36 Human Reproduction

Reproduction is one of the essential process in organisms. The reproduction is the mechanism by which continuity of generation is sustained and single cell duplicates its genetic material. In the process, genetic material is passed from generation to generation and reproduction maintains the life of the species.

Human is higher level vertebrate social, unisexual animal. So it exhibits external as well as internal sexual dimorphism.

Male (man)	External characters	Female (Woman)
- A pair of mammary gland is namesake only or undeveloped at ventral side of thoracic region.		A pair of mammary gland is well developed at the maturation at ventral side of thoracic region.
- Generally at the maturation time beard and moustache develops.		- At the maturation time beard and mustache is not seen.
- Its muscles are strong.		- Its muscles are comparatively weak.
- Age of musculine voice is deep		- Feminine voice is shrill.
	Internal characters	
- As male gonad a pair of testes occur.		- As female gonad, pair of ovaries occur.
- Testes are located in scrotum.		- Ovaries are located in the abdominal cavity.
- At the age of maturation by the process of spermatogenesis testes produce sperms.		- At the age of maturation by the process of oogenesis ovaries produce ova.
- From the testes, testosterone maleness hormone is released.		- From the ovaries, Estrogen and progesterone hormones, which has characteristic femaleness are released.

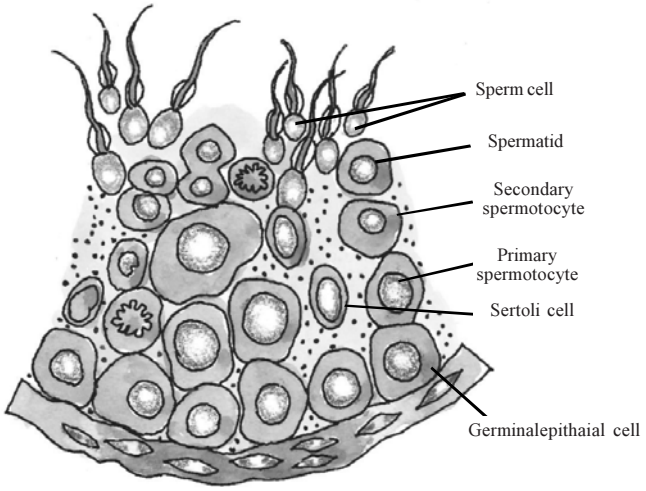
- **Reproductive system :** The male and female reproductive systems are formed by several types of organs. Let us discuss.
- **Male reproductive system :** The organs of the male reproductive system are a pair of testes, a pair of epididymis a pair of vas deferens, a pair of seminal vesicles, a prostate gland, a pair of bulbourethral gland (couper) urethra and penis.
- **Testes :** The testes are situated in the scrotal sac; which are located outside the body. The development of testes starts when they are within the abdominal cavity. Later they descend into the scrotal sac. The scrotal sac helps to maintain the low temperature of the testes. The temperature of scrotal sac is almost 3^{o}C lower than the normal body temperature, which is essential for spermatogenesis.

- **Internal stucture of testes :** The testes are paired oval shaped glands measuring about 5cm in length and 2.5 cm in diameter. A fibrous connective tissue, the tunica albuginea surround each testis - It extends inward and divides each testis into several lobules. Each lobule contains one to four tightly coiled seminiferous tubules, which produces sperms.

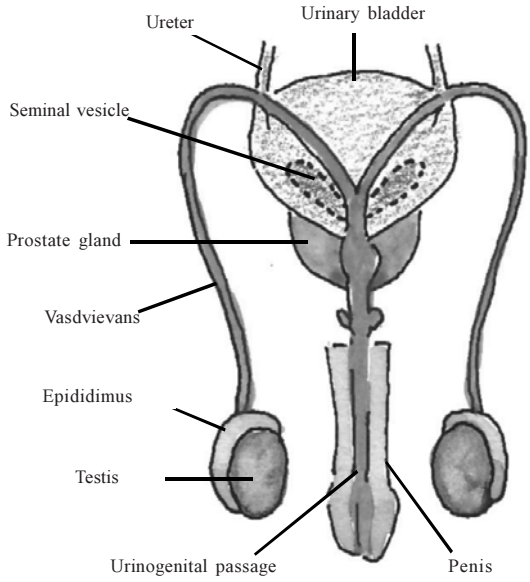
  Each seminiferous tubule is lined by two types of cells. (1) Germinal cells : They are arranged in 4 to.8 layers. These cells divides many times and differentiate into sperm (2) Sertoli cells : They are placed in between the developing sperm cells and provides nutrition to the sperm cells.

  The cells present in the interstitial space between seminiferous tubules are known as interstitial cells or leydig's cells. They secrete the male sex hormone testosterone.

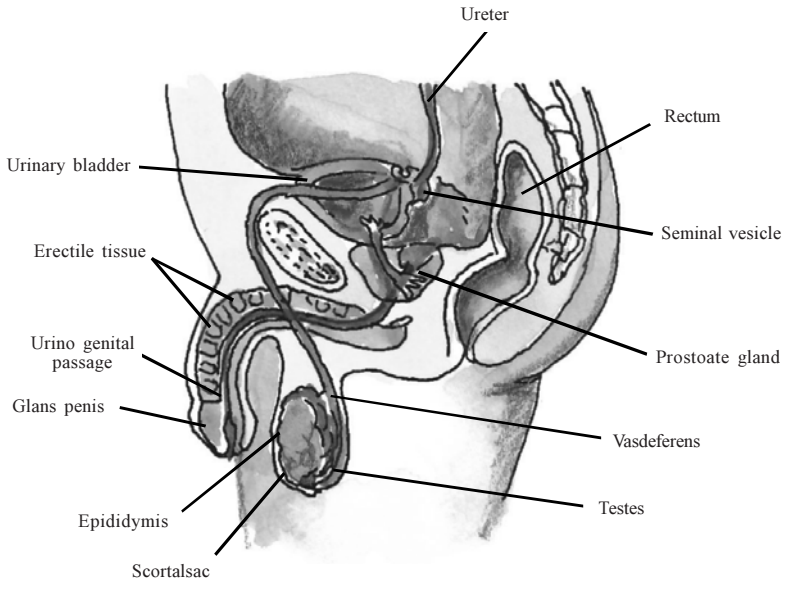
  Seminiferous tubules of each lobe empty sperms into the vas efferentia. Sperms travel through vasa efferentia to the epididymis; which surrounds the external surface of the testis.



T.S. of Semini ferous tubule



Male Reproductive System (Front View)



Male Reproductive System (Lateral View)

- **Epididymis :** The epididymis is highly coiled tube, about 6 meters long. It provides temporary storage site for the immature sperms, in which sperms complete their maturation process and gain the ability to swim. When a male is sexually stimulated, the walls of the epididymis contract and sperms are transported into vas deferens.
- **Vas deferens :** The vas deferens is a tube which is about 45 cm long. It turns upward from the epididymis through the inguinal canal and enters the abdomen where it loops over the urinary bladder. This tube is connected with blood vessels and nerves. The distal end of vas deferens is expanded and in this region the seminal vesicle opens. Afterwards it is known as an ejaculatory duct. The duct of urinary bladder joins with ejaculatory duct. Now it is known as urethra.
- **Urethra :** In the structure of uretra ejaculatory duct is formed from the vas deferens and ureter linked, even seminal vesicle (accessory reproductive gland) also secrete in it that path or passage is known as urethra. It called as urinogental passage because ureter passes urine and vas deferens passes the male gametes in this path way. So it called urinogenetal path way. Now urethra passes through the penis. Before that secretions of prostate and bulbourethral of glands poured into urethra, which opens at the tip of the penis.
- **Penis :** The penis is a cylindrical organ located at the frontal region of scrotal sacs. It deposite sperms into the vagina of female. The distal end of the penis is slightly enlarged, called glans - penis. Glans - penis is covered by loosly fitting skin known as foreskin.
- **Internal structure of penis :** Internal structure of the penis is composed of three cylindrical masses of tissue bound together by fibrous tissue. Out of these two are located dorsally and one is located ventrally which contains the urethra. All three masses of tissue are sponge like and contain blood sinuses. It is filled with blood during sexual arousal. This causes the penis to enlarge and become rigid. This event is called erection.
- **Accessory reproductive glands of male / man :** The accessory reproductive glands of man includes paired seminal vesicles, a prostate gland and a pair of bulbourethral glands. Secretion these glands produce semen.
- **Seminal vesicle :** The seminal vesicle are located at the base of the urinary bladder. They produce 60% fluid volume of semen. Their thick and yellowish secretion is rich in sugar, vitamin-C and other substances; which nourishes the sperms. The duct of each seminal vesicle joins with vas deferens and form the ejaculatory duct. Thus sperms and seminal fluid enter in the urethra together.
- **Prostate gland :** The prostate gland is located at the posterior region of the urinary bladder. The secretion of prostate gland is milky. It plays a major role in activating sperms. It enters the urethra through several small ducs.
- **Bulbourethral (cauper)gland :** The paired bulbourethral glands are located beneath the prostate gland on lateral side of urethara. Like prostate gland, they secrete alkaline fluid which serves as a lubricant during sexual intercourse.

- **Semen :** Semen is milky white and sticky mixture of sperms and secretion of accessory glands. The relative alkalinity of semen as a whole (pH 7.2 - 7.6) helps to neutralize the acidic environment (pH 3.5-4.0) of the vaginal fluid thus protecting the delicate sperms and enhancing their motility. The average volume of semen for each ejaculation is 3 to 4 ml.

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(1) Which option is improper with reference to reproduction ?

(A) It is essential process for livings.

(B) Continuity of life is maintained generation after generation due to reproduction.

(C) During reproduction haploid genetic material is maintained.

(D) Reproduction maintains characteristic of species, genetic continuity by genetic material generation after generation.

(2) Which type of animal is Human ?

(A) Highest level, quardiplage

(B) Highest level, vertebrate, quardiplage, social

(C) Highest level, vertebrate, quardiplage, unisexual, social

(D) Highest level, Bisexual, vertebrate

(3) Which statement is improper for external dimorphism in male ?

(A) Pair of developed mammary gland present on ventral side of thoracic region.

(B) In adult stage well developed beard and moustache appear on face.

(C) They have strong muscles.

(D) Voice is deep and harsh in adult

(4) Which of the following is improper for external dimorphism in female ?

(A) They have well developed pair of mammary gland on ventral side in thoracic region.

(B) In adult stage beard and moustache on face.

(C) Their muscles are weak.

(D) Their voice become shrill, faminine at adult stage.

(5) Which of the following character is not for internal sexual dimorphism of man.

(A) One pair of testis present as gonads.

(B) Testis are protected outside the body in scortal sac.

(C) It releases aldosterone in the form of male hormone from testis.

(D) In adult stage by the process of spermatogenesis forms sperm from testis.

(6) Which of the following is not character of female internal sexual dimorphism ?

(A) Pair of ovary is present as gonad.

(B) One pair of ovary present in abdominal cavity.

(C) Female sex hormone estrogen and testosterone secreted from ovary.

(D) In adult form, by the process of oogenesis, ovules are formed by ovary.

(7) Which is correct sequence for main reproductive organs in male reproductive system?

(A) Pair of testis - Pair of epididymis - pair of vas deferens - urinogenital passage - Penis

(B) Pair of testis - Pair of vas deferens - Pair of epididymis - urinogenital passage - Penis

(C) Pair of epididymis - Pair of vas deferens - Pair of testis - urinogenital passage - Penis

(D) Pair of vas deferens - pair of epididymis - pair of testis - urinogenital passage - Penis

(8) Which arrangement is correct for accessory reproductive organs in male reproductive system ?

