transverse section of mammalian testis

7 **(d)**

A-Alveoli, B-Milk, C-Mammary duct

8 **(d)**

Nucleus of ovum is called female pronucleus.

Capacitation takes about 5-6 hours.

Capacitation of Sperm The sperms in the female is genital tract are made capable of fertilizing the egg by the secretion of female genital tract. These secretions of the female genital tract removes the coating substances deposited on the surface of the sperms, particularly those on acrosome. Thus, the receptor sites on the acrosome are exposed and sperm become active to penetrate the egg. This phenomenon of sperm activation in mammals is called capacitation. It takes about 5-6 hr for capacitation of sperm

9 **(a)**

To produce test tube baby, the egg fertilized outside the human body, is placed in the womb of the mother, where the gastrula period is completed.

10 **(c)**

Oestrogen is secreted by the cells of Graafin follicles. It is the principal feminizing hormone responsible for the development of secondary sexual characters and female reproductive organs.

11 **(c)**

Due to lack of progesterone, uterine endmetrium, epithelial glands and connective tissue are broken in menstrual cycle.

12 **(b)**

During normal menstruation approximately 40 mL of blood and an additional 35 mL of serous fluid are lost. The menstrual fluid is normally non-clotting because a fibrinolysin is releasted alongwith necrotic endometrial material.

13 **(b)**

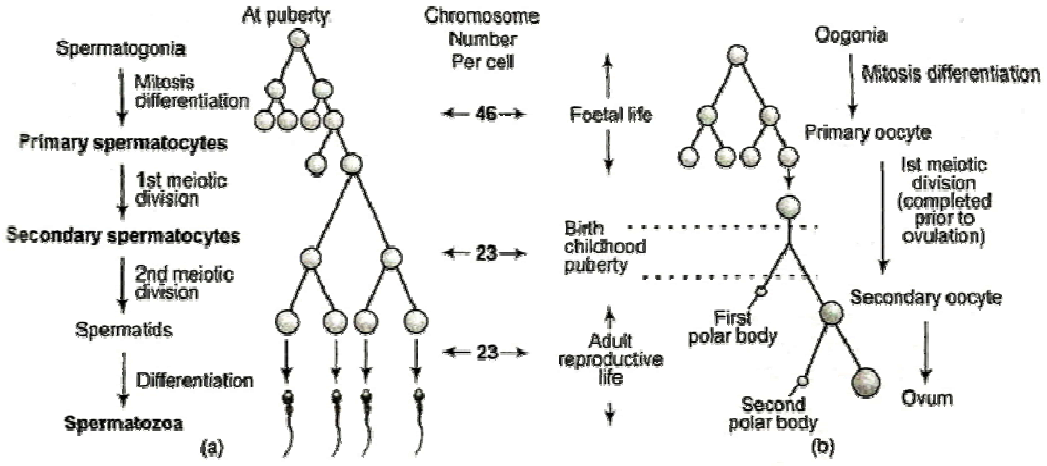
In ovulatory phase, release of ova occurs due to the rapid increase in LH called LH surge. It last for maximum two days

14 **(b)**

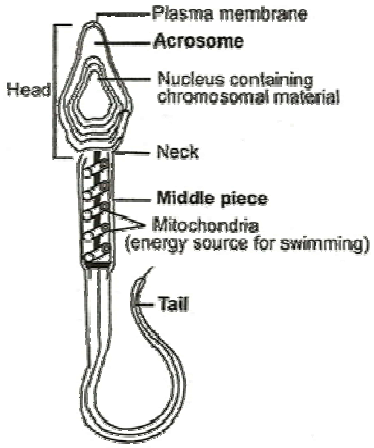
In beginning, the corpus luteum degenerates because of decreasing LH and progesterone level. This leads to the degradation at endometrium wall

15 **(d)**

Oogonia (*A*)
↓ Miosis (cell division)
Primary oocyte (*B*)
↓ Meiosis-I (completed prior to ovation)
Secondary oocyte (*C*)
↓ Meiosis-II
Ovum



Schematic representation of (a) Spermatogenesis (b) Oogenesis



Structure of a sperm

16 **(a)**

The fusion of a haploid male gamete (sperm) and a haploid female gamete (ovum) to form zygote is called fertilization. Fertilization takes places in fallopian tube of human.

17 **(b)**

A- Chorion, B-Amnion, C- Yolk sac, D- Allantois.

