



Human Reproduction Important Questions With Answers

NEET Biology 2023

1. Spermiation is the process of the release of sperms from
a) seminiferous tubules b) vas deferens c) epididymis **d) prostate gland.**
2. Egg is liberated from ovary in _____
a) secondary oocyte stage b) primary oocyte stage c) oogonial stage d) mature ovum stage

Solution : -

In most of the organisms including human female the ovulation, i.e., release of ovum from ovary occurs at secondary oocyte stage in which meiosis-I has been completed and first polar body has been released.

3. Which among the following has 23 chromosomes?
a) Spermatogonia b) Zygote **c) Secondary oocyte** d) Oogonia

Solution : -

Spermatogonia are the cells on the inside wall of seminiferous tubules and consist of 46 chromosomes. Oogonia are also diploid and are formed in the fetal ovary. Zygote is also diploid. Secondary oocyte has 23 chromosomes and is formed by meiosis-I of primary oocyte.

4. How many sperms are formed from 4 primary spermatocytes?
a) 4 b) 1 **c) 16** d) 32

Solution : -

One primary spermatocyte produces four spermatozoa, therefore, four primary spermatocytes will produce 16 spermatozoa

5. How many sperms are formed from a secondary spermatocyte?
a) 4 b) 8 **c) 2** d) 1

Solution : -

As it is clear from the figure that each secondary spermatocyte, after second meiosis give rise to two spermatids, each of which develops into sperm.

6. Match column I with column II and select the correct option from the codes given below.

Column - I	Column -II
A. Acrosome	(i) Rudimentary erectile tissue
B. Endometrium	(ii) Uterus
C. Polar body	(iii) Oogenesis
D. Clitoris	(iv) Spermatozoon

- a) A-(ii), B-(i), C-(iv), D-(iii) **b) A-(iv), B-(ii), C-(iii), D-(i)** c) A-(iv), B-(iii), C-(ii), D-(i)
d) A-(iv), B-(iii), C-(i), D-(ii)

7. Assertion : All copulations do not lead to the fertilisation and pregnancy.

Reason: Fertilisation can occur only if the ovum and sperms are transported simultaneously to the ampullary isthmic junction.

a) If both assertion and reason are true and reason is the correct explanation of assertion.

b) If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false. d) If both assertion and reason are false.

Solution : -

Fertilisation can only occur if the ovum and sperms are transported simultaneously to the ampullary-isthmic junction and ovum is released only once a month. This is one of the reasons why all copulations do not lead to fertilisation and pregnancy.

8. The testes in humans are situated outside the abdominal cavity inside a pouch called scrotum. The purpose served is for _____

a) maintaining the scrotal temperature lower than the internal body temperature.

b) escaping any possible compression by the visceral organs

c) providing more space for the growth of epididymis.

d) providing a secondary sexual feature for exhibiting the male sex.

Solution : -

The testes in humans are situated outside the abdominal cavity inside a pouch called scrotum. The purpose served is for maintaining the scrotal temperature lower than the internal body temperature. The temperature of scrotal sac is 2-2.50C lower than the internal body temperature. This is necessary for spermatogenesis.

9. 1st polar body is formed at which stage of oogenesis?

a) 1stmeiosis b) mitosis c) 1stmitosis d) Differentiation

Solution : -

During maturation phase of oogenesis, primary oocyte undergoes first meiotic division and form two haploid daughter cells; large secondary oocyte and small first polar body.

10. **Assertion :** The regions outside the seminiferous tubules are called interstitial spaces, which contain Leydig's cells.

Reason: Leydig's cells synthesise and secrete testicular hormones called androgens.

a) If both assertion and reason are true and reason is the correct explanation of assertion.

b) If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false. d) If both assertion and reason are false.

Solution : -

Each seminiferous tubule is lined on its inside by two types of cells called male germ cells (spermatogonia) and Sertoli cells. The regions outside the seminiferous tubules called interstitial spaces, contain Leydig's cells.

