Human Reproduction

Question1

Arrange the following parts in human Mammary gland, traversing the route of milk ejection.
A. Mammary duct
B. Lactiferous duct
C. Mammary alveolus
D. Ampulla
E. Mammary tubule

Choose the correct answer from the options given below:

[NEET 2024 Re]

Options:

A.

D ⟶ C ⟶ E ⟶ A ⟶ B

B.

C ⟶ E ⟶ B ⟶ A ⟶ D

C.

C ⟶ E ⟶ A ⟶ D ⟶ B

D.

A ⟶ C ⟶ E ⟶ D ⟶ B

Answer: C

Solution:

The correct answer is Option (3) as the correct route of milk ejection via mammary glands in human is:

Mammary alveolus ⟶ Mammary tubule ⟶ Mammary duct ⟶ Mammary ampulla ⟶ Lactiferous duct

In the question, the given structures are represented as:-

C ⟶ E ⟶ A ⟶ D ⟶ B (given in option 3)

The other option i.e., (1), (2) and (4) are incorrect as they represent the wrong pathway.

Question2

Match List-I with List-II relating to human female external genitalia.

	List-I (Structures)		List-II (Features)
A.	Mons pubis	I	A fleshy fold of tissue surrounding the vaginal opening
B.	Clitoris	II	Fatty cushion of cells covered by skin and hair
C.	Hymen	III	Tiny finger-like structure above labia minora
D.	Labina majora	IV	A thin membrane-like structure covering vaginal opening

Choose the correct answer from the option given below :

[NEET 2024 Re]

Options:

A.

A-II, B-III, C-IV, D-I

B.

A-IV, B-III, C-II, D-I

C.

A-I, B-IV, C-III, D-II

D.

A-II, B-III, C-I, D-IV

Answer: A

Solution:

The correct answer is option (1) because

• Mons pubis is a cushion of fatty tissue covered by skin and pubic hair. So (A) matches with (II).

• Clitoris is a tiny finger like structure which lies at the upper junction of the two labia minora above the urethral opening. So, (B) matches with (III)

• Hymen is a membrane which partially covers the opening of vagina., So (C) matches with (IV)

• Labia majora are fleshy folds of tissue which extends down from the mons pubis and surround the vaginal opening. So, (D) matches with (I)

Other options (2), (3) and (4) are incorrect as they represent mismatches for (A), (B), (C) and (D)

Question3

Match List-I with List-II:

	List-I		List-II
A.	Parturition	I	Several antibodies for new-born babies
B.	Placenta	II	Collection of ovum after ovulation
C.	Colostrum	III	Foetal ejection reflex
D.	Fimbriae	IV	Secretion of the hormone hCG

Choose the correct answer from the option given below:

[NEET 2024 Re]

Options:

A.

A-III, B-IV, C-I, D-II

B.

A-I, B-IV, C-II, D-III

C.

A-II, B-III, C-IV, D-I

D.

A-III, B-IV, C-II, D-I

Answer: A

Solution:

The correct answer is option (1) as

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

• Placenta acts as an endocrine tissue and produces several hormones like hCG, hPL estrogens, progestogens, etc.

• The milk produced during the initial few days of lactation is called colostrum that contains several antibodies absolutely necessary to develop resistance for the new-born babies.

Fimbriae helps in collection of the ovum after ovulation.

Question4

Given below are two statements: One is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: During menstrual cycle, the ovulation takes place approximately on 14th day.

Reason R: Rapid secretion of LH in the middle of menstrual cycle induces rupture of Graafian follicle and thereby the release of ovum.

In the light of the above statements, choose the most appropriate answer from the options given below.

[NEET 2024 Re]

Options:

A.

A is correct but R is not correct.

B.

A is not correct but R is correct.

C.

Both A and R are correct and R is the correct explanation of A.

D.

Both A and R are correct but R is NOT the correct explanation of A.

Answer: C

Solution:

The correct answer is option (3), because in a 28 days menstrual cycle of a human female, rapid secretion of LH leading to its maximum level during the mid-cycle (14^{th} day) called LH surge induces the rupture of Graafian follicleand thereby the release of ovum (ovulation).