Extraembryonic or Foetal Membranes

The growing embryo/foetus develops four membranes called the extraembryoic or foetal membranes. These include chorion, aminion, allantois and yolk sac

(i) **Chorion** It is made up of trophoblast outside and somatopleuric extraembryonic mesoderm inside. It completely surrounds the embryo and protects it. It also takes part in the formation of placenta

(ii) **Amnion** It is composed of trophoblast inside and somatopleuric extraembryonic mesoderm outside. The space between the embryo and the amnion is called the amniotic cavity, which is filled with a clear, watery fluid secreted by both the embryo and the membrane. The amniotic fluid prevents dessication of the embryo and acts as a protective cushion that absorbs shocks

(iii) **Allantois** The allantois is composed of endoderm inside and splanchnopleuric extraembryoic mesoderm outside. It is a sac like structure, which arises from the gut of the embryo near the yolk sac. In human the allantois is small and non-functional except for furnishing blood vessels to the placenta

(iv) **Yolk Sac** The primary yolk sac consists of endoderm inside and splanchnopleuric extraembryoic mesoderm outside. The yolk sac is non-functional in human beings except that it functions as the site of early blood cell formation

18 **(a)**

Oogenesis starts in the foetal stage. Till the time of birth they remains in prophase-I. The oogenesis resumes at the time of puberty by GnRH produced by hypothalamus

19 **(a)**

Vulva or urinogenital opening is the opening of vestibule which inturn consists jointly the opening of vagina

(*i.e,* vaginal orifice), urethra (urethral orifice) and hymen.

20 **(a)**

Trophoblast ia an epithelium surrounding the mammalian blastocyst forming outer layer of chorion and becoming part of the embryonic component of extra-embryonic membranes.

21 **(b)**

Relaxin is secreted by ovary. Relaxin increases the flexibility of the pubic symphysis and ligaments of the sacroiliac and sacrococcygeal joints that helps to dilate the uterine cervix

during labour pain

22 **(a)**

Testosterone.

Region outside the seminiferous tubules is called interdigital space, which is lined by interstitial cells also called Leydig cells. Leydig cells secretes testosterone and also called endocrine part of the testis

23 **(c)**

Sertoli's cells, seminiferous tubules and Leydig's cells, all are present in testes, while Graafian follicles are present in ovary of mammals.

24 **(d)**

A- Mammary duct, B-Mammary duct, C-Lactiferous duct, D-Areola

The glandular tissue comprises about 15-20 lobes in each breast. Each lobe is made up of number of lobules.

Each lobule is composed of grape like cluster of milk secreting glands termed as alveoli. When milk is produced, it passes from alveoli into **mammary lobules** and into the mammary ducts

Internally, the breast consists of the glandular tissue forming mammary glands, the fibrous tissue (connective tissue) and the fatty or adipose tissue. Mammary glands are modified **sweat glands**

25 **(a)**

During **maturation** phase, each primary oocyte undergoes two maturation divisions, first meiotic and second mitotic. In the first meiotic division, the primary oocyte divides into a large secondary oocyte and small first **polar body** or polocyte.

26 **(a)**

Umbilical cordconnects the foetus to placenta of mother. It mainly consists of allantoic mesoderm and blood vessels (umbilical artery and veins).

27 **(a)**

Structure of a sperm (spermatozoa) It consists of four parts *i.e.,* Head, Neck, Middle piece and tail, enveloped by a plasma membrane.

HeadIt is the enlarged end of a sperm, containing the large haploid nucleus, *i.e.,* condensed chromatin body and is capped by **acrosome**. The acrosome contains hydrolytic enzymes that help in dissolving membranes of the ovum for fertilization.

Neck It contains proximal centriole which is necessary for the first cleavage division of zygote and the distal centriole that is connected to the tail filament.

Middle piece It contains a number of mitochondria that provide energy for the movement of the tail that facilitate sperm motility essential or fertilization.

Tail It consists of axial filaments surrounded by the plasma membrane. It helps the sperms to swim in a fluid medium

28 **(c)**

Sperm has mitochondria at its middle part. This middle part gives energy for the motility to the sperm.

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29 **(c)**

Usually, the cytoplasm of ova is without centrioles, because during the second maturation division, the centrioles are taken away by the second polar body.

30 **(d)**

5th month.