Leydig's cells synthesise and secrete testicular hormones called androgens.

11. Consider the following three statements related to the human male reproductive system and select the correct option stating which ones are true (T) and which ones are false (F).

(i) Middle piece of spermatozoon is also termed as power house of spermatozoon.

(ii) Vas deferens joins a duct from seminal vesicle and form vasa efferentia.

(iii) Semen is a collection of secretions from the seminal vesicles, prostate gland and Cowper's glands and sperms from testes.

a)

(i)	(ii)	(iii)
T	F	T

b)

(i)	(ii)	(iii)
F	F	T

c)

(i)	(ii)	(iii)
T	T	F

d)

(i)	(ii)	(iii)
F	T	T

Solution : -

Vas deferens joins a duct from seminal vesicle to form ejaculatory duct

12. Ovulation in the human female normally takes place during the menstrual cycle

a) at the mid secretory phase b) just before the end of the secretory phase

c) at the beginning of the proliferative phase d) at the end of the proliferative phase

Solution : -

Proliferative phase includes days 6-13 of cycle and ovulation occurs on day 14.

13. Eye lens is formed from _____

- a) **ectoderm** b) mesoderm c) endoderm d) Both (a) and (b)

Solution : -

Eye lens is formed from ectoderm, other than lens, ectoderm also forms epidermis, epidermal glands, hair, conjunctiva, retina, internal ear, foregut, hindgut, central nervous system, middle and posterior pituitary, adrenal medulla and pineal gland.

14. At what stage of life is oogenesis initiated in a human female?

- a) At puberty b) During menarch c) During menopause **d) During embryonic development**

Solution : -

Oogenesis is the process of formation of functional haploid ova from the diploid germinal cells in the ovary. Oogenesis begins during embryonic development but is completed only after fertilisation of the secondary oocyte with the sperm.

15. Which one of the following statements about morula in humans is correct?

- a) It has almost equal quantity of cytoplasm as an uncleaved zygote but much more DNA.**
b) It has far less cytoplasm as well as less DNA than in an uncleaved zygote.
c) It has more or less equal quantity of cytoplasm and DNA as in uncleaved zygote.
d) It has more cytoplasm and more DNA than and uncleaved zygote.

Solution : -

It has more cytoplasm and more DNA than an uncleaved zygote. Cleavage is a type of mitotic division in which single celled zygote is converted into multicellular morula. But in cleavage, there is no growth of resultant daughter cells/ blastomeres. So, the DNA content will increase, but there is no increase or insignificant increase in amount of cytoplasm.

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

- a) Spermatogonial cells b) Germinal epithelial cells **c) Secondary spermatocytes**
d) Primary spermatocytes

Solution : -

In male gonad, germinal epithelial cells, spermatogonium and primary spermatocytes are diploid cells. Secondary spermatocytes, spermatids and spermatozoa represent haploid cells.

17. Which one of the following is the correct matching of the events occurring during menstrual cycle?

- a) Proliferative phase: Rapid regeneration of myometrium and maturation of Graffian follicle.
b) Development of corpus luteum : Secretory phase and increased secretion of progesterone.
c) Menstruation: Breakdown of myometrium and ovum not fertilised.
d) Ovulation: LH and FSH attain peak level and sharp fall in the secretion of progesterone.

Solution : -

Due to LH surge, mature graffian follicles ruptured and ovulation occurs. The remaining mass begins to enlarged and forms a yellow structure called corpus luteum. Thd, corpus luteum secretes progesterone and estrogens which maintain the endometrium for the implantation of the fertilised egg. This phase is called secretory phase.

18. Which one of the following generates new genetic combinations leading to variation?

- a) Vegetative reproduction b) Parthenogenesis **c) Sexual reproduction** d) Nucellar polyembryony

Solution : -

Sexual reproduction generates new genetic combinations which lead to variation and this variation is through genetic recombinations. All genetic recombination takes place in non-homologous chromosomes.