Hence, both (A) and (R) are correct and (R) is the correct explanation of (A).

Question5

Which of the following is not a component of Fallopian tube?

[NEET 2024]

Options:

A.

Uterine fundus

B.

Isthmus

C.

Infundibulum

D.

Ampulla

Answer: A

Solution:

The correct answer is option (1) as uterine fundus is the upper, dome-shaped part of the uterus, above the opening of fallopian tubes.

• Option (2) is incorrect as isthmus is the last and narrow part of the oviduct that links to the uterus.

• Option (3) is incorrect as infundibulum is the part of oviduct which is closer to the ovary.

• Option (4) is incorrect as ampulla is the wider part of the oviduct.

Question6

Given below are two statements:
Statement I: The presence or absence of hymen is not a reliable indicator of virginity.
Statement II: The hymen is torn during the first coitus only.

In the light of the above above statements, choose the correct answer from the options given below :

[NEET 2024]

Options:

A.

Both Statement I and Statement II are true

B.

Both Statement I and Statement II are false

C.

Statement I is true but Statement II is false

D.

Statement I is false but Statement II is true

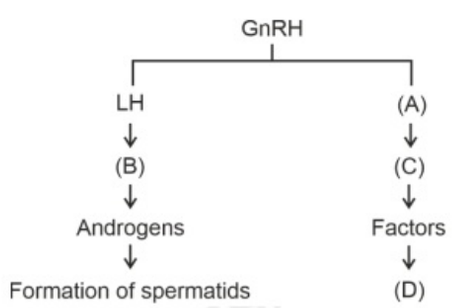
Answer: C

Solution:

The correct answer is option no. (3) because the presence or absence of hymen is not a reliable indicator of virginity because hymen can also be broken by a sudden jolt, insertion of a vaginal tampon, active participation in some sports and insome women the hymen persists even after coitus.

Question7

Identify the correct option (A), (B), (C), (D) with respect to spermatogenesis.



[NEET 2024]

Options:

A.

FSH, Leydig cells, Sertoli cells, spermiogenesis.

B.

ICSH, Interstitial cells, Leydig cells, spermiogenesis.

C.

FSH, Sertoli cells, Leydig cells, spermatogenesis.

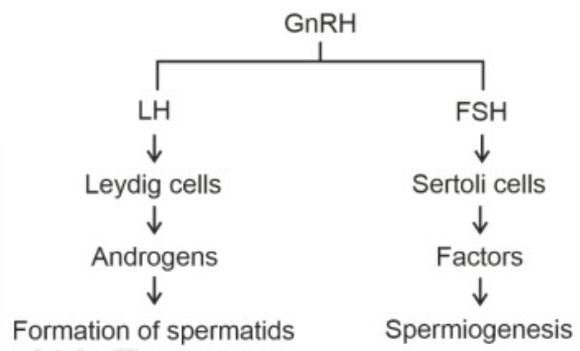
D.

ICSH, Leydig cells, Sertoli cells, spermatogenesis.

Answer: A

Solution:

The correct answer is option no. (1) as



(A) is FSH which is a pituitary hormone.
(B) is Leydig cells which are found in the interstitial space outside of the seminiferous tubules.
(C) is Sertoli cells are found inside the seminiferous tubules.
(D) is Spermiogenesis which is a process that helps in transformation of spermatids into spermatozoa.

Question8

Given below are two statements regarding oogenesis:
Statement I :-
The primary follicles get surrounded by more layers of granulosa cells, a theca and shows fluid filled cavity antrum. Now it is called secondary follicle.

Statement II :-
Graffian follicle ruptures to release the secondary oocyte from the ovary by the process called ovulation.
In the light of the above statements, choose the correct answer from the options given below:

[NEET 2023 mpr]

Options:

A.

Statement I is correct but Statement II is false.

B.

Statement I is incorrect but Statement II is true

C.

Both Statement I and Statement II are true

D.

Both Statement I and Statement II are false.

Answer: B

Solution:

Statement I is incorrect because the primary follicles, when surrounded by more layers of granulosa cells and a theca, are called secondary follicles. However, the secondary follicles then transform into tertiary follicles, which is characterized by a fluid-filled cavity called antrum. Therefore, the statement is not accurate as it incorrectly describes the transition from primary to secondary follicle.