(A) Pair of seminal vesicle - one prostate gland - Pair of bulbourethral gland

(B) Pair of seminal vesicle - one prostate gland one bulbourethral gland

(C) Pair of seminal vesicle - Pair of bulbourethral gland - one prostate gland

(D) One pair of bulbourethral gland - one pair seminal vesicle - One prostate gland

(9) Which sentence is proper for scrortal sac with reference of testis ?

(A) Scortal sac is not situated outside body, below abdominal region.

(B) Testis are not protected in scortal sac.

(C) In scortal sac, temperature of testis is less than body temperature, sperms are produced by testis.

(D) Scortal sac inhibits activeness of testis.

(10) What are main functions of scortum ?

(A) Protection of sperms and maintaining shape

(B) Protection of testis, maintaining shape of testis

(C) Protect the testis, lowering its temperature

(D) Protection of testis, maintain amount of water

(11) Which process occurs in testis and for what purpose ?

(A) Process of development of testis, for maturity

(B) Process of growth of testis, for maturity

(C) Testis show spermatogenesis, for formation of sperms

(D) Testis show spermatogenesis, for maturity of sperms

(12) Which is proper statement for the size of testis ?

(A) Oval, pink shaped, 5 cm diameter - 2.5 length

(B) Oval, Pink coloured, 5 cm length 2.5 cm diameter

(C) Round, Red coloured, 5 cm diameter, 2.5 cm length

(D) Round, Red coloured, 5 cm length, 2.5 diameter

(13) Which structure is present outside the testis ?

(A) Structure of tunica albugenia, formed of white fibrous connective tissue.

(B) Structure of tunica albugenia, formed of fibrous connective tissue.

(C) Tunica albugenia, formed by yellow fibrous connective tissue.

(D) Structure of tunica albugenia, formed by white and yellow connective tissue.

(14) Spermatic cord is formed by which structure ?

(A) Fibrous (B) Hollow structure (C) Segmentated (D) Cellular structure

(15) Which vessels are found in the structure of spermatic cord ?

(A) Epididymis tubule (B) Vas deferens (C) Seminiferous tubules (D) Seminal vesicle

(16) Which type of cells are present in seminiferous tubules ?

(A) Germinal epithelium, somatic cells (B) Somatic cells, germinal epithelium

(C) Spermatogonia, sertoli cells (D) Somatic cells, sertoli cells

(17) The cells present in the interstitial space between seminiferous tubule are known as ..... .

(A) sertoli cells (B) gap cells (C) interstitial cells (D) internal cells

(18) What is function of sertoli cells ?

(A) Nutrition for testis (B) Nutrition for vas deferens

(C) Nutrition for sperms (D) Nutrition for developing sperms

(19) What is main function of interstitial cells / Leydig's cell ?

(A) Secretion of male sex hormone - testosterone.

(B) Secretion of male sex hormone androgens.

(C) Development of male secondary sex characters.

(D) Develop sexual characters.

(20) What is specific location of vas deferens ?

(A) Seminiferous tubules, in the vas deferens.

(B) Between seminiferous tubule and ejaculatory duct.

(C) Between seminiferous tubule and epididymis.

(D) Between seminiferous tubule and testis.

(21) What is proper sentence with reference of epididymis ?

(A) One pair of straight tubule, 12 mt. long (B) One pair of straight tubule, 6 mt. long

(C) One pair of convoluted tubule, 12 mt. long (D) One pair of convoluted tubule 6 mt. long

(22) Which tubules are present at both ends of epididymis ?

(A) Vas efferentia, Inguial tubule (B) Vasa efferentia, vas deferens

(C) Vasa efferentia, urinogenital tubule (D) None of above

(23) Epididymis has storage function for ..... .

(A) Storage of immature sperm cells (B) Storage of mature sperm cells

(C) Temporary storage of immature sperms (D) Permenant storage for immature sperms

(24) Which ability is gained by sperm cells in epididymis ?

(A) To obtain nutritive substances (B) Swimming

(C) Ciliary movement (D) Amoeboid movement

(25) When is sperm cells transported from epididymis to vasa efferentia ?

(A) Due to contraction of wall of epididymis, sperm cells gain buoyancy and transported to vasa efferentia.

(B) Secretion of epididymis transports sperm cells to vasa efferentia.

(C) Hormones of epididymis, gives motility to sperm cells into vasa efferentia.

(D) Enzymes of epididymis gives motility to sperm cells to vasa efferentia.

(26) Which tubule connects scrotum and abdominal cavity in male ?

(A) Epididymis (B) Vasa efferentia (C) Inguinal tubule (D) Vas deferens

(27) Inguinal canal is present between, which two tubules ?

(A) Epididymis, vasa efferentia (B) Epididymis, vas deferens

(C) Epididymis, collecting tubule (D) Epididymis, Ejaculatory duct

(28) Which sentence is proper for vasa efferentia ?

(A) Connected with inguinal, 45 cm length, folds around urinary bladder, results in ejaculatory duct.

(B) Connected with ejaculatory duct, 25 cm in length form loop around urinary bladder, results in ejaculatory duct.

(C) Connected with epididymis, 45 cm length, loop around urinary bladder and form ejaculatory duct.

(D) Connected with vasa efferentia, 45 cm length, loops around urinary bladder and form ejaculatory duct.

(29) Which structures are connected with spermatic cord ?

(A) Blood capillaries + lymph capillaries

(B) Blood capillaries + nerves + vasa efferentia

(C) Blood capillaries + lymph capillaries + vasa efferentia

(D) Blood capillaries + nerves + lymph capillaries

(30) When is ejaculatory duct formed from vasa efferentia ?

(A) When secretion of prostate mixes (B) When secretion of Bulbourethral mixes

(C) When secretion of seminal vesicle mixes (D) When secretion of cowper's gland mixes

(31) Which structures are connected with urinogenital passage ?

(A) Vas deferens + seminal vesicle

(B) Vas deferens + seminal vesicle + prostate gland.

(C) Vas deferens + seminal vesicle + prostate gland + ureter

(D) Vas deferens + seminal vesicle + prostate gland + ureter + bulbourethral gland

(32) Urinogenital passage is connected with structure at both ends ..... .

(A) epididymis, penis (B) vasa efferentia, penis

(C) vasa efferentia, penis (D) ejaculatory duct, penis

(33) Structure of penis is formed of ..... .

(A) fibrous tissue (B) erectile tissue

(C) erectile tissue and internal cavities (D) eractile tissue, internal cavities and ureter passes through it

(34) Which sentence is proper for seminal vesicle ?

(A) One pair, accessory organ for storage, at the base of urinary bladder.

(B) One pair, accessory organ for secretion, at the base of urinary bladder.

(C) One pair, accessory organ for secretion, upper side of urinary bladder.

(D) One pair, accessory organ for secretion, lateral side of urinary bladder.

(35) Which are secretory components of seminal vesicle ?

(A) Thick, jelly like fluid + yellowish sugar

(B) Thick, jelly like fluid + yellowish sugar + vitamin C

(C) Thick, jelly like fluid + yellowish sugar + vitamin C + other substances

(D) Thick, jelly like fluid + yellowish sugar + vitamin C + other substances + vitamin B_1 , B_2, B_{12}

(36) Which secretion is essential for entry of sperm cells into urinogenital passage ?

(A) Secretion of seminal vesicle (B) Secretion of prostate gland

(C) Secretion of bulbourethral gland (D) Secretion of ejaculatory duct

(37) Secretion of prostate gland is of which type ?

(A) Colourless, without viscousity (B) Red, without viscousity

(C) Milky, viscous (D) Pink, viscous

(38) What is effect of secretion of prostate gland on sperm cells ?

(A) Reduces activeness (B) Increases activeness

(C) Increase inactivity (D) Maintains inactivity

(39) What is exact location of pair of bulbourethral gland ?
(A) Ventral side of urinary bladder (B) Lateral side of urinary bladder
(C) Ventral side of urinogenital passage (D) Lateral side of urinogenital passage

(40) Secretion of which gland increases motility of sperm cells ?
(A) Seminal vesicle (B) Prostate (C) Bulbo urethral (D) Cowper's gland

(41) Secretion of which gland serves as lubricant during copulation ?
(A) Seminal vesicle (B) Prostate (C) Bulbourethral (D) Ejaculatory duct

(42) Secretion of which gland is useful in transport of sperms into vagina without friction ?
(A) Seminal vesicle (B) Prostate (C) Bulbourethral (D) Vasa efferentia

(43) Which type of fluid is semen ?
(A) Colourless, acidic, white (B) White , oily, alkaline fluid
(C) White, sticky, alkaline, with sperm cells (D) White, sticky, acidic with sperm cells

(44) What is approximate PH value of semen ?
(A) 7.0 to 7.2 (B) 7.2 to 7.6 (C) 7.4 to 7.8 (D) 7.6 to 7.8

(45) Approximate PH in vaginal passage is ..... .
(A) 1.5 to 2 (B) 2.6 to 2.5 (C) 2.5 to 3.0 (D) 3.5 to 4.00

(46) Due to which process PH value become neutral in vaginal passage ?
(A) Growth (B) Development
(C) Differentiation (D) Ejaculation of semen during copulation

(47) Which processes become easy with removal of acidity in vaginal passage ?
(A) Transport of delicate sperm cells and maintain its shape.
(B) Prctection of delicate sperm cells and increage in its motility.
(C) To keep sperms alive, increases motility of sperm cell.
(D) To protect and increase motility of sperm cell.

(48) What is approximate volume of semen ?
(A) 1 to 2 cm (B) 1 to 2 ml (C) 3 to 4 cm (D) 3 to 4 ml

(49) Which option is proper for proper passage for sperm cells in male reproductive system ?
(A) Testis - Epididymis - Vasa efferentia - urinogenital passage - Penis - Vaginal passage
(B) Seminiferous tubule - Vasa efferentia - Epididymis - Inguinal canal - Vasa deferens - ejaculatory duct - urinogenital passage - Penis - Vaginal passage
(C) Seminifercus tubule - Vasa efferentia - epididymis - Inguinal canal - urinogenital passage - Penis - Vagina
(D) Testis - Epididymis - Vasa efferentia - Vasa deferens ejaculatory duct - urinogenital passage - Penis - Vagina

Answers : (1-C), (2-C), (3-A), (4-B), (5-C), (6-C), (7-A), (8-A), (9-C), (10-C), (11-C), (12-B), (13-B), (14-C), (15-C), (16-C), (17-C), (18-D), (19-A), (20-C), (21-D), (22-B), (23-C), (24-B), (25-A), (26-C), (27-B), (28-A), (29-B), (30-C), (31-D), (32-D) (33-D), (34-B), (35-C), (36-A), (37-C), (38-B), (39-D), (40-B), (41-C), (42-C), (43-C), (44-B), (45-D), (46-D), (47-D), (48-D), (49-B)

- **Female Reproductive System :**

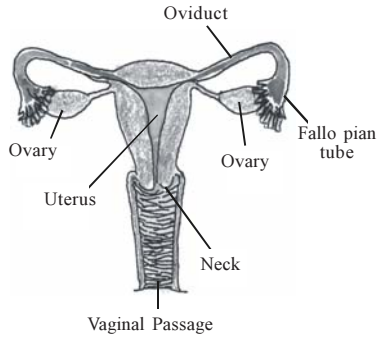
The female reproductive system consists of a pair of ovaries, fallopian tubes or oviducts or uterine tubes, uterus, vagina and external genitalia or vulva or pudendum. The mammary glands are also included in female reproductive system as an accessory organs.