Summary of important development changes in the human embryo

Time from Fertilisation	Organ Formed
Week 1	Fertilisation cleavage starts about 24 hours after fertilisation cleavage to form a blastocyst 4-5 days after fertilisation. More than 100 cells implantataion 6-9 days after fertilisation
Week 2	The three primary germ layers (ectoderm, endoderm and mesoderm) develop
Week 3	Woman will not have a period. This may be the first sign that she is pregnant. Beginning of the backbone. Neural tube develops, the beginning of the brain and spinal cord (first organs)
Week 4	Heart, blood vessels, blood and gut start forming. Umbilical cord developing
Week 5	Brain developing, 'Limb buds', small swelling which are the beginning of the arms and legs. Heart is a large tube and starts to beat, pumping blood. This can be seen an ultrasound scan
Week 6	Eyes and ears start to form
Week 7	All major internal organs developing. Face forming. Eyes have some colour. Mouth and tongue develop. Beginning of hand and feet
Week 12	Foetus fully formed, with all organs, muscles, bones toes and fingers. Sex organs well developed. Foetus is moving
Week 20	Hair beginning to grow including eyebrows and eyelashes. Fingerprints developed. Fingernails and toenails growing. Firm hand grip. Between 16 and 20 weeks baby usually felt moving for first time
Week 24	Eyelids open. Legal limit of abortion in most circumstances
By Week 26	Has a good chance of survival if born prematurely
By Week 28	Baby moving vigorously. Responds to touch and loud noises. Swallowing amniotic fluid and urinating
By Week 30	Usually lying head down ready for birth
40 Weeks	Birth

31 **(d)**

A-Sexually, B-Viviparous, C-Internal, D-Haploid, E-Diploid, F-Ovulation, G-LH, H-Fertilisation, I-Blastocyst, J-Placenta

32 **(b)**

A - Vas deferens B- Seminal vesicle

C-Prostategland D- Bulbourethral gland

33 **(c)**

Blastopore is found in gastrula. Gastrula is characterized by ectoderm, endoderm, archenteron and blastopore, dorsal lip of blastopore has organiser properties. If dorsal lip is removed, organ formation does not take place.

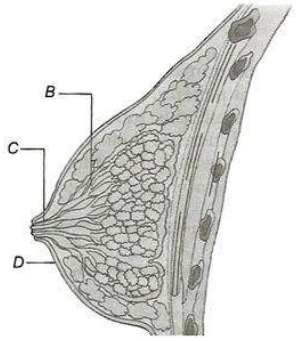
34 **(c)**

Fructose, prostaglandin, clotting factor

Seminal vesicles are present at the base of bladder and joins to the ejaculatory duct. They produces alkaline secretion, which forms 60% of the semen. Their secretion contains, fructose, prostaglandin and clotting factor

35 **(b)**

Sectional view of mammary gland shows.



(i) Nipple areola
(ii) Mammary lobe (alveolus) and duct
(iii) Ampulla and lactiferous duct

36 **(a)**

Cowper's gland
Greater vestibular glands (Bartholin's gland) are packed glands situated on each side of vaginal orifice. These glands are homologous to male bulbourethral (Cowper's) gland and secretes viscus fluid that supplements the lubrication during sexual intercourse.
The lesser vestibular glands (paraurethral glands or glands of Skene) are numerous minute glands that are present on either side of the urethral orifice (opening). These glands are homologous to the male prostate glands and secrete mucus

37 **(c)**

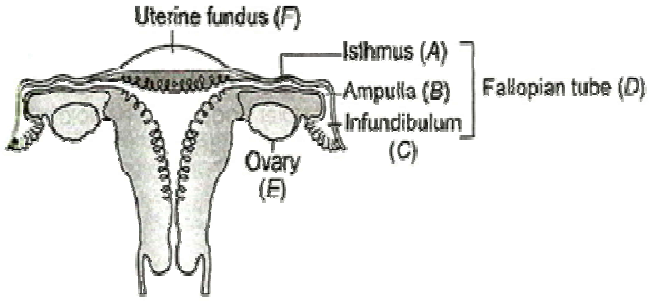
Holoblastic cleavage is complete division of zygote, e.g., frog.