19. Assertion: The endometrium undergoes cyclical changes during menstrual cycle.
Reason: The myometrium exhibits strong contractions during delivery of the baby.
- a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false.
20. After birth, colostrum is released from mammary glands which is rich in
a) fat and low in proteins b) proteins and low in fat **c) proteins, antibodies and low in fat**
d) proteins, fat and low in antibodies.

Solution : -

After birth, the first milk released by mammary glands is called colostrum. It is released for 2-3 days. It is thin, yellowish fluid containing cells from the alveoli of glandular tissue of mammary glands and is rich in protein, antibodies, but low in fat.

21. Which one of the following is the correct matching of the events occurring during menstrual cycle?
a) Proliferative phase : Rapid regeneration of myometrium and maturation of Graafian follicle
b) Secretory phase : Development of corpus luteum and increased secretion of progesterone
c) Menstruation : Breakdown of myometrium and ovum not fertilised
d) Ovulation : LH and FSH attain peak level and sharp fall in the secretion of progesterone
22. In most mammals, the testes are located in scrotal sac for
a) more space to visceral organs b) spermatogenesis **c) sex differentiation**
d) independent functioning of kidney

Solution : -

In mammals, scrotal sacs (containing testes) act as thermoregulator, maintaining the temperature of the testes 2°C lower than that of the body. This temperature is required for the spermatogenesis to occur, otherwise, the sperms could be destroyed by high temperature, resulting in sterility.

23. The solid mass of 8-16 cells formed from zygote after successive mitotic divisions is called
a) blastula b) gastrula **c) morula** d) none of these
24. The head of the epididymis at the head of the testis is called
a) cauda epididymis b) vas deferens **c) caput epididymis** d) gubernaculum

Solution : -

The epididymis is a mass of long narrow closely coiled tubule which lies along the inner side of each testis. Coiling forms three parts - upper caput epididymis or head, middle corpus epididymis or body and lower cauda epididymis or tail.

25. Middle piece of mammalian sperm possesses _____
a) mitochondria and centriole **b) mitochondria only** c) centriole only d) nucleus and mitochondria

Solution : -

The middle piece of human sperm contains mitochondria which are coiled around an axial filament. called mitochondrial spiral. These provide energy for the movement of sperm.

26. Match the following and choose the correct option.

A. Trophoblast	(i) Embedding of blastocyst in the endometrium
B. Cleavage	(ii) Group of cells that would differentiate as embryo
C. Inner cell mass	(iii) Outer layer of blastocyst attached to the endometrium
D. Implantation	(iv) Mitotic division of zygote

- a) A-(ii), B-(i), C-(iii), D-(iv) **b) A-(iii), B-(iv), C-(ii), D-(i)** c) A-(iii), B-(i), C-(ii), D-(iv)
d) A-(ii), B-(iv), C-(iii), D-(i)

27. Which of the following contains the actual genetic part of a sperm?

- a) Whole of it b) Tail c) Middle piece **d) Head**

Solution : -

Head of the sperm is anterior, broad, flattened and oval structure. It consists of two parts, posterior large nucleus and anterior small cap-like acrosome. The nucleus consists of condensed DNA and basic proteins.

28. Level of follicle stimulating hormone (FSH) during infancy and adulthood is the same but spermatogenesis is seen only during adulthood. mRNA levels coding for FSH receptors are also found to be same in testis of both age groups. Which of the following investigations will clarify this paradox a little more?

a) Culture testicular cells and add LH to see testosterone production.

b) Culture testicular cells and add testosterone to see comparative rise in FSH mRNA from both age groups.

c) Culture testicular cells and FSH to see comparative rise in cAMP production by both age groups.

d) Add both LH and FSH to testicular cells and evaluate cAMP production.