- **External and internal structure of ovary :**

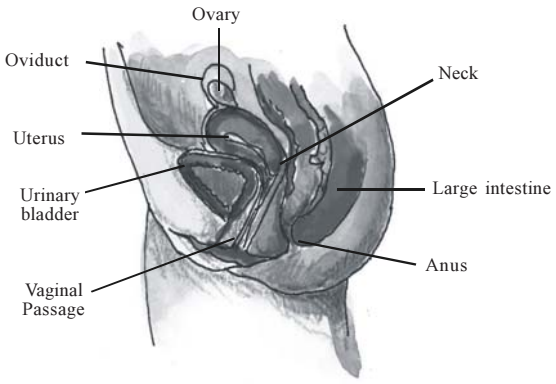
The ovaries are paired glands with the size and shape of almonds. It is about 3 cm long, 2 cm wide and 1 cm thick. They are situated in the upper pelvic cavity, one on each side of the uterus. The ovaries

maintain their position by a series of ligaments. Each ovary contains a hilus, the entry point for blood vessels and nerves. In sectional view, ovary consists of the following parts.

- **Germinal Epithelium :** It is a layer of simple cuboidal epithelium which covers ovary.
- **Tunica Albuginea :** It is a capsule of collagenous connective tissue immediately after the germinal epithelium.
- **Stroma :** This is a region of connective tissue deep to the tumica albuginea. It is composed by outer cortex and an inner medulla. The cortex contains ovarian follicles.
- **Ovarian follicles :** It consist of ova and their surrounding tissues in various stages of development. After that ovarian follicle gets maturation stage.
- **Graffion fallicle :** It consists of mature ovum and its surrounding tissues.
- **Corpus Luteum :** Graffion follicle after ovulation produces glandular body. It secrete hormone progesterone. Thus, ova are produced by ovaries and female sexualy hormones estrogen and progesterone are secreted also.



Female reproductive system (Front view)



Female reproductive system (Lateral view)

- **Oviduct :** A pair of oviduct or fallopian tube, are included in female reproductive system. Uterine or fallopian tube or oviduct transports ova from ovaries to uterus. It is 10cm long and situated between the folds of the ligaments of the uteras. It has vannel-shaped open end, called infundibulum (Oviducal funnel) which lies very close to the ovary but not attached to it. About once a month ovum is released from ovary near the infundibulum of uterine tube; this process is called ovulation. The collected ovum run forward in uterine tube by ciliary action. The uterine tube from side runs forwards and becomes associated with the uterus. If ovum is fertilized by sperm. Phenomenon is observed in the parts after oviducal funnel.
- **Uterus :** The uterine tubes from both side join and form the uterus. The uterus is situated in between the urinary bladder and rectum. It is inverted pear-shaped and thick walled muscular structure, where menstruation, implantation of a fertilized ovum and development of the embryo occurs. The wall of the uterus is made up of three layers.

(i) **Endometrium :** It is an inner most layer. If fertilization occurs, the fertilized egg is implanted here and resides there for further development. If the woman does not conceive, the endometrial lining slough off periodically, usally after every 28 days.

(ii) **Myometriums :** It is bulky middle layer of the uteras. It is composed of bundles of smooth muscle. This layer plays an active role during the delivery of a baby.

(iii) **Epimetrium :** It is the outermost layer of the uterus.

- **Cervix :** The distal narrow end of the uterus is called cervix, which connect uterus to the vagina.
- **Vagina :** Vagina is a thin walled tube, it lies between urinary bladder and rectum and it extends from cervix to the outside of the body. Vagina provides a passageway for the delivery and for the menstrual flow to leave the body. The distal end of the vagina is partially closed by a thin fold of the mucosal membrane called the hymen. It can break at anytime either due to vigorous exercise or due to other reasons.
- **External genitalia of female/Accessory genital organs of female :**

  Female have external genitilia. They are mons pubis, labia majora, labia minora and clitoris.
- **Mons pubis :** It is a cushion of fatty tissues which is covered by skin and pubic hair.
- The labia majora are folds of tissue, which are located below the mons pubis and surrounds the vulva. The labia minora are also a fold of tissue under the labia majora. The clitoris is a tiny finger like structure which lies at the upper junction of two labia minora. It contains erectile tissue and is considered equivalent to the male penis. The clitoris differs from the penis in that it lacks a reproductive duct.

  Mammary glands are present in both sexes, but normally they are functional in females only. The biological role of the mammary glands is to produce milk and nourish a newborn baby. In the puberty stage, the female mammary glands increase in size, this is stimulated by sex hormone estrogen. They are also considered as accessory reproductive glands.

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(50) Which are main argans in female reproductive system from the given below ?

(A) Pair of ovary - pair of oviduct - uterus - pair of vaginal passage

(B) Pair of ovary - pair of oviduct - pair of uterus - pair of vaginal passage

(C) Pair of ovary - pair of oviduct - uterus - vaginal passage - external genital organs - mammary gland

(D) Pair of ovary - pair of oviduct - uterus - vaginal passage

(51) Which of the following sentence is not proper for female gonads ?

(A) Pair of ovary, almond shaped, glandular 3 cm length, 2 cm width, 1 cm thickness

(B) Pair of testis, almond shaped, glandular 3 cm length, 2 cm width, 1 cm thickness

(C) Pair of ovaries on lateral sides of pelvic cavities attached with one one - muscle cord

(D) Ovary has hilum, which is believed to entry place for blood capillaries and nerves

(52) What is exact location of Ovary ?

(A) Pelvic region, behind abdominal cavity one - one on lateral side

(B) Pelvic region, behind abdominal cavity one- one, each in the middle.

(C) Pelvic region, behind abdominal cavity one - one each on ventral side.

(D) Pelvic region, behind abdominal cavity one - one each on both lateral side

(53) Which is outer most layer in medulla of ovary ?

(A) germinal epithelium (B) Tunica albuginea

(C) Squamous epithelium (D) Nutritive layer

(54) Which tissue layer is found in tunica albuginea ?

(A) Fibrous connective tissue (B) Yellow fibrous connective tissue

(C) Connective collagen tissue (D) liquid connective tissue

(55) Which cells are included in ovarian follicle?

(A) Ovules

(B) Ovules + Follicular epithelial cells

(C) Ovules + Follicular epithelial cells + squamous epithelium

(D) Ovules + Follicular epithelial cells + columnar cells

(56) Developmental stages of ovarian follicle are shown by which hormone and gland ?

(A) LTH, Anterior Pituitary (B) GTH, Ant. Pituitary

(C) LH, Anterior Pituitary (D) Estrogen , Ant. Pituitary

(57) Which are developmental stages of ovarian follicle, which at the end shows ovulation ?

(A) Primary ovarian follicle - primary follicle - secondary follicle - graffian follicle

(B) Primary ovarian follicle - secondary follicle - primary follicle - graffian follicle

(C) Primary follicle - graffian follicle - primary ovarian follicle - secondary follicle

(D) Primary follicle - graffian follicle - secondary follicle - primary ovarian follicle

(58) Which ovarian follicle are found in secondary oocute ?

(A) Secondary follicle, primary follicle (B) Primary ovaridn folicle, primary follicle

(C) Primary follicle, secondary follicle (D) Graffian follicle, secondary follicle

(59) Where arrangement of graffian follicles occurs in human ?

(A) Ovary (B) Oviduct

(C) Uterus (D) Bulges out on ovary

(60) Which structure develop due to rupturing of graffian follicle ?

(A) Corpus albunics (B) Corpus metsuosa (C) Corpus luteum (D) Corpus cortex

(61) Which hormone is released due to rupturing of graffian follicle ? Which type of hormone it is ?

(A) Estrogen, steroid (B) Progesterone, catecholamine

(C) Progesterone, steroid (D) Estrogen, catecholamine

(62) Which hormone level increases due to development of corpus luteum ?

(A) GTH - LH (B) GTH - estrogen

(C) Estrogen - progesterone (D) LH - Progesterone

(63) Which sentence is not proper for fallopian tube ?

(A) Pair of fallopian tube is present in female reproductive system.

(B) It transports ovules from ovary to uterus.

(C) It is arranged between 10 cm - long and folds of uterus muscle joints.

(D) Its anterior portion is narrow, from it ovules are transported.

(64) What is oviducal funnel ?

(A) It is filamentous, funnel shaped structure on anterior. region of oviduct.

(B) Oviducal funnel is structure connected with oviduct.

(C) Funnel shaped structure between oviduct and uterus.

(D) Filamentous structure between oviduct and uterus.

(65) How are eggs transported by oviduct ?

(A) Amoeboid movement (B) Cilliary movement

(C) muscular movement (D) Oscillatory movement

(66) How are of oviduct and uterus connected ?

(A) From Anterior region (B) From Ventral region

(C) From Posterior region (D) From Lateral side

(67) Where is fertilization of ovulm takes place by sperms ?

(A) Posterior region of oviduct (B) Oviducal funnel

(C) Oviduct region after oviducal funnel (D) Middle of oviduct

(68) Which option is proper for location and shape of uterus ?

(A) Above rectum and urinary bladder, pear shaped.

(B) Below urindary bladder and rectum, pear shaped.

(C) Between urinary bladder and rectum, inverted pear shaped.

(D) Lateral side of urinary bladder and rectum, inverted pear shaped.

(69) Which sentence is not proper for uterus ?

(A) Between two oviduct, in between urinary bladder and rectum, inverted pear shaped organ.

(B) It is organ with thick muscular wall, posterior opens in cervix region which is narrow structure.

(C) It forms three layered wall, and structure connected with menstrual cycle, embryo implantation.

(D) It is concerned with fertilization and abortion.

(70) Which layer of uterus, normally breaks by 25 to 30 days ? Which is hormone deficiency controlls it ?

(A) Endometrium (B) Myometrium (C) Ectometrium (D) Mesometrium

(71) Which layer is associated with implantation of embryo in uterus ?

(A) Endometrium (B) Myometrium (C) Epimetrium (D) Ectometrium

(72) Which is most developed layer of uterus for embryo implantation ?

(A) Endometrium (B) Myometrium (C) Epimetrium (D) Ectometrium

(73) Which layer induces contraction and relaxation of uterus during child birth ?

(A) Endometrium (B) Myometrium (C) Epimetrium (D) Ectometrium

(74) Which organs are related with menstrual cycle and delivary ?

(A) Uterus, vaginal passage (B) Oviduct, oviducal funnel

(C) Oviducal neck (D) Neck, oviducal funnel

(75) Which is proper sentence for hymen membrane ?

(A) Partially covers mucosal part of vagina present at the far end of vaginal passage.

(B) Thick membrane connected at the far end of vaginal passage.

(C) Membrane present at the far end of vaginal passage, conctractile in nature.

(D) Posterior membrane formed by angular membrane.

(76) Which option is proper for external genital organs of female ?

(A) Labia majora monspubis, Labiaminora, clitoris

(B) Monspubis, labia majora, Labia minora, clitoris

(C) Monspubis, 1 pair labia majora, labia minora, clitoris

(D) Monspubis, one pair labia majora, labia minora, pair clitoris

(77) Which sentence is proper for monspubis ?

(A) It is accessory organ for vaginal passage, pillow like structure with pubic hair and adipose tissue.

(B) It is accessory organ for vagina, pillow like, white connective tissue containing structure.

(C) Main organ for vaginal passage, structure covered with pubic hair, pillow like formed of adipose tissue.

(D) Main organ for vaginal passage, white fibrous tissue, pillow like structure.

(78) Which is proper sentence for clitoris ?

(A) It is small finger like, attached at upper part of labia minora, having contractile tissue, comparative structure with penis.

(B) It is small finger like, structure present at upper region of labia minora, having non-striated muscles, not comparative to penis.

(C) It is spongy, fibrous structure, attached with labia majora, having striated muscles comparative with penis.

(D) It is spongy fibrous structure, independent of labia majora, having striated muscles comparative with penis.

(79) Which sentence is proper for function of mammary gland ?

(A) It is accessory reproductive organ, for breast feeding of baby.

(B) Main reproductive organ, storage of adipose tissue.