Statement II is correct as the Graafian follicle does rupture to release the secondary oocyte from the ovary, a process known as ovulation.

Question9

Which of the following statements are correct regarding female reproductive cycle?
A. In non-primate mammals cyclical changes during reproduction are called oestrus cycle.
B. First menstrual cycle begins at puberty and is called menopause.
C. Lack of menstruation may be indicative of pregnancy.
D. Cyclic menstruation extends between menarche and menopause.

Choose the most appropriate answer from the options given below.
[NEET 2023]

Options:

A. A and B only

B. A, B and C only

C. A, C and D only

D. A and D only

Answer: C

Solution:

The correct answer is option (3) as first menstrual cycle that begins at puberty is called menarche.

Cyclic menstruation is an indicator of normal reproductive phase and extends between menarche and menopause.

In primates, cyclical changes during reproduction are called menstrual cycle.

Question10

Given below are two statements:
Statement I: Vas deferens receives a duct from seminal vesicle and opens into urethra as the ejaculatory duct.
Statement II: The cavity of the cervix is called cervical canal which along with vagina forms birthcanal.

In the light of the above statements, choose the correct answer from the options given below:
[NEET 2023]

Options:

A. Both Statement I and Statement II are false.

B. Statement I is correct but Statement II is false.

C. Statement I is incorrect but Statement II is true.

D. Both Statement I and Statement II are true.

Answer: D

Solution:

Solution:

Option (4) is the correct answer to this question because statement I and statement II both are correct.

Vas deferens receives a duct from seminal vesicle and opens into urethra as the ejaculatory duct. The cavity of cervix is called cervical canal which along with vagina forms the birth canal.

Question11

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.
Assertion A: Endometrium is necessary for implantation of blastocyst.
Reason R: In the absence of fertilization, the corpus luteumdegenerates that causes disintegration of endometrium.

In the light of the above statements, choose the correct answer from the

options given below:
[NEET 2023]

Options:

A. Both A and R are true but R is NOT the correct explanation of A.

B. A is true but R is false.

C. A is false but R is true.

D. Both A and R are true and R is the correct expiation of A.

Answer: A

Solution:

Solution:

Option (1) is the correct answer because both Assertion and Reason are true.

Implantation is embedding of the blastocyst into endometrium of uterus.

Correct explanation of reason is

Corpus luteum secretes large amount of progesterone which is essential for maintenance of endometrium of uterus. In absence of fertilisation, the corpus luteum degenerates hence the decrease in the level of progesterone hormone will cause disintegration of endometrium leading to menstruation

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Question12

How many secondary spermatocytes are required to form 400 million spermatozoa?
[NEET Re-2022]

Options:

A. 400 million

B. 50 million

C. 100 million

D. 200 million

Answer: D

Solution:

Solution:

During spermatogenesis, each secondaryspermatocyte undergoes Meiosis II and forms two spermatids that in turn differentiate to formtwo spermatozoa. So, the number of spermatozoa is twice that of secondaryspermatocytes. Therefore, 200 millionsecondary spermatocytes are required to form400 million spermatozoa.

Question13

Arrange the components of mammary gland. (from proximal to distal).
(a) Mammary duct
(b) Lactiferous duct
(c) Alveoli
(d) Mammary ampulla
(e) Mammary tubules

Choose the most appropriate answer from the options given below.
[NEET Re-2022]

Options:

A. (e) →(c) → (d) → (b) → (a)

B. (c) →(a) → (d) → (e) → (b)

C. (b) → (c) →(e) → (d) → (a)

D. (c) → (e) → (a) → (d) → (b)

Answer: D

Solution:

Solution:

Alveoli → Mammary tubules → Mammary duct → Mammary ampulla → Lactiferous duct

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Question14

Given below are two statements : one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A) :
During pregnancy the level of thyroxine is increased in the maternal blood.
Reason (R) :
Pregnancy is characterised by metabolic changes in the mother.