Solution : -

In males, FSH and LH are secreted by hypothalamus. FSH stimulates Sertoli cells of the testes to secrete androgen binding protein (ABP) that concentrates testosterone in seminiferous tubules. LH stimulates interstitial cells (Leydig's cells) of the testes to secrete androgens testosterone. Androgens stimulate germinal epithelium to undergo spermatogenesis.

29. Prostate glands are located below

- a) gubernaculum **b) seminal vesicles** c) epididymis d) bulbourethral glands

30. $2n = 16$ is in a primary spermatocyte which is in metaphase of first meiotic division. What shall be the total number of chromatids in each of the secondary spermatocyte?

- a) 16** b) 24 c) 32 d) 8

Solution : -

Secondary spermatocyte contains half the number of chromosomes i.e., 8. Each chromosome has 2 chromatids, therefore, 8 chromosomes will have 16 chromatids in all.

31. In vitro fertilisation is a technique that involves transfer of which one of the following into the fallopian tube?

- a) Embryo only upto 8 cell stage** b) Either zygote or early embryo upto 8 cell stage
c) Embryo of 32 cell stage d) Zygote only

Solution : -

In-vitro fertilisation is a technique in which either zygote or early embryo upto 8-cell stage are transferred to fallopian tube. It is also known as test-tube baby in which fertilisation occurs outside body and then after fertilisation it is transferred to uterus or fallopian tube. ZIFT is an example of IVF. If the embryo has more than 8 blastomeres then it is transferred into uterus.

32. Which one is released from the ovary?

- a) Primary oocyte **b) Secondary oocyte** c) Graafian follicle d) Oogonium

Solution : -

Female gamete is released from the ovary in the secondary oocyte stage by rupturing the wall of the ovary.

33. In the human female, menstruation can be deferred by the administration of _____.

- a) combination of FSH and LH **b) combination of estrogen and progesterone** c) FSH only d) LH only

Solution : -

Progesterone is used along with estrogen in women who still have their uterus. The progesterone and estradiol continue the hypertrophy of endometrial lining in the uterus and fallopian tubes and maintain it throughout pregnancy. Progesterone is also required for the proper implantation of the foetus in the uterine wall. It stimulates

the endometrial glands to secrete a nutrient fluid for the foetus. hence the term secretory phase. The progesterone prevents the release of FSH so that it may not develop additional follicles and eggs.

34. Assertion: Human male ejaculates about 50-100 million sperms during a coitus.

Reason: For normal fertility at least 40 percent sperms must have normal shape and size.

- a) If both assertion and reason are true and reason is the correct explanation of assertion.
 b) If both assertion and reason are true but reason is not the correct explanation of assertion.
 c) If assertion is true but reason is false. **d) If both assertion and reason are false.**

Solution : -

Human male ejaculates about 200 to 300 million sperms during a coitus of which, for normal fertility, at least 60 percent sperms must have normal shape and size and atleast 40 percent of them must show vigorous motility.

35. Preparation of sperm before penetration of ovum is

- a) spermiation b) cortical reaction c) spermiogenesis **d) capacitation**

Solution : -

The secretions of the female genital tract remove coating substances deposited on the surface of the sperms particularly those on the acrosome. Thus, the receptor sites on the acrosome are exposed and sperm becomes active to penetrate the egg. This phenomenon of sperm activation in mammals is known as capacitation.

36. If for some reason, the vasa efferentia in the human reproductive system gets blocked, the gametes will not be transported from _____

- a) testes to epididymis** b) epididymis to vas deferens c) ovary to uterus d) vagina to uterus

Solution : -

Vasa efferentia (10 - 20 in number) are fine tubules which connect rete testes with an epididymis. If vasa efferentia are blocked, then gametes will not be transported from testes to epididymis.