(C) Main reproductive organ, contraction by striated muscle.

(D) Breast feeding, production of antibiotics

Answers : (50-D), (51-B), (52-A), (53-B), (54-C) , (55-B), (56-B), (57-A), (58-D), (59-D), (60-C), (61-C), (62 -C), (63-D), (64-A), (65-B), (66-D), (67-C), (68-C), (69-D), (70-A), (71-A), (72-B), (73-B), (74- A), (75-A), (76-A), (77-A), (78-A), (79-A)

Gametogenesis : The gametogenesis is the process of gamete formation in the sexually reproducing animals. The animals have two types of cells in their body : Somatic cells and Germinal cells. Somatic cells form various organs of the body; and divide by mitotic division. The germinal cells produce gametes by successive mitotic and meiotic divisions. The male gamete is known as spermatozon or sperm and female gamete is known as ovum or egg. The process of sperm production is known as the the spermatogenesis and the process of production of ovum is known as oogenesis.

Spermatogenesis : The process of spermatogenesis occurs in male gonads or testes; continues process of miltiplication, growth and maturation all the end of this process sperms are formed so it is known as spermatogenesis, for the sake of convenience this process can be studied in two different stages.

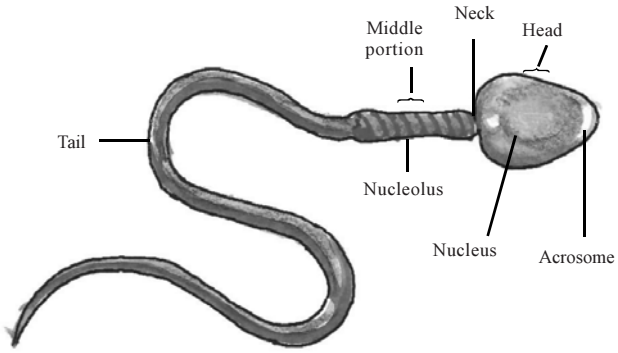
(1) Formation of spermatids (2) Spermiogenesis.

(1) Formation of spermatids : The male germinal cells, which produce the sperms are known as primary germinal cells. These primary germinal cells pass through the following three phases for the formation of spermatids.

(i) Multiplication phase : The undifferentiated germ cells or primary germinal cells, contain large size and chromatin rich nuclei. These cells multiply by mitotic division and produce spermatogonia. Each spermatogonium is diploid.

(ii) Growth phase : In the growth phase the spermatogonia accumulate large amount of nutrient and chromatin material. Now each spermatogonium is known as the primary spermatocytes.

(iii) Maturation phase : Now primary spermatocytes are ready for first meiotic or maturation division. By this, two secondary spermatocytes are formed. Each secondary spermatocyte is haploid. Each secondary spermatocyte passes through the second meiotic or maturation division and produces two spermatids. Thus, by a meiotic or maturation division a diploid spermatogonium produces four haploid spermatids. These spermatids can not act directly as the gametes, so they have to pass through spermiogenesis.



Mature sperm cell

(2) Spermiogenesis : The metamorphosis of differentiation of the spermatids into the sperms is known as spermiogenesis. Three changes occurs in the spermatids.

(i) Changes in the nucleus : The nucleus loses water, shrinks and assumes ovoid and laterally flattened shape. The RNA and the nucleolus are greatly reduced. The DNA become more concentrated.

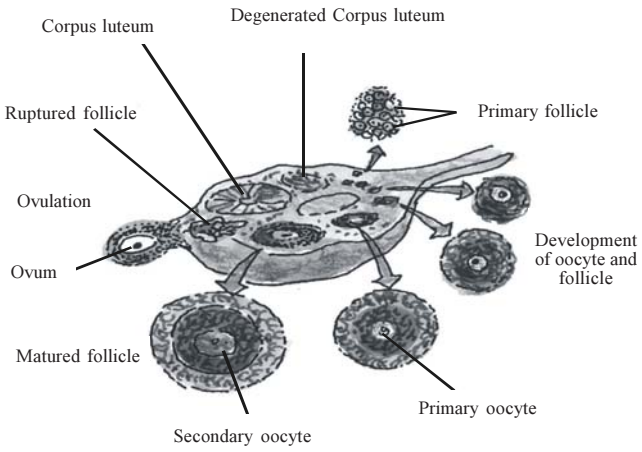
(ii) Acrosome formation : The acrosome occurs at the anterior side of the sperm and contains the protease enzyme hyaluronidase which helps it to penetrate into in the ovum. The acrosome is formed by the Golgi complex. It is concentrated near the anterior end of the sperm nucleus. One or two vacuoles of the Golgi complex become large and occupy the place between the tubes of Golgi complex. Soon after, a dense granule known as proacrosomal granule develops in the vacuole. The proacrosomal attaches with the anterior end of the nucleus and enlarges, which is now known as acrosome.

(iii) Centrioles : The two centrioles of the spermatids become arranged one after the other behind the nucleus. The anterior one is known as the proximal centriole and the posterior one is known as the distal centriole. The distal centriole changes into the basal bodies and form axial filament of the sperm. The mitochondria fuse together and twist spirally around the axial filament. These form a middle piece of the sperm.

- **Oogenesis :** Multiplication phase accurs by the germined epithelial cells of ovary due to mitosis and nutritive material include in cells in growth phase. Then by the meiosis division in maturation phase take place so unicellular ovum can be formed. The oogenesis is completed in three successive phases (1) Multiplication (2) Growth (3) Maturation division.

(1) Multiplication phase : The germinal cells of ovary divide repeatedly to form oogonia. Germinal cells divide repeatedly to form the oogonia or eggmother cells. By the repeated division, there is increase in the number of cells so this phase is called multiplication. In this phase germinal cells and oogonia both are diploids (2n).

(2) Growth phase : This phase is comparatively longer than the spermatogenesis. In this phase, the size of the primary oocyte increases enormously. In the primary oocyte, fats and proteins present in the form of yolk. The cytoplasm becomes rich in RNA, DNA, ATP and enzymes, moreover mitochondria, golgi complex, ribosomes etc. are also concentrated in it. During this phase, changes also occurs in the nucleus of primary oocyte and it becomes large due to the increased amount of nucleoplasm. When the growth of the cytoplasm and nucleus of primary oocyte is completed, it becomes ready for the maturation phase.

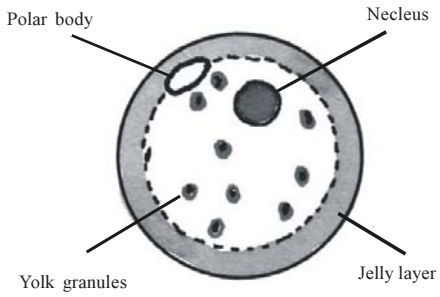


T.S. of Ovule

(3) Maturation phase : The maturation phase is accompanied by the maturation division or meiotic division (meiosis). This division is quite different from the meiotic division of spermatocyte. Here, after the first division primary oocyte divides unequally to form one large sized haploid secondary oocyte and one small sized haploid first polar body.

Ovulation takes place at the secondary oocyte stage only and enters into oviduct. When sperm

penetrates into secondary oocyte it undergoes unequal second meiotic division and produces second polar body and an ovum. In the same way the first polar body undergoes equal second meiotic division and produces two second polar bodies. However, if the sperm does not penetrate into the secondary oocytes, it simply deteriorates without completing meiosis to form the ovum. The mature ovum has a cell like structure.



Secondary oocyte

(80) Which type of cells are present in animal body ?

(A) Epithelial cells, connective tissue, blood cells, bone cells, reproductive cells

(B) Epithelial cells, conenective tissue , blood cells, bone cells, reproductive cells, nerve cells

(C) Epithelial cells, connective cells, blood cells, bone cells, reproductive cells, nerve cells, nutritive cells

(D) Somatic cells, reproductive cells

(81) Which sentence is improper for somatic cells ?

(A) Cell division of somatic cells is of mitosis type.

(B) Various organs of animal body is formed due to cell division of somatic cells.

(C) Cell division of somatic cells , doubles number of cells in animal body.

(D) Somatic cells shows structure of reproductive organs and reproductive cells.

(82) Which cells are formed by cell division of germinal epithelial cells in seminiferous tubule.

(A) Somatic cells (B) Spermatogonia (C) Oocytes (D) Male reproductive cells

(83) Arrange given sentences in sequence for spermatogenesis . Select proper option.

(1) Germinal epithelial cells produces male gametes by cell division in seminiferous tubules.

(2) Spermatids are always haploid, without morphogenesis.

(3) Germinal epithelial cells passes through multiplication, growth and maturation division.

(4) Spermatids results in mature sperm cells by morphogenesis .

(5) Germinal epithelial cells first divides mitotically and than meiotically.

(6) Male reproductive cells have various enzymes at their anterior region.

(A) 1, 2, 3, 4, 5, 6 (B) 1, 2, 3, 5, 4, 6 (C) 1, 3, 5, 2, 4, 6 (D) 2, 4, 6, 1, 2, 3

(84) What is known as formation of spermatids ?

(A) Formation of spermatids from spermatogonia.

(B) Development of spermatid from primary spermatocyte.

(C) Spermatids formed from primary germinal cells.

(D) Formation of spermatids from secondary spermatocyte.

(85) What is very specific matter about spermatocyte cells ?

(A) Undifferentiated, large size, nucleus having chromatin .

(B) Differentiated, large size, nucleus having chromatin.

(C) Undifferentiated, small size, nucleus having chromatin.

(D) Differentiated, small size, nucleus with chromatin.

(86) Which type of spermatocyte cells are there during spermatogenesis, diploid (2n) ?

(A) Sperm cells, spermatids

(B) Spermatocyte, primary spermatocyte, spermatogonia.

(C) Spermatocyte, primary spermatocyte, secondary spermatocyte.

(D) Spermatocyte, secondary spermatocyte, primary spermatocyte.

(87) What are sequential stages in metamorphosis of sperm cells ?

(A) Development of centriole, formation of acrosome, change in nucleus

(B) Development of centriole, changes in nucleus, formation of acrosome

(C) Changes of nucleus, acrosome formation, centriole form

(D) Formation of acrosome - formation of centriole - changes in nucleus

(88) Which sentence is proper for changes in nucleus ?

(A) Nucleus of spermatid enlarges, become turgid, Decrease in RNA and nucleolus, DNA concentration increases

(B) Nucleus of spermatid enlarges, become turgid, RNA and nucleolus amount reduces as a result DNA concentration increases.

(C) Nucleus of spermatid constricted, loss of turgidity, decrease of more amount of RNA and nucleolus, DNA concentration increases.

(D) Nucleus of spermatid constricted, loss of turgidity, increases of amount of RNA and nucleolus, DNA concentration decreases.

(89) Which sentence is not proper for formation of Acrosome ?

(A) At the anterior portion of sperm cells enzymes present, hyaluronidase dissolves ovary

(B) Golgi body form acrosome, it is accumulated at anterior part of sperm cells, one or two vacuoles of golgi body enlarges, situated in golgi body.

(C) Spermatid granule connects with anterior region of nucleus enlarges and acrosome is formed.

(D) Spermatid granules form long nuclear structure, connects and form constricted acrosome.

(90) Which sentence is not proper with the function of centriole ?

(A) Two centriole are one by one arranged behind nucleus of spermatid.

(B) Distal centriole forms basal granule to form axial filament.

(C) One centriole attached to anterior part of nucleus of spermatid, another to posterior part of nucleus. (D) Centriole form mid piece and tail of sperm cells.

(91) Which are sequential true name for spermatogenesis, according to development of sperm cells ?

(A) Spermatogonia - primary spermatocyte - secondary spermatocyte - spermatids - sperm cells.

(B) Spermatogenic cells - primary spermatocyte - spermatogonia - secondary spermatocyte - spermatids - sperm cells.