In the light of the above statements, choose the most appropriate answer from the options given below :
[NEET Re-2022]

Options:

A. (A) is not correct but (R) is correct

B. Both (A) and (R) are correct and (R) is the correct explanation of (A)

C. Both (A) and (R) are correct but (R) is not the correct explanation of (A)

D. (A) is correct but (R) is not correct

Answer: B

Solution:

Solution:

During pregnancy, the metabolic rate in the mother is increased to fulfil the increased requirements of the mother and the developing foetus by increase in thyroxine

Both assertion and reason are correct and reason is the correct explanation of the assertion.

Question15

Which of the following statements are true for spermatogenesis but do not hold true for Oogenesis?
(a) It results in the formation of haploid gametes
(b) Differentiation of gamete occurs after the completion of meiosis
(c) Meiosis occurs continuously in a mitotically dividing stem cell population
(d) It is controlled by the Luteinising hormone (LH) and Follicle Stimulating Hormone (FSH) secreted by the anterior pituitary
(e) It is initiated at puberty

Choose the most appropriate answer from the options given below [NEET-2022]

Options:

A. (c) and (e) only

B. (b) and (c) only

C. (b), (d) and (e) only

D. (b), (c) and (e) only

Answer: D

Solution:

Solution:

• In both, spermatogenesis and oogenesis haploid gametes are formed. So (a) is true for both.

• The spermatids are transformed into spermatozoa (sperms) by the process called spermiogenesis. Hence, (b) is true for spermatogenesis only.

• Spermatogenesis and oogenesis both are controlled by LH and FSH secreted by the anterior pituitary. Hence (d) is true for both.

• Spermatogenesis is a continuous process that begins at puberty. So (e) is true for spermatogenesis. Oogenesis on the other hand begins during embryonic development of the female.

Question16

Given below are two statements:
Statement I :
The release of sperms into the seminiferous tubules is called spermiation.
Statement II :
Spermiogenesis is the process of formation of sperms from spermatogonia.

In the light of the above statements, choose the most appropriate answer from the options given below :
[NEET-2022]

Options:

A. Both Statement I and Statement II are correct

B. Both Statement I and Statement II are incorrect

C. Statement I is correct but Statement II is incorrect

D. Statement I is incorrect but Statement II is correct

Answer: C

Solution:

Solution:

Option (3) is the correct answer because Statement II is incorrect as the transformation of spermatids into spermatozoa (sperms) are called spermiogenesis. After this, sperm head becomes embedded in the Sertoli cells and are finally released from the seminiferous tubules by the process called spermiation. Hence, Statement I is a correct statement.

Spermatogenesis is the process of formation of sperms from spermatogonia.

Question17

At which stage of life the oogenesis process is initiated?
[NEET-2022]

Options:

A. Puberty

B. Embryonic development stage

C. Birth

D. Adult

Answer: B

Solution:

Solution:

Option (2) is the correct answer as oogenesis is initiated during the embryonic development stage when a couple of

million gamete mother cells (oogonia) are formed within each foetal ovary.

No more oogonia are formed and added after birth in a human female.

At puberty only 60,000 to 80,000 primary follicles are left in each ovary, rest degenerate during the phase from birth to puberty.

Question18

Receptors for sperm binding in mammals are present on : [NEET 2021]

Options:

A. Corona radiata

B. Vitelline membrane

C. Perivitelline space

D. Zona pellucida

Answer: D

Solution:

Solution:

● Option (4) is correct because zona pellucida has receptors for sperm binding (ZP3 receptors) in mammals.

● Corona radiata is a layer of radially arranged cells of membrana granulosa.

● Perivitelline space is present in between vitelline membrane and zona pellucida.

Question19

Which of these is not an important component of initiation of parturition in humans ? [NEET 2021]

Options:

A. Increase in estrogen and progesterone ratio

B. Synthesis of prostaglandins

C. Release of Oxytocin

D. Release of Prolactin

Answer: D

Solution:

● At the end of gestation, the completely developed foetus is expelled out. This process is called parturition.
● Parturition is controlled by a complex neuroendocrine mechanism.
● Estrogen and progesterone ratio increases as estrogen levels rise significantly.
● Prostaglandins, which stimulate uterine contractions are also produced that act on myometrium.
● Oxytocin, the main hormone, also called as birth hormone is released by maternal pituitary, which brings about strong uterine contractions.
● Prolactin is a lactation hormone that has no role in initiation of parturition.