37. The given table shows differences between spermatogenesis and spermiogenesis. Select the incorrect option.

a)

Spermatogenesis	Spermiogenesis
Process of formation of spermatozoa.	Process of differentiation of spermatozoon from a spermatid.

b)

Spermatogenesis	Spermiogenesis
It changes a haploid structure into another haploid structure.	It involves conversion of a diploid structure into haploid structure.

c)

Spermatogenesis	Spermiogenesis
Growth and divisions occur.	Divisions and growth are absent.

d)

Spermatogenesis	Spermiogenesis
A spermatogonium forms four spermatozoa.	A spermatid forms a single spermatozoon.

Solution : -

Spermatogenesis involves conversion of a diploid structure (spermatogonia) into haploid structures (spermatozoa). Spermiogenesis changes a haploid structure (spermatid) into another haploid structure (spermatozoon).

38. Which of the following statements concerning menopause is correct?

- a) Menopause occurs because all of the female's follicles become hormone producing corpus luteum at once.
 b) Menopausal symptoms are a result of decrease in the production of FSH and LH.
c) The onset of menopause is primarily due to follicle atresia. d) All of these

Solution : -

Follicular atresia means degeneration of follicles. Thus, if all follicles get degenerated at the age of 45-50 years, there will be no ovulation and hence no menstruation which leads to menopause.

39. Fertilization in humans is practically feasible only if
- The sperms are transported into cervix within 48 hours of release to ovum in uterus
 - The sperms are transported into vagina just after the release of ovum in fallopian tube
 -

The ovum and sperms are transported simultaneously to ampullary - isthmic junction of the fallopian tube

- The ovum and sperms are transported simultaneously to ampullary - isthmic junction of the cervix

Solution : -

During copulation (coitus) semen is released by the penis into the vagina (insemination). The motile sperms swim rapidly, pass through the cervix, enter into the uterus and finally reach the junction of the isthmus and ampulla (ampullary-isthmic junction) of the fallopian tube. The ovum released by the ovary is also transported to the ampullary-isthmic junction where fertilisation takes place

40. A change in the amount of yolk and its distribution in the egg will affect _____

- pattern of cleavage**
- number of blastomeres produced
- fertilisation
- formation of zygote

Solution : -

A change in the amount of yolk and its distribution in the egg will affect pattern of cleavage

41. What is the correct sequence of sperm formation?

- Spermatogonia, spermatozoa, spermatocyte, spermatid
- Spermatogonia, spermatocyte, spermatid, spermatozoa**
- Spermatid, spermatocyte, spermatogonia, spermatozoa
- Spermatogonia, spermatocyte, spermatozoa, spermatid

Solution : -

Fact.

42. Cleavage differs from mitosis in lacking

- synthetic phase
- growth phase**
- both (a) and (b)
- none of these

Solution : -

Cleavage in the fertilised egg starts in the Fallopian tube. It is holoblastic. There is no growth phase, so it differs from mitosis.

43. Below is given the unorganised list of some important events in the human female reproductive cycle. Identify the correct sequence of these events and select the correct option.

- Secretion of FSH
 - Growth of corpus luteum
 - Growth of the follicle
 - Ovulation
 - Sudden increase in the levels of LH
- (i) → (iv) → (iii) → (v) → (ii)
 - (ii) → (i) → (iii) → (iv) → (v)
 - (iii) → (i) → (iv) → (ii) → (v)
 - (i) → (iii) → (v) → (iv) → (ii)**

44. During bleeding phase of menstrual cycle unfertilised secondary oocyte undergoes autolysis. The interplay of hormones then is

- Progesterone and estrogen continue the hypertrophy of endometrial lining.
- Prolactin and progesterone reduces LH level causing regression of corpus luteum
- Progesterone inhibits the release of LH from pituitary causing regression of corpus luteum.**
- Prolactin and estrogen inhibits progesterone secretion leading to sloughing off uterine lining.