(C) Spermatogenic cells - secondary spermatocyte-primary spermatocyte - spermatogonia - spermatid sperm cells.

(D) Spermatogenic cells - spermatid - spermcell spematogonia - primary spermatocyte - secondary spermatocyte.

(92) Which type of stages found during of oogenesis and cell division ?

(A) Multiplication - Mitosis, growth - mitosis maturation division - meiosis

(B) Multiplication - meiosis, growth - mitosis maturation division - mitosis

(C) Multiplication - mitosis, growth - no cell division maturation division - meiosis

(D) Multiplication - mitosis, growth - no cell division maturation division - A mitosis

(93) Which are main difference in growth phase of spermatogenesis and oogenesis ?

(A) It has long phase than spermatogenesis. It increases in size by increase of cytoplasmic fat, protein and yolkmatter.

(B) It is short phase than spermatogenesis. In its cytoplasm fat, protein and yolk matter decreased, size decreased.

(C) It is long phase than spermatogenesis. In its cytoplasm fat, protein and carbohydrate increase, as a result size increases.

(D) It is long phase than spermatogenesis. In its cytoplasm fat, protein, DNA, RNA increased as a result size increases.

(94) In growth phase of oogenesis which region enlarges ?

(A) Nuclear region increases

(B) Cytoplasmic region increases

(C) Peripheral region increases

(D) Nuclear, cytoplasmic region increase peripheral cell region increases.

(95) In oogenesis amitotic division occur in which stage ? Cells produced by it are called ..... .

(A) Mitosis oocyte, primary polar body

(B) Maturation division (meiosis) - secondary oocyte, primary polar body

(C) Meiosis primary oocyte, primary polar body

(D) Mitosis, secondary oocyte, secondary polar body

(96) Which cells have (2n) diploid chromatin structure during oogenesis ?

(A) Germinal epithelial cell, secondary oocyte, mature oocyte.

(B) Germinal epitherial cell, primary oocyte, first primary oocyte.

(C) Germinal epithelial cell, oogonia, secondary oocyte.

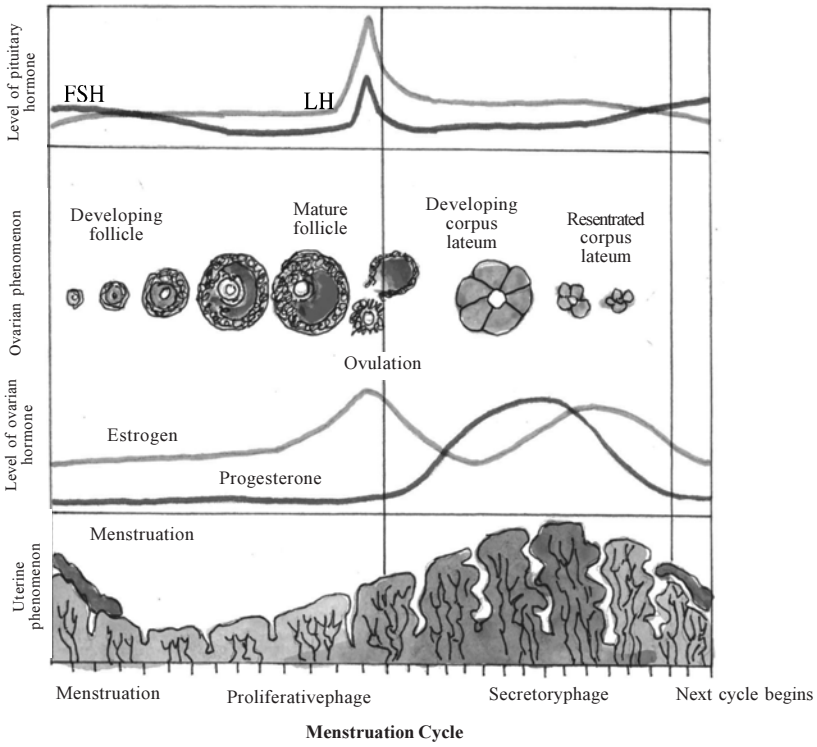
(D) Germinal epithelial cell, mature egg cell, secondary oocyte.

Answers : (80-D), (81-D), (82-D), (83-C), (84-A), (85-A), (86-C), (87-C), (88-C), (89-D), (90-C), (91-A), (92-D), (93-A), (94-D), (95-B), (96-C)

(4) Menstrual cycle : The events of the menstrual or uterine cycle are the cyclic changes in the endometrium; which occur in cyclic form every month. This is due to the change in the levels of female sex hormones like estrogen and progesterone, in the blood. The events in this cycle can be divided into 28 days.

- **Day1-5 (Menstruation phase) :** Due to lower concentration of female sex hormones in the blood, the endometrium disintegrates and blood vessels within it breaks up. Due to this secretion of blood through vagina takes place. It lasts for 3 to 5 days. During this period about 50 ml to 150 ml blood is lost. This phase is known as a menstrual phase.

- **Days 6-14 (proliferative phase) :** This phase of the menstrual cycle is known as a proliferative phase. This phase in stimulated by rising estrogen levels which is produced by the growing follicles. The endometrium becomes glandular, vascularized and thick. At the end of this phase on 14th day ovulation occurs.



Menstruation Cycle

Ended day of 14th in this phase releave the secondary oocyte from the graffian follicle. So this process is known as ovulation. So 14th day is known as the ovulation phase.

- **Days 15-28 (Secretory phase) :** Rising levels of progesterone produced by the corpus luteum induces development of endometrium and increases its blood supply. Now endometrium is ready for implantation of embryo. If fertilization does not occur, the corpus luteum degenerates. This phase is known as secretory phase. At this juncture, menstruation begins.

(97) In which layer of uterus menstrual cycle is shown ?

(A) Endometrium (B) Myometrium (C) Epimetrium (D) Exometrium

(98) Menstrual stage is shown for which purpose ?

(A) Estrogen level increases in blood, progesterone level decreases.

(B) Estrogen level increases in blood, progesterone level increases.

(C) Decrease in estrogen, increase in progesterone.

(D) Decrease in estrogen, Decrease in progesterone.

(99) Which sentence is improper for menstrual cycle ?

(A) It is for 1-5 day, decrease in female sex hormone shown.

(B) Endometrium of uterus is degenerated, secreted along blood capillaries.

(C) In this stage 50-100 ml blood is lost which is released out side the body through vaginal passage.

(D) Endometrium of uterus dissociate due to estrogen, progesterone concentration.

(100) Which hormonal change sound in proliferative stage ?

(A) Increase GTH, estrogen increase (B) Decrease GTH, Estrogen increase

(C) LH increase, Estrogen increase (D) LH reduces, Estrogen increases

(101) Which sentence is not proper for changes occurring in proliferative stage ?

(A) Sex hormone estrogen secreted from developing ovarian follicle, so this stage is stimulated.

(B) In this endometrium of uterus develops to become thick for embryo implantation.

(C) It is observed in 6-13 day period on 14th day release the ova is called ovulation.

(D) In this endometrium gradually develops and readily results in embryo implantation.

(102) In which stage graffian follicle develops and ruptures on which day ?

(A) Menstrual stage 6-13 days (B) Proliferative stage 1-5 days

(C) Proliferative stage 15-28 days (D) Proliferative stage 14^{th} day

(103) Which stage corpus luteum is formed ?

(A) Menstrual stage (B) Proliferative stage (C) Ovulation (D) Secretory phase

(104) What changes are found in uterus due to progesterone ?

(A) Endometrium develops in uterus (B) Myometrium develops in uterus

(C) Epimetrium develops in uterus (D) Endometrium degenerates in uterus.

(105) When is uterus become prepared for embryo implantation ?

(A) Endometrium develops by progesterone and blood supply increases with blood vessels.

(B) Myometrium develops by estrogen and blood supply increases with blood vessels

(C) Myometrium develops by progesterone blood supply increases with blood vessels.

(D) Endometrium develops by progesterone and blood supply increases with blood vessel.

(106) When is corpus luteum dissociates ?

(A) Fertilization of ovule by sperm cells.

(B) Ovule is not fertilized by sperm cells.

(C) Fertilization of ovule by sperm cell in the uterus.

(D) Fertilization of ovule by sperm cell in oviducal funnel.

(107) Corpus luteum dissociates by the effect of which hormone ?

(A) Decrease in progesterone level (B) Increase in progesterone level

(C) Decrease in estrogen level (D) Increase in estrogen level

(108) Which are sequential stages of uterine cycle ?

(A) Secretory phase, proliferative stage, ovulation, menstrual stage

(B) Menstrual stage, ovulation, proliferative stage, secretory stage

(C) Menstrual stage, proliferative stage, ovulation, secretory stage

(D) Menstrual stage, secretory stage, ovulation, proliferative stage

(109) Menstruation occurs with the joint effects of which hormones ?

(A) GTH, LH

(B) Estrogen level decrease progesterone level increases

(C) Estrogen, progesterone both level decreases

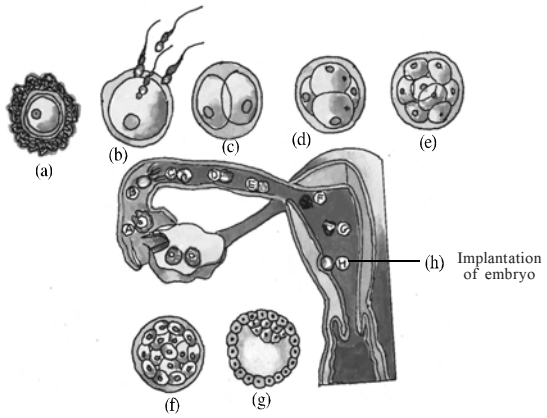
(D) GTH increases, LH increases

Answers : (97-A), (98-D), (99-D), (100-B), (101-D), (102- D), (103-D), (104-A), (105-A), (106-B), (107-A), (108-C), (109-C)

(5) Fertilization and Implantation : At the time of intercourse penis enlarge and become rigid at the climax stage so man ejacts semen in vagina of female. The average volume of semen for each ejaculation is 3 to 4 ml in which billions of sperms are present.

Ejaculated semen with sperms, in vagina, sperms travelled from vagina to oviduct via uterus. For the movements of sperms which get the velocity by contraction of wall of uterus and vagina. Even sticky secretion of oviduct also help to the sperm movement. This process take approximately 5 to 6 hours i.e. sperm reach upto the ovum for fertilization they take 5 to 6 hours.

The secondary oocyte is surrounded by numerous sperms. Secondary oocyte is surrounded by egg membrane and layer of jelly. Various enzymes are located in the arosome of sperms, one of which hyluronidase, which makes the entry of sperm, into secondary oocyte possible. The head and middle part of sperms enters the secondary occyte. Then head and middle piece of sperms become spherical in shape and form male pronucleus.



Transport of ovum in oviduct and Implantation of embryo

(a) secondary oocyte
(b) fertilization
(c) and (d) cleavage
(e) morulla
(f) 16th cell stage
(g) blastocyst
(h) implantation of embryo

The entry of sperm occur in secondary oocyte so certain physical and chemical changes occur in it. The egg menbrane of secondary oocyte becomes slightly separated from the protoplasm. Now egg membrane and jelly layer becomes dense and impermeable which separates from protoplasm. Now it is known as fertilization membrane. This membrane prevents entry of other sperms in secondary oocyte. Entry of sperm induces completion of maturation of secondary oocyte forms a female pronucleus. Thus one sperm and one ovum become involved in fertilization. A diploid zygote nucleus (2n) is formed through fusion of male and female pronucleus. This phenomenon is known as fertilization.