Question20

Which of the following secretes the hormone, relaxin, during the later phase of pregnancy?
[NEET 2021]

Options:

A. Graafian follicle

B. Corpus luteum

C. Foetus

D. Uterus

Answer: B

Solution:

Solution:

The hormone relaxin is produced in the later phase of pregnancy. It is produced by the ovary.

● Graafian follicle is not formed when the woman is pregnant.

● Uterus and foetus do not produce relaxin.

● Relaxin is produced by the corpus luteum present in the ovary. Ruptured Graafian follicle is called corpus luteum, which has endocrine function.

Question21

Which of these is not an important component of initiation of parturition in humans ?
[NEET 2021]

Options:

A. Increase in estrogen and progesterone ratio

B. Synthesis of prostaglandins

C. Release of Oxytocin

D. Release of Prolactin

Answer: D

Solution:

● At the end of gestation, the completely developed foetus is expelled out. This process is called parturition.

● Parturition is controlled by a complex neuroendocrine mechanism.

● Estrogen and progesterone ratio increases as estrogen levels rise significantly.

● Prostaglandins, which stimulate uterine contractions are also produced that act on myometrium.

● Oxytocin, the main hormone, also called as birth hormone is released by maternal pituitary, which brings about strong uterine contractions.

● Prolactin is a lactation hormone that has no role in initiation of parturition.

Question22

Meiotic division of the secondary oocyte is completed (2020)

Options:

A. At the time of copulation

B. After zygote formation

C. At the time of fusion of a sperm with an ovum

D. Prior to ovulation

Answer: C

Solution:

Solution:
In human beings, the secondary oocyte is released from the mature Graafian follicle of an ovary (ovulation). The oocyte is received by the nearby Fallopian funnel and sent into the Fallopian tube by movements of fimbriae and their cilia. The secondary oocyte can be fertilized only within 24 hours after its release from the ovary.
The secondary oocyte is surrounded by numerous sperms but only one sperm succeeds in fertilizing the oocyte. Since, the second meiotic division is in progress, so the sperm enters the secondary oocyte. Second meiotic division is completed by the entry of the sperm into the secondary oocyte (fallopian tube). After this secondary oocyte is called ovum (egg).

Question23

Which of the following hormone levels will cause release of ovum (ovulation) from the graffian follicle? [NEET-2020]

Options:

A. High concentration of Progesterone

B. Low concentration of LH

C. Low concentration of FSH

D. High concentration of Estrogen

Answer: D

Solution:

High level of estrogen will send positive feedback to anterior pituitary for release of LH.

FSH, LH and estrogen are at peak level during mid of menstrual cycle (28 days cycle).

LH surge leads to ovulation.

Question24

Match the following columns and select the correct option.

	Column-I		Column-II
(a)	Placenta	(i)	Androgens
(b)	Zona pellucida	(ii)	Human Chorionic Gonadotropin (hCG)
(c)	Bulbo-urethral glands	(iii)	Layer of the ovum
(d)	Leydig cells	(iv)	Lubrication of the Penis

	(a)	(b)	(c)	(d)
(1)	(i)	(iv)	(ii)	(iii)
(2)	(iii)	(ii)	(iv)	(i)
(3)	(ii)	(iii)	(iv)	(i)
(4)	(iv)	(iii)	(i)	(ii)

[NEET-2020]

Options:

A. a

B. b

C. c

D. d

Answer: C

Solution:

The correct option is (3) because

(a) Placenta secretes human chorionic gonadotropin (hCG)

(b) Zona pellucida is a primary egg membrane secreted by the secondary oocyte

(c) The secretions of bulbourethral glands help in lubrication of the penis

(d) Leydig cells synthesise and secrete testicular hormones called androgens

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Question25

Extrusion of second polar body from egg nucleus occurs : [NEET 2019]

Options:

A. after fertilization

B. before entry of sperm into ovum

C. simultaneously with first cleavage

D. after entry of sperm but before fertilization

Answer: D

Solution:

Solution:

Extrusion of second polar body from egg nucleus occurs after entry of sperm but before fertilization.