Solution : -

If fertilisation does not occur, the secondary oocyte undergoes autolysis and progesterone (secreted by persistent corpus luteum) inhibits the release of LH from pituitary. Reduction of LH level causes regression of corpus luteum by autolysis and thus fall in the progesterone level in the blood. Due to deficiency of progesterone, uterine lining sloughs off causing bleeding. This whole phase is called bleeding phase.

45. Which part of ovary in mammals acts as an endocrine gland after ovulation?

- a) Stroma b) Germinal epithelium c) Vitelline membrane **d) Graafian follicle**

Solution : -

Release of ovum from the ovary is called ovulation. The Graafian follicle rises to the surface, sends out a protuberance or stigma and everts to release the ovum into peritoneal cavity. The empty Graafian follicle contains a blood clot which is called corpus haemorrhagic. Its granulosa cells continue to proliferate, develop yellow carotene pigment or lutein and get converted into lutein cells. This converts the ruptured follicle into yellow body called corpus luteum. It becomes a temporary endocrine gland secreting progesterone with small quantity of estrogen.

46. The correct sequence of spermatogenetic stages leading to the formation of sperms in a mature human testes is _____

a) spermatogonia -spermatocyte -spermatid -sperms

- b) spermatid -spermatocyte -spermatogonia - sperms c) spermatogonia -spermatid -spermatocyte - sperms
d) spermatocyte -spermatogonia -spermatid - sperms

Solution : -

Spermatogonia - Spermatocyte -Spermatid -sperms. During spermatogenesis, some spermatogonia grow in size and are known as primary spermatocytes. These primary spermatocytes undergo meiosis-I and as a result two haploid secondary spermatocytes are formed. During meiosis II, these secondary spermatocytes forms 4-spermatids. Then these spermatids which are round in shape and non-motile are transformed into motile, haploid sperms.

47. Select the correct sequence for transport of sperm cells in male reproductive system

a)

Seminiferous tubules → Rete testis → Vasa efferentia → Epididymis → Vas deferens → Ejaculatory duct → Urethra → Urethral meatus

b) Seminiferous tubules → Vasa efferentia → Epididymis → Inguinal canal → Urethra

c)

Testis → Epididymis → Vasa efferentia → Vas deferens → Ejaculatory duct → Inguinal canal → Urethra → Urethral meatus

d) Testis → Epididymis → Vasa efferentia J Rete → testis → Inguinal canal → Urethra

Solution : -

The correct sequence for transport of sperm cells in male reproductive system is Seminiferous tubules J Rete testis → Vasa efferentia → Epididymis → Vas deferens → Ejaculatory duct → Urethra → Urethral meatus

48. Which of the following hormone levels will cause release of ovum (ovulation) from the graafian follicle ?

- a) Low concentration of LH b) Low concentration of FSH **c) High concentration of Estrogen**
d) High concentration of Progesterone

Solution : -

LH (Leutenizing hormone) is produced by pituitary gland in the brain. It triggers ovulation & promotes the development of corpus luteum by rupture of graafian follicle. Which high concentration of estrogen is released by mature graafian follicle.

49. Which of these is not an important component of initiation of parturition in humans?

- a) Increase in estrogen and progesterone ratio b) Synthesis of prostaglandins c) Release of oxytocin
d) Release of prolactin

Solution : -

Release of prolactin is not an important component of initiation of parturition in humans. This hormone is responsible for the secretion of milk at the end of pregnancy. It has no role during birth or initiation of parturition process. Oxytocin and prostaglandins causes uterine contraction and helpful in parturition. Levels of oestrogen and progesterone marks the beginning of parturition.

50. Acrosome reaction in sperm is triggered by _____

- a) capacitation b) release of lysin c) influx of Na^+ **d) release of fertilisin**

Solution : -

Ovum secretes a chemical substance, called fertilisin which has number of spermophilic sites on its surface where the sperm of species specific type can be bound by their antifertilisin site. This fertilisin-antifertilisin reaction triggers acrosome reaction. The main aim of this reaction is to thin out the number of sperms to reduce the chances of polyspermy.