After the fertilization zygote move anterior part of oviduct and then zygote move to uterus through fallopian tube. During the movement of zygote from oviduct to uterus division of zygote will start. Division or cleavages inreducing form. Cleavages occur in zygote resultant cells are known as blastomeres. First five cleavages are regular. By the first cleavage occur in verticle plane zygote becomes two cells. By the second cleavage perpendicular to first cleavage in verticle four cells are formed. Third cleavage occur transveresly and eight cells occur in embryo. Afterwards forth cleavage occurs complete vertically and embryo becomes sixteen celled. This sixteen cells stage is called morula stage. At the time of cleavages hollow or space occur among the cells. It is called Blastocoel. Bag like structure at this time is known as blastocyst. Blostomeres produce fluid it is known as a blastula fluid. Fifth cleavage occur in transversely, it becomes 32 celled stage. Now the irragular cleavages occur in

embryo so multi cellular embryo can occur. Thus by the regular cleavages forms 2,4,8, 16 and 32 daughter cells formed. All these changes take place in period of one week.

Now, the process of implantation of embryo in the uterine wall takes place. The jelly like layer around the embryo is removed. The enzymes secreted from trophoblast cells digest some tissues and blood vessels of uterine wall and make implantation possible. the inner wall of uterus / endometriums develops and partially envelops the embryo. This process is called implantation of embryo.

(110) What is passage of sperm cells which are entered due to semen discharge in vaginal passage who helps in conduction of sperm cells ?

(A) Vaginal passage to uterus muscles of wall of uterus.

(B) Vaginal passage - uterus - towards oviduct contraction of vaginal passage and contraction of uterine wall muscles.

(C) Vaginal passage - uterus - oviduct contractions of vaginal passage and muscle of uterine wall.

(D) Vaginal passage - uterus - oviduct - oviducal funnel - towards ovule, vaginal passage, uterine wall, oviducal wall muscle contraction and slimy secretion helps in transport.

(111) Which statement is not proper for fertilization ?

(A) Innumerable sperm cells surrounds secondary oocyte, one of such sperm which is near to oocyte physically and chemically secretes protease type of enzyme hyaluronidase from Acrosome.

(B) Ovarian membrane and jelly layer disintegrate by hyaluronidase, Head and middle part of sperm enters egg cell.

(C) Head and middle region of sperm enters in egg cell, it is called secretion.

(D) Head and middle region of sperm for physical, chemical balance become round - as male pronucleus, during that period oogenesis is completed, mature egg nucleus become female pronucleus unite and reproductive nucleus and diploid cell formed. It is called fertilization.

(112) Sperm, ovule, spermatogenic cell, spermatid primary spermatocyte, zygote which of the following option shown based on chromosome number ?

(A) n, n, 2n, n, 2n, 2n (B) 2n, 2n, 2n, n, 2n, 2n

(C) n, n, n, n, n, n (D) 2n, 2n, 2n, 2n, 2n, 2n

(113) When is formation of fertilization membrane become possible ?

(A) With the formation of male pronucleus

(B) With the formation of female pronucleus

(C) Zygotic nucleus and zygotic cell formation and constriction of cytoplasm

(D) Enlargement of egg membrane and jelly layer

(114) Which layers are found in fertilization membrane ?

(A) External jelly layer + egg membrane (B) Egg membrane + layer without albumin

(C) Sperm cell membrane + egg membrane (D) None

(115) Morula stage and formation of blastocyst start at which cleave period ?

(A) 5^{th} cleavage and 4^{th} cleavage (B) 4^{th} cleavage and 3^{rd} cleavage

(C) 3^{rd} cleavage and 2^{nd} cleavage (D) 2^{nd} cleavage and 4^{th} cleavage

(116) What is similarity in multicellular embryo and zygote ?

(A) Chromatin matter, total weight and size of cell are similar

(B) Shape of cells similar

(C) No. of cells similar

(D) Cytoplasmic and nuclear component similar

(117) After which cleavage Blastocyst is formed and how many cells are found in it ?

(A) After 4^{th} cleavage, 16 cells (B) After 3^{rd} cleavage, 8 cells

(C) After 5^{th} cleavage, 32 cells (D) After 2^{nd} cleavage, 4 cells

(118) Which type of enzymes are produced by trophoblast ?

(A) Transferases type (B) Lyases type (C) Hydrolyzing type (D) Oxido-reductase type

(119) When is hydrolyzing enzymes released ?

(A) When embryo is at anterior part of oviduct.

(B) When embryo is at middle part of oviduct.

(C) When embryo is at posterior part of oviduct.

(D) When embryo reaches at the basal region of uterus.

(120) After degeneration of which layer by hydrolyzing enzymes, developed trophoblast cells completes ..... process.

(A) Epimetrium, embryo implantation (B) Myometrium, embryo implantation

(C) Endometrium, embryo implantation (D) Trophoblast layer, embryo implantation

Answers :(110-C), (111-C), (112-A), (113-C), (114-A), (115-C), (116-A), (117-A), (118-C), (119-D), (120-C)

(6) Pregnancy and Embryonic Development : The period of development of young one in the female reproductive system is known as pregnancy. In humans the normal period of pregnancy is approximately 266 days to 280 days (40 weeks) from last menstruation from ovulation. However, many babies are born 1 or 2 weeks earlier or later. The fertilized ovum during the first 12 weeks is called embryo and thereafter it known as foetus.

After implantation the trophoblast part of the blastocyst develops elaborate projections, called chorionic villi, which cooperate with the tissues of the mother's uterus to form placenta. The placenta functions to deliver nutrients and oxygen to embryo and remove wastes from the embryonic blood. The placenta is connected to the embryo through an umbilical cord; placenta also acts as an endocrine tissue and produces many hormones like human chorionic gonadotropin (HCG), human placental lactogen (HCL), estrogens and progesterone. In the later stage of pregnancy, hormone relaxin is produced from ovary. The hormones like HCG, HPL and relaxin are produced only during pregnancy.

These hormones help in fetal growth, metabolic changes in the mother and maintenance of pregnancy.

The embryonic development is a continuous process which is summarized, as under.

Stages of embryo development :

	Period	**Changes**
-	First week	- Zygote undergoes cleavage.
		- The blastocyst implants in the uterus.
		- Begins to receive nutrients from the mother.
-	Second week	- Implantation of blastocyst becomes deep in the endometrium.
		- The embryonic disc and amniotic cavity develop.
		- The mesoderm is spreading between ectoderm and endoderm.
-	Third week	- The embrayonic disc broadnens.
		- The primitive heart is formed but it is not yet beating.
-	Fourth week	- The embryo is protected and suspended in amniotic fluid.
		- The primary brain, eyes, stomach, kidneys and heart develop.

- Heart starts beating, approximately 60 times per minute.
- The primitive umbilical cord is formed.
- In this stage, the embryo length is less than 4 cm.

- Second month
  - The embryo is now looks like a human.
  - The main organs of the body develop and begin their function.
  - In this stage, head is larger compared to body.
  - It is 2.5 cm long.

Foetus Development

- Third month
  - Now embryo called foetus means 'young one'.
  - Foetus reaches 7.5 cm height and about 14g weight.
  - Body has grown, but head is larger then body.
  - The limbs become longer.
  - The external genitalia appear; but it is difficult to identify sex.
  - Some movement of the body and limbs occurs.
- Fourth Month
  - Body is bright red in colour because the blood vessels grow through its transparent skin.
  - The muscles become active.
- Fifth month
  - Skin is now less transparent and covered with hair.
  - From this stage onwards the growth of the placenta slows down.
- Sixth month
  - The skin is wrinkled because it lacks fat.
  - Two eyelids are separated but a mambrane covers the pupils.
  - The foetus measures about 32 cm and weight about 650g.
- Seventh month
  - The foetus moves round vigourously within the uterus.
  - It can open its eyes.
  - If born at this stage it can now breath but with difficulty.
- Eighth month
  - In this stage, foetus is about 42 cm long and its weight is about 1800g.
  - Development of lungs can now support life.
  - At this stage, if baby is born, it is necessary to provide expert care.
- Ninth month
  - At the end of this month, foetus measures about 46cm.
- Tenth month
  - In this stage mother awaits the birth of her child.
- Generally the child is about 50 cm long and weighs 3300g. There are wide variations in the weight of the child at birth.

Toward the later part of pregnancy, the human foetus normally assumes a position with its head directed downwards i.e at the time of birth.

- Parturition and lactation : Parturition is also called childbirth. It is the culmination of pregnancy. It usually occurs within 15 days of the calculated due date. The series of events the expel the infant from the uterus are collectively referred to as labour.

Parturition is induced by a complex neuroendocrine mechanism. The signals for parturition originate from the fully developed foetus and the placenta which induce mild uterine contractions called foetus ejection reflex.

At the time of birth, two chemical signal co-operate to creat real labour pain. Some cells of the foetus begin to produce oxytocin, which stimulates the placenta to release prostuglandins. Both hormones stimulate more frequent and powerful contractions of the uterus. At this point, signals for the release of oxytocin is sent by the posterior pituitary. The combined effects of rising levels of oxytocin and prostaglandins initiate true labour. Stronger contractions cause the release of more oxytocin which causes even more vigorous contractions, forcing the baby even deeper into the mother's pelvis. This leads the baby out of the uterus. Soon after the infant is delivered.

The mammary glands of the female undergo differentiation during pregnancy and start producing milk after delivery; this process is called lactation. Mother feeds this to her new born baby. Milk secreted during initial days of lactation is known as colostrum, which contains antibodies.

(121) Gestation period, in human after ovulation and menstrual period, is how many days ?
(A) 266 days, 250 days (B) 280 days, 266 days
(C) 240 days, 380 days (D) 380 days, 240 days

(122) After embryo formation, what is 12^{th} week fertilized egg cell is called ? And after fertilized egg cell is known as ..... .
(A) Foetus, Embryo (B) Embryo, Foetus
(C) Foetus, new born baby (D) New born baby, foetus

(123) What are chorionic villi ?
(A) At multicellular embryonic stage trophoblastic cells irregularly bulge out.
(B) Group of cells encircling embryo at morula stage.
(C) Trophoblast layer, irregularly bulge out during blastocyst stage.
(D) Trophoblast layer irregularly bulge out during gastrulation stage.

(124) What is placenta ? What is its function ?
(A) Structure connected with uterine tissue provides nutritive components to embryo.
(B) Structure connected with uterine tissue provides O_2 to embryo.
(C) Structure connected with uterine tissue removes excretory substances from embryo
(D) Structure connected with uterine tissue provides O_2 and nutritive substance to embryo, removes excretory substances.

(125) Which hormones are produced by placenta ?
(A) HCG, HPL, estrogen, progesterone (B) HCG, estrogen, progesterone
(C) HCG, HPL, progesterone (D) HPL, estrogen, progesterone

(126) During Gestation period what is the function of hormones ?
(A) Maintains Growth of foetus
(B) Metabolic changes in mother
(C) Maintains growth of foetus, metabolic changes in mother
(D) Parturition

(127) Which change is not proper for changes during first week of embryo development ?
(A) Zygote formation, cleavage process (B) Implantation of Blastocoel sac in embryo
(C) Starts obtaining nutrition from mother (D) Blastocyte sac enters deep in endo metrium and implanted

(128) Which change is not possible during 2nd week of pregnancy ?

(A) Blastocoel sac implantation and penetrate deeper in endometrium

(B) Development of blastodisc and Amniotic sac

(C) Enlargement of blastodisc

(D) Mesoderm spreads between ectoderm and endoderm

(129) Which changes are observed in 3rd week of embryo development ?

(A) Blastodisc enlarges and primary heart is formed.

(B) Heart is developed, starts beating.

(C) Primary brain, eyes, stomach, kidney and heart is developed.

(D) Heart starts beating, approximate 60 times per minute.

(130) Which is not proper for changes in 4th week embryo development ?