The entry of sperm into the ovum induces completion of the meiotic division of the secondary oocyte.

Entry of sperm causes breakdown of metaphase promoting factor (MPF) and turns on anaphase promoting complex (APC).

Question26

Select the correct sequence for transport of sperm cells in male reproductive system. [NEET 2019]

Options:

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 → Rete testis → Inguinal canal → Urethra

Answer: A

Solution:

The correct sequence for transport of spermcells in male reproductive system is

Seminiferous tubules → Rete testis → Vasaefferentia → Epididymis → Vas deferens →Ejaculatory duct → Urethra → Urethralmeatus

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Question27

Select the correct sequence of events:
[NEET OD 2019]

Options:

A. Gametogenesis → Gamete transfer → Syngamy → Zygote → Cell division (Cleavage) → Cell differentiation → Organogenesis

B. Gametogenesis → Gamete transfer → Syngamy → Zygote → Cell division (Cleavage) → Organogenesis → Cell differentiation

C. Gametogenesis → Syngamy → Gamete transfer → Zygote → Cell division (Cleavage) → Cell differentiation → Organogenesis

D. Gametogenesis → Gamete transfer → Syngamy → Zygote → Cell differentiation → Cell division (Cleavage) → Organogenesis

Answer: A

Question28

No new follicles develop in the luteal phase of the menstrual cycle because
[NEET OD 2019]

Options:

A. Follicles do not remain in the ovary after ovulation

B. FSH levels are high in the luteal phase

C. LH levels are high in the luteal phase

D. Both FSH and LH levels are low in the luteal phase

Answer: D

Question29

Which of the following hormones is responsible for both the milk ejection reflex and the foetal ejection reflex ?
[NEET OD 2019]

Options:

A. Estrogen

B. Prolactin

C. Oxytocin

D. Relaxin

Answer: C

Question30

The difference between spermiogenesis and spermiation is [NEET 2018]

Options:

A. In spermiogenesis spermatide are formed, while in spermiation spermatozoaare formed.

B. In spermiogenesis spermatozoa are formed, while in spermiation spermatids are formed

C. In spermiogenesis spermatozoa are formed, while in spermiation spermatozoaare released from sertoli cells into the cavity of seminiferous tubules

D. In spermiogenesis spermatozoa from sertoli cells are released into the cavity of seminiferous tubules, while in spermiation spermatozoa are formed

Answer: C

Solution:

Solution:

Spermiogenesis is transformation of spermatids into spermatozoa whereasspermiation is the release of the sperms from sertoli cells into the lumen of seminiferous tubule.

Question31

Match the items given in Column-I with those in Column-II and select the correct option given below:

Column - I	Column - II
a) Proliferative Phase	i) Breakdown of endometrial lining
b) Secretory Phase	ii) Follicular Phase
c) Menstruation	iii) Luteal Phase

	a	b	c
1)	iii	ii	i
2)	i	iii	ii
3)	iii	i	ii
4)	ii	iii	i

[NEET 2018]

Options:

A. 1

B. 2

C. 3

D. 4

Answer: D

Solution:

Solution:

During proliferative phase, the follicles start developing, hence, called follicular phase.

Secretory phase is also called as luteal phasemainly controlled by progesterone secreted by corpus luteum. Estrogen further thickens the endometrium maintained by progesterone.

Menstruation occurs due to decline in progesterone level and involves breakdown of overgrown endometrial lining.

Question32

The amnion of mammalian embryo is derived from [NEET 2018]

Options:

A. ectoderm and mesoderm

B. endoderm and mesoderm

C. ectoderm and endoderm

D. mesoderm and trophoblast

Answer: D

Solution:

Solution:

The extraembryonic or foetal membranes are amnion, chorion, allantois and Yolk sac.

Amnion is formed from mesoderm on outer side and ectoderm on inner side.

Chorion is formed from trophectoderm andmesoderm whereas allantois and Yolk sac membrane have mesoderm on outerside and endoderm in inner side.