38 **(b)**

Postnatal.
Development periods It includes embryonic or prenatal and post embryonic or postnatal (natal concerning birth)
(i) Embryonic period (prenatal period) In human beings is passed in mother's womb (uterus). It includes the events from the formation of an embryo till the time of birth
(ii) Post embryonic period (postnatal period). This period is passed outside the mother's womb. It includes events from birth to the death

39 **(c)**

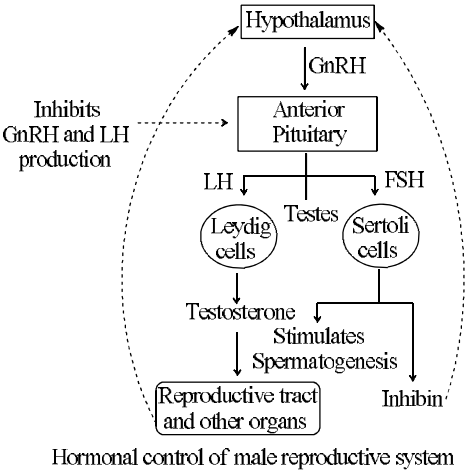
In female reproductive system
(i) Egg produced by ovary
(ii) Fertilization takes place in the ampulla of oviduct
(iii) Implantation takes place in the wall of uterus
(iv) Oestrogen and progesterone are produced by ovary
(v) Part receive the male genitalia (penis) during copulation is vagina.
A- Isthums, B- Ampulla, C-Infundibulum, D-Fallopian tube, E-Ovary, F-Uterine fundus



Female reproductive system

40 **(a)**

Hormonal Control of Spermatogenesis Spermatogenesis is initiated due to the increase in Gonadotropin Releasing Hormone (GnRH) by hypothalamus. GnRH acts on the anterior lobe of the pituitary gland to secrete Luteinising Hormone (LH) and Follicle Stimulating Hormone (FSH). LH acts on the Leydig cells of the testis to secreted testosterone.
FSH acts on the sertoli cells of the seminiferous tubules of the testis to secrete an androgen binding protein (ABP) and inhibin. ABP concentrates testosterone in the seminiferous tubules. Inhibin suppresses FSH synthesis. FSH act on spermatogonia to stimulate sperm production



Hormonal control of male reproductive system

Dark line – Positive feed back
Dot line – Negative feed back

41 **(a)**

In the given options only acrosome belong to the male reproductive system. Rest of the options (corpus luteum, endometrium, Graafian follicle) belongs to the female reproductive system

42 **(b)**

Human placental lactogen stimulates growth and development of breast in preparation for lactation. This hormone is needed before oestrogen and progesterone can have their effects on breasts.

43 **(c)**

Ovulation (release of egg or ovum from ovary into body cavity) involves the extrusion of a secondary oocyte from the ovary. Actually by 10-14 days after the first day of menstruation, only one follicle has contained its growth to become a fully mature Graafian follicle, while other follicles regress through a process called follicle atresia. Under proper hormonal stimulation, Graafian follicle rupture and extrude its oocyte into the uterine tube in the process of ovulation.

44 **(b)**

Seminal vesicle produce 60% of the semen and gives alkaline medium to the sperm for the nutralisation of vaginal acidic medium

45 **(d)**

A- Cervix B- Uterine cavity

C-fallopian tube D-Ovary

46 **(a)**

2nd month.

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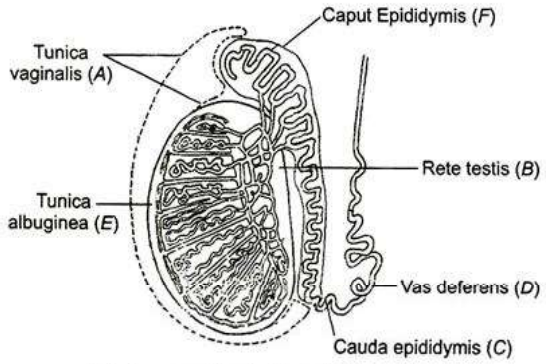
47 **(a)**

FSH (Follicle Stimulating Hormone), secreted by anterior lobe of pituitary, stimulates sperm formation in male and growth of ovarian follicles in the females.

48 **(c)**

Testis is covered by tough compact fibrous capsule called **tunica albuginea**, which is externally covered by peritoneal layer of flat cells called **tunica vaginalis**; which is supplied by a network of blood capillaries called **tunica vasculosa**



LS of mammalian testis and different ducts

49 **(d)**

Inhibin is a glycoprotein hormone secreted from the Sertoli's cells. It is involved in the negative feedback control of sperm production.

50 **(a)**

Inner cell mass forms embryonic disc, which is composed of two layers, ectoderm above and endoderm below. Once the embryonic disc elongates, to form primitive streak which forms mesoderm.