(A) At this stage embryo is less than 4cm in length.

(B) Primary umbilical cord develops.

(C) Compare to trunk region of body, size of head is more, approtimate 2.5 cm. in length.

(D) Now embryo is called foetus, which has 7.5 cm height and 14gm weight.

(131) Which is not possible in 2nd month of embryo development ?

(A) Embroy looks like human (B) Main organs are developed and starts functioning

(C) Head is larger than body (D) Height is 7.5 and weight is 14 g.

(132) Statement 1 - At this stage, embroy is called foetus which has 7.5 cm height and 14 gm weight.

Statement 2 - Body grows, but head remains enlarged.

Statement 3 - Appandages become larger, body and appandages show slight movement.

Statement 4 - External reproductive organs seen, but sex is difficult to identify.

Which of the above sentences show changes in third week ?

(A) Statements 1, 2 (B) Statements 1, 2, 3, 4

(C) Statements 1, 3 (D) Statements 2, 4

(133) Body appears shining red, blood capillaries seen from transparent skin, activity of muscle, indicates embryo development of which month ?

(A) Second month (B) Third month (C) Fourth month (D) Fifth month

(134) Statement - (1) Skin become less transparent and covered by hair.

Statement (2) At this stage growth of placenta becomes slow.

Statement (3) Its eye lashes separated but lens is covered by membrane.

Statement (4) Skin become wrinkled due to lack of lipid.

Statement (5) Foetus has approximate 32cm in size and 650 gm weight.

Statement (6) Foetus vigorously moves round in uterus.

Statement (7) Foetus opens its eyes.

Statement (8) If born at this stage, breath with difficulty.

Above which statements in fifth, sixth and seventh month which embryological changes are found. Select by option.

(A) Fifth month - statement 1,2,3; 6th month - statement 4,5,6; 7th month - statement 7,8

(B) Fifth month - statement 1,2; 6th month - statement 3,4,5; 7th month - statement ,2,8

(C) Fifth month - statement 6,7,8; 6th month - statement - 3,4,5; 7th month statement 1,2

(D) Fifth month - statement 1,2,3,4; 6th month - statement 4, 6; 7th month - statement 7,8

(135) Which of the following statements related with 8th, 9th and 10th month embryological changes arrange sequentially.

Statement - (1) Foetus is having approximate 42 cm long and 1800 gm weight.

Statement - (2) -Lungs developed which supports life.

Statement - (3) - At this stage if child is born, it should care according specialist advise.

Statement - (4) - At the end of month size of embryo is approximate 46 cm in length and having 1800 gm weight.

Statement - (5) At the end of the month, weight of foetus is 330 gm and size approximate 50cm.

Statement - (6) Mother waits for child birth.

Above statements shows which changes of third week?

(A) Statement 1, 2, 3, 4, 5, 6 (B) Statement 1, 2, 5, 3, 4, 6

(C) Statement 1, 2, 4, 3, 5, 6 (C) Statement 1, 2, 6, 4, 5, 3

(136) What is delivery ?

(A) At the climax of pregnancy in calculated days sequential processes in uterus depending on hormones, together result in removal of child from mothers body.

(B) Discharge of child from vaginal passage.

(C) Discharge of child from uterus.

(D) Based on hormones, expulsion of child from maternal body.

(137) What is improper for embryo / foetus discharge reflex action ?

(A) For foetal removal neuro - hormonal action induced.

(B) Signals for foetus removal originated from foetus and placenta.

(C) By neuro - endocrinal activities contraction of smooth uterus begins.

(D) Contraction of vaginal passage is also begins.

(138) Arrange the sentences sequentially for child birth.

Statement - 1 when child birth is possible two chemical signals unite and gives actual labour pain.

Statement - 2 Some of foetal cells starts synthesizing hormones.

Statement - 3 Oxytocin induces placenta for release of prostaglandins.

Statement - 4 Oxytocin and prostoglandin induces, continuous and powerful contractions.

Statement - 5 Message for oxytocin releases from post pituitary.

Statement - 6 Increase level of oxytocin and prostaglandin together induces real parturition

Statement - 7 Increase of oxytocin, induces powerful contraction of uterus.

Which draws child out from uterus and parturition take place.

(A) Statements 1, 2, 4, 5, 6, 7, 3 (B) Statements 1, 2, 3, 4, 5, 6, 7

(C) Statements 1, 3, 5, 7, 2, 4, 6 (D) Statements 2, 4, 6, 1, 3, 5, 7

(139) What is milk secretion ?

(A) Mammary gland of female develops during gestation period and after delivery starts producing milk is called lactation or milk secretion.

(B) Milk is secreted from mammary glands of female is called lactation.

(C) Sticky fluid secreted from mammary glands of mother is called lactation.

(D) Breast - feeding is called lactation.

(140) Which hormone is milk inhibiting and milk inducing ?

(A) PIF, LTH (B) LTH, PIF (C) PIF, LH (D) LH, PIF

Answers : (121-A), (122-B), (123-C), (124-D), (125-A), (126-C), (127-D), (128-C), (129-A), (130-D), (131-D), (132-B), (133-C), (134-B), (135-A), (136-A), (137-D), (138-B), (139-A), (140-A)

- **A = Statement R = Reason A/R type questions : answers of questions are given below, select the correct answer given option :**

(A) A and R both correct. R is explanation of A.

(B) A and R both correct but R is not explanation of A.

(C) A is right, R is false.

(D) A is false, R is right.

(141) Statement A : Epididymis is very long tubular and 6 mt. long tubule.

Reason R : Provides temporary storage sight for immature sperm cells.

(A) (B) (C) (D)

(142) Statement A : Internal structure of penis formed of two tissue groups, which possess blood sinuses.

Reason R : During sexual intercourse these blood sinuses filled with semen, require for erection.

(A) (B) (C) (D)

(143) Statement A : Third week of foetal development primary heart is produced.

Reason R : At the end of 4th week heart beat starts.

(A) (B) (C) (D)

(144) Statement A : Seminal vesicle produces 80% fluid of semen.

Reason R : Semen is thick and whitish substance.

(A) (B) (C) (D)

(145) Statement A : Mature oocyte moves in oviduct, do not get fertilized by sperm cell.

Reason R : Endometrium layer disintegrates and menstruation type phenomenon occur.

(A) (B) (C) (D)

(146) Statement A : Increasing level of oxytocin and prostaglandin, induces true delivery.

Reason R : These hormones induces powerful contractions in uterus, which takes child out from uterus.

(A) (B) (C) (D)

(147) Statement A : Myometrium is middle layer of uterus.

Reason R : It is formed by group of striated muscles.

(A) (B) (C) (D)

(148) Statement A : Somatic cells form various organs of body.

Reason R : Reproductive cells by reproduction carries hereditary characters.

(A) (B) (C) (D)

(149) Statement A : Primary spermatocyte meiotically divides to form secondary spermatocyte.
Reason R : Germinal epithelial cells by meiotic division produces spermatogonia.
(A) (B) (C) (D)

(150) Statement A : Spermatids formed due to maturation division do not behave as reproductive cells.
Reason R : Spermatids by metamorphosis becomes mature sperms.
(A) (B) (C) (D)

(151) Statement A : Clitoris is external genital organ of female.
Reason R : It is at the connecting place of labia majora.
(A) (B) (C) (D)

(152) Statement A : In 1- 5 days of menstrual cycle endometrium degenerates.
Reason R : Less concentration of female sex hormones in blood.
(A) (B) (C) (D)

(153) Statement A : Clitoris is small finger like projection, which is similar to male penis.
Reason R : Clitoris differs from penis as reproductive tubule is absent.
(A) (B) (C) (D)

(154) Statement A : During spermiogenesis, of the two centrioles of spermatids, distal centriole forms axial filament.
Reason R : Mitochondria together innervates axial filament.
(A) (B) (C) (D)

(155) Statement A : Zygote by the process of cleavage, converted into blastocyst sac.
Reason R : These changes occur within period of one week.
(A) (B) (C) (D)

(156) Statement A : Sperm when enters secondary oocyte, it is called zygote.
Reason R : Due to entry of sperm, nucleus in head region is called male pronucleus.
(A) (B) (C) (D)

(157) Statement A : Secondary spermatocyte by mitosis transforns into spermatids.
Reason R : Spermatids by spermiogenesis are converted into sperms.
(A) (B) (C) (D)

(158) Statement A : HCG, HPL and relaxin produced at the time of conception.
Reason R : Placenta as endocrine gland produces many hormones.
(A) (B) (C) (D)

(159) Statement A : Messages for oxytocin released from anterior pituitary gland.
Reason R : Due to effect of prostaglandins powerful contraction occur.
(A) (B) (C) (D)

Answers : (141-A), (142-E), (143-B), (144-D), (145-A), (146-A), (147-B), (148-A), (149-C), (150-A), (151- C), (152-A), (153-B), (154-B), (155-D), (156-A), (157-D), (158-A), (159-E)

(160)

(1) Fourth month	(p) Skin become less transpatent and covered by hair
(2) Sixth month	(q) Due to lack of fat skin is wrinkled
(3) Seventh month	(r) Foetus turns vigorously in uterus
(4) Fifth month	(s) Blood capillaries developed through transparent skin

(A) : (1 - s), (2 - r), (3 - p) (4 - q)
(B) : (1 - s), (2 - q), (3 - p) (4 - r)
(C) : (1 - s), (2 - r), (3 - q) (4 - p)
(D) : (1 - s), (2 - q), (3 - r) (4 - p)

(161)

Column - I	**Column - II**
(1) Bulbourethral gland	(i) Nutrition to seminal vesicle
(2) Seminal vesicle	(ii) Activates sperm cells
(3) Prostate gland	(iii) Act as lubricant during copulation
(4) Urinogenital passage	(iv) Temporary storage of sperm cells
(5) Epididymis	(v) Opens at the anterior region of penis

	1	2	3	4	5
(A) :	(ii)	(i)	(iii)	(v)	(iv)
(B) :	(i)	(iii)	(ii)	(v)	(iv)
(C) :	(iii)	(ii)	(i)	(v)	(iv)
(D) :	(iii)	(i)	(ii)	(v)	(iv)

(162)

Column - I	**Column - II**		
(P) Tunica albuginea	(i) Provide nutrition	(A)	(P - ii) (Q - iv) (R - iii) (S - i)
(Q) Seminiferous tubule	(ii) Fibrous connective tissue	(B)	(P - ii) (Q - iv) (R - i) (S - iii)
(R) Sertoli cells	(iii) Secrete testosterone	(C)	(P - iii) (Q - i) (R - ii) (S - iv)
(S) Leydig's cells	(iv) Produces sperm cells	(D)	(P - iv) (Q - iii) (R - ii) (S - i)

(163)

Column - I	**Column - II**		
(P) Endometrium	(i) Outermost layer of uterus	(A)	(P - ii) (Q - iv) (R - i) (S - ii)
(Q) Myometrium	(ii) Innermost layer of uterus	(B)	(P - iii) (Q - i) (R - ii) (S - iv)
(R) Epimetrium	(iii) Fold at the far region of vaginal passage	(C)	(P - i) (Q - iii) (R - iv) (S - ii)
		(D)	(P - iv) (Q - iii) (R - i) (S - ii)
(S) Hymen	(iv) Middle layer of uterus		

(164)

Column - I	**Column - II**		1	2	3	4
(1) Golgibody	(i) Mid region of sperm cell	(A) :	(iii)	(i)	(ii)	(iv)
(2) DNA concentrated	(ii) Nucleus of sperm cell	(B) :	(iii)	(ii)	(i)	(iv)
(3) Mitochondria	(iii) Acrosome formation	(C) :	(iii)	(i)	(iv)	(ii)
(4) Meiosis	(iv) Primary spermatocyte	(D) :	(i)	(iii)	(ii)	(iv)

(165)

Column - I	Column - II
(1) First week	(p) Primary heart is formed, which do not beat.
(2) Second week	(q) Development of Amniotic sac
(3) Third week	(r) Implantation of blastocyst in to embryo
(4) Fourth week	(s) Primary umbilical cord is formed.