Question33

Hormones secreted by the placenta to maintain pregnancy are [NEET 2018]

Options:

A. hCG, hPL, progesterone, prolactin

B. hCG, hPL, estrogens, relaxin,oxytocin

C. hCG, progesterone, estrogens,glucocorticoids

D. hCG, hPL, progesterones, estrogens

Answer: D

Solution:

Solution:

Placenta releases human chorionic gonadotropic hormone (hCG) which stimulates the Corpus luteum during pregnancy to release estrogen and progesterone and also rescues corpus luteum from regression. Human placental lactogen (hPL) is involved in growth of body of mother and breast. Progesterone maintains pregnancy, keeps the uterus silent by increasing uterine threshold to contractile stimuli.

Question34

Capacitation occurs in : [NEET 2017]

Options:

A. Epididymis

B. VAs deferens

C. Female reproductive tract

D. Rete testis

Answer: C

Question35

Which of the following depicts the correct pathway of transport of sperms?
[NEET 2016 P2]

Options:

A. Efferent ductules → Rete testis → Vas deferens → Epididymis

B. Rete testis → Efferent ductules → Epididymis → Vas deferens

C. Rete testis → Epididymis → Efferent ductules → Vas deferens

D. Rete testis → Vas deferens → Efferent ductules → Epididymis

Answer: B

Solution:

Solution:

The correct pathway of transport of sperms is

Rete testis → Efferent ductules → Epididymis → Vas deferens

Question36

Match Column-I with Column-II and select the correct option using the codes given below :

Column-I	Column-II
a. Mons pubis	(i) Embryo formation
b. Antrum	(ii) Sperm
c. Trophectoderm	(iii) Female external genitalia
d. Nebenkern	(iv) Graafian follicle

[NEET 2016 P2]

Options:

A. ^{a}(i) ^{b}(iv) ^{c}(iii) ^{d}(ii)

B. (iii) (iv) (ii) (i)

C. (iii) (iv) (i) (ii)

D. (iii) (i) (iv) (ii)

Answer: C

Solution:

Solution:

Column-I	Column-II
a. Mons pubis	–Female external genitaliab
b. Antrum	– Graafian folliclec.
c. Trophectoderm	– Embryo formationd.
d. Nebenkern	– Sperm

Question37

Several hormones like hCG, hPL, estrogen. progesterone are produced by
[NEET 2016 P2]

Options:

A. pituitary

B. ovary

C. placenta

D. fallopian tube

Answer: C

Solution:

Human chorionic gonadotropin (hCG) is a hormone produced by trophoblast cells that lines a developing embryo that eventually forms the placenta. It is the maternal recognition of pregnancy.

Human placental lactogen (hPL) is also known as human chorionic somatomammotropin (HCS). It is a placental hormone that forms the placental lactogen. Its structure and function are parallel to human growth hormone.

Estrogen and progesterone are the sex haemones that helps in the regulation of secondary sex harmone. They also help in regulation of the menstrual cycle and play a vital role during pregnancy in women. These two steroid hormones are produced by placenta.

Progesterone supports the lining of the womb or uterus that provides the environment for the development of the fetus and placenta.along with these hormones, relaxin, placental growth hormone and kisspeptin are also produced by placenta that provides support during gestation period in pregnancy.

Question38

Changes in GnRH pulse frequency in females is controlled by circulating levels of :
[NEET 2016 P1]

Options:

A. progesterone and inhibin

B. estrogen and progesterone

C. estrogen and inhibin

D. progesterone only

Answer: B

Solution:

Solution:

GnRH pulse frequency in controlled by estrogen and progesterone both after puberty

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Question39

Fertilization in humans is practically feasible only if:
[NEET 2016 P1]

Options:

A. the sperms are transported into cervix within 48 hrs of release of ovum in uterus.

B. the sperms are transported into vagina just after the release of ovum in fallopian tube.

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

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

Answer: C

Question40

Select the incorrect statement:
[NEET 2016 P1]

Options:

A. LH triggers secretion of androgens from the Leydig cells

B. FSH stimulates the sertoli cells which help in spermiogenesis

C. LH triggers ovulation in ovary.

D. LH and FSH decrease gradually during the follicular phase

Answer: D

Solution:

Solution:

LH and FSH both increase during follicular phase.