	1	2	3	4
(A) :	p	q	r	s
(B) :	r	q	p	s
(C) :	s	r	q	p
(D) :	r	q	s	p

(166)

Column - I	Column - II		
(P) Mons pubis	(i) Small finger like structure	(A)	(P - iv) (Q - iii) (R - ii) (S - i)
(Q) Labia majora	(ii) Folded tissue	(B)	(P - iii) (Q - iv) (R - ii) (S - i)
(R) Labia minora	(iii) Pillow of adipose tissue	(C)	(P - ii) (Q - iii) (R - iv) (S - i)
(S) Clitoris	(iv) Surrounding reproduction organs	(D)	(P - ii) (Q - iv) (R - iii) (S - i)

(167)

Column - I	Column - II		
(P) Multiplication stage	(i) Sperm cell	(A)	(P - iv) (Q - iii) (R - ii) (S - i)
(Q) Growth phase	(ii) Primary sperm cell	(B)	(P - iii) (Q - iv) (R - ii) (S - i)
(R) Maturation phase	(iii) Primary spermatocyte	(C)	(P - ii) (Q - iii) (R - iv) (S - i)
(S) Spermiogenesis	(iv) Spermatid	(D)	(P - ii) (Q - i) (R - iv) (S - iii)

Answers : (160-D), (161-D), (162-B), (163-A), (164-B), (165-B), (166-B), (167-C)

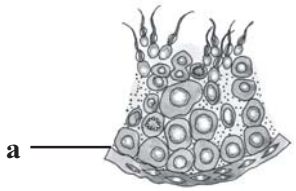
(168) Which is 'a' part in the given diagram 1 ?

(A) Sertoli cells

(B) Primary spermatocyte

(C) Spermatid

(D) Sperm cell



(169) What is indicated by part a in given diagram ? Which organelles are more in it ?

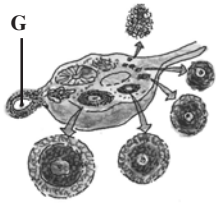
(A) Middle piece - golgibody (B) Middle piece - centriole

(C) Tail part - Nucleus (D) Middlepart - mitochondria

(170) In given diagram what is indicated by 'G' labelled part ?

(A) Primary oocyte (B) Ovarian follicle

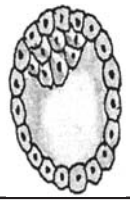
(C) Oocyte (D) Graffian follicle



(171) What is indicated by part labelled as 'a' ?

(A) Trophoblast layer (B) Blastocyst

(C) Internal cell mass (D) Thick covering



Answers : (168-B), (169-D), (170-C), (171-A)

- **Questions for NEET**

(172) ..... region is of grey crescent.

(A) Shows place for entry of sperm into egg cell

(B) It is on the opposite part of the place for entry of sperm into egg cell

(C) In the region of animal pole

(D) In the region of vegetative pole

(173) ..... is key for begining of reaction in acrosome of sperm cell.

(A) Receiving (B) Development of lysine (C) Yolk sac (D) Amniotic sac

(174) Which extra embryonal membrane prevents drying of foetus in uterus.

(A) Trophoblast (B) Allantois (C) Yolk sac (D) Amniotic sac

(175) Human egg cell are ..... .

(A) alecithal (B) micro lecithal (C) mesocecithal (D) poly lecithal

(176) ..... Semen is saturated in human.

(A) Fructose and calcium, no enzyme

(B) Glucose and some enzymes, no calcium

(C) Fructose and some enzymes, calcium is very less

(D) Fructose, calcium and some enzymes present

(177) During secrectory phase of menstrual cycle ..... .

(A) luteal phase for approximate six days

(B) follicular phase for approximate six days

(C) luteal phase for thirteen days.

(D) follicular phase for thirteen days.

(178) Secretory source of ..... is leydig's cell of human

(A) progesterone (B) mucosa in intestinal region

(C) glucagon (D) androgens

(179) Which of the following sentence is false in reference to vitality of sperm cells in mammals ?

(A) Sperm cells are living for 24 hours.

(B) Vitality of spermcell depends on PH of medium more active in alkaline medium.

(C) Vitality of sperm cells are determined by its motility.

(D) It is necessary that sperm cells concenterated in thick medium.

(180) Micro tubule is vasa efferentia coming out from ..... .

(A) festicular lobules to testis (B) testis to vasa efferentia

(C) testis to epididymis (D) epididymis to urinogenital passage

(181) Correct chain, in testis of adult human for formation of sperm cells by spermato genesis is .....

(A) Spermato gonia - primary spermatocyte - spermatid - sperm

(B) Spermatid - primary spermatocyte - spermatogonia - sperm

(C) Spermatogonia - spermatid - primary spermatocyte - sperm cell

(D) Spermatogonia - primary spermatocyte - spermatid - sperm cell

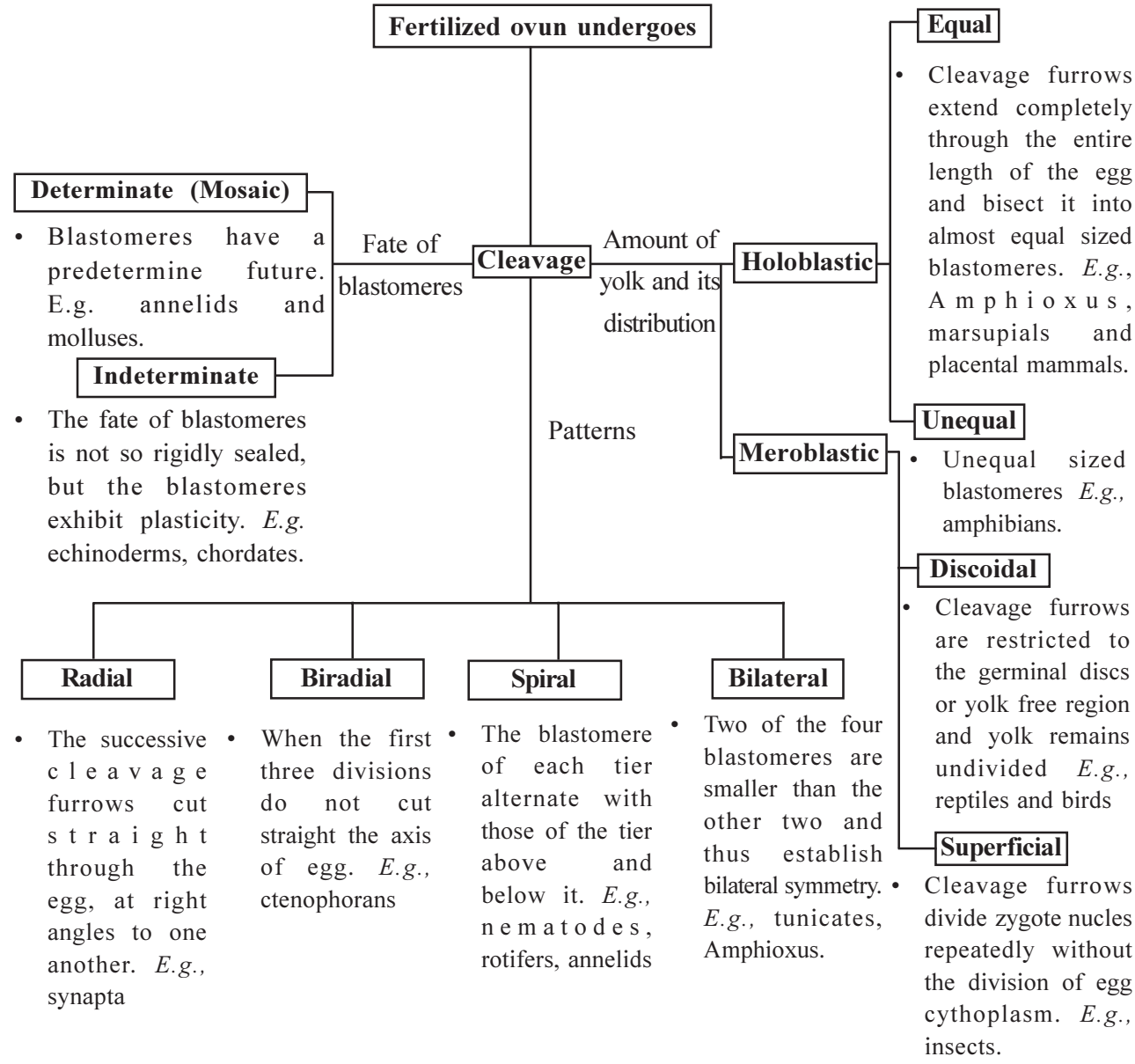
(182) Stimulation for child birth spreads in human female through ..... .
(A) release of oxytocin from pituitary gland (B) completely developed child and placenta
(C) separation of mammary glands (D) pressure by amniotic fluid

(183) At which month of conception, appearance of hair on head and movement of foetus experienced for the first time ?
(A) Fourth month (B) Fifth month (C) Sixth month (D) Third month

(184) ..... amniocenecsis, amniotic fluid analysis technic is used with permission.
(A) To determine sex of unborn child (B) Artificial conception
(C) Transfer foetus in uterus of surrogate mother (D) To study genetic deformitios

(185) In normal pregnant female no. of total stimulating gonadial hormones can determined, result may be .....
(A) High level of transpoting FSH and LH in uterus stimulates implantation of embryo
(B) High level of transpoting HCG is required to increase thickness of endothelium
(C) High level of FSH and LH of uterus, stimulates thickness of endothrlium
(D) High level of transpoting HCG stimulates synthesis of estrogen and progesterone

Answers : (172-B), (173-(D), (174-D), (175-A), (176-C), (177-C), (178-D), (179-D), (180-B), (181-A), (182-B), (183-B), (184-D), (185-D)



Human Reproduction

Primary Sex Organs

- Produce gametes called gonads male gonad testes and female gonad ovaries.

Secondary Sex organs

- Do not produce gametes
- Essential for transport of gemetes fertilizaion etc.
- In males, prostate, seminal vesicles, vasa deferentia, penis.
- In females, fallopian tubes, uterus, vagina and mammary glands.

Male reproductive system

Testes

- Paired structures lying in scrotum.
- Helps in spermatogenesis.

Accessory glands

- Include paired seminal vesicles, a prostate and paired bulbourethral glands.

Female Reproductive System

- Consists of a pair of ovaries along with a pair of oviducts, uterus, cervix, vagina and external genitalia.
- Ovaries help in Oogenesis.
- A cyclic change in the reproductive tract of female occur, which is called menstrual cycle.

Fertilization

- It is the process of fussion of sparn and egg to produce zygote.
- Amphimixis occurs.
- The presence of X and Y chromosomes daternime the sex of the embryo.

Significance

- Restores diploid number of chromosomes
- Initiates cleavage
- Results in determination of sex
- Introduces variation

Pregnancy

- Zygote undergoes repoated mitotic division to form a blastocyst, which is implanted in the uteras resulting in pregnancy.

Embryo Development

- Embryo after implantation differentiates into 3 germinal layered embryo.
- Three germinal layers of the embryo undergo organogenesis.
- By the end of 9th month of the embryo the foetus is fully developed.

Parturition and Lactation

- Parturition is the process of child birth.
- Parturition is induced by neuro-endocrine mechanism.
- Mammary glands differentiates and secrete after child birth.
- New born baby is fed with mother's milk is called lactation.
- Milk produced during initial few days of lactation is called colostrum which is rich with antibodies.