Question41

Identify the correct statement on 'inhibin' :
[NEET 2016 P1]

Options:

A. Is produced by nurse cells in testes and inhibits the secretion of LH.

B. Inhibits the secretion of LH, FSH and Prolactin.

C. Is produced by granulose cells in ovary and inhibits the secretion of FSH.

D. Is produced by granulose cells in ovary and inhibits the secretion of LH.

Answer: C

Question42

In human females, meiosis-II is not completed until [NEET 2015]

Options:

A. uterine implantation

B. birth

C. puberty

D. fertilisation

Answer: D

Solution:

Solution:
Meiosis-II does not complete untill fertilization occurs in females (in human being).

Question43

Which of the following layers in an antral follicle is acellular? [NEET 2015]

Options:

A. Stroma

B. Zona pellucida

C. Granulosa

D. Theca interna

Answer: B

Solution:

Solution:
Zona pellucida is formed as a new membrane by secondary oocyte around itself.

Question44

Which of the following events is not associated with ovulation in human life?
[NEET 2015]

Options:

A. Release of secondary oocyte

B. LH surge

C. Decrease in estradiol

D. Full developmentof Graafian follicle

Answer: C

Solution:

Solution:
In human females, ovulation is the release of secondary oocyte from the ovary at about 14^{th} day of the menstrual cycle. Both LH and FSH attain a peak level during this period. Rapid secretion of LH induces rupturing of fully developed Graafian follicle and thereby release of ovum. LH surge is actually responsible for ovulation.

Question45

Ectopic pregnancies are referred to as
[NEET 2015]

Options:

A. implantation of defective embryo in the uterus

B. pregnancies terminated due to hormonal imbalance

C. pregnancies with genetic abnormality

D. implantation of embryo at site other than uterus.

Answer: D

Solution:

Solution:
In ectopic pregnancies, the implantation of embryo does not occur in uterus but at other site

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Question46

Which of the following cells during gametogenesis is normally diploid?
[NEET 2015 C]

Options:

A. Spermatogonia

B. Spermatid

C. Secondary polar body

D. Primary polar body

Answer: A

Solution:

Solution:
Spermatogonia are diploid germ cells of seminiferous tubules that undergo mitosis to form the primary spermatocytes. These primary spermatocytes are coverted to haploid sperms by meiotic of division.

Question47

Capacitation refers to changes in the :- [NEET 2015 C]

Options:

A. Ovum before fertilization

B. Ovum after fertilization

C. Sperm after fertilization

D. Sperm before fertilization

Answer: D

Question48

Hysteresctomy is surgical removal of : [NEET 2015 C]

Options:

A. Prostate gland

B. Vas-deference

C. Mammary glands

D. Uterus

Answer: D

Question49

The shared terminal duct of the reproductive and urinary system in the human male is:
[NEET 2014]

Options:

A. Urethra

B. Urete

C. Vas deferens

D. Vasa efferentia

Answer: A

Solution:

Solution:
In human male, urethra is urinogenital duct carry urine and sperm both.

Question50

The main function of mammalian corpus luteum is to produce:
[NEET 2014]

Options:

A. estrogen only

B. progesterone

C. human chorionic gonadotropin

D. relaxin only

Answer: B

Solution:

Corpus luteum secretes steroid hormones progesterone and estrogen.

Question51

Select the correct option describing gonadotropin activity in a normal pregnant female:
[NEET 2014]

Options:

A. High level of FSH and LH stimulates the thickening of endometrium

B. High level of FSH and LH facilitate implantation of the embryo.

C. high level of hCG stimulates the synthesize of estrogen and progesterone

D. High level of hCG stimulates the thickening of endometrium.

Answer: C

Solution:

Solution:
In pregnant female, hCG maintains the corpus luteum which secretes estrogen and progesterone.

Question52

What is the correct sequence of sperm formation?
(NEET 2013)

Options:

A. Spermatogonia, spermatozoa, spermatocytes, spermatids

B. Spermatogonia,spermatocytes, spermatids, spermatozoa

C. Spermatids, spermatocytes, spermatogonia, spermatozoa

D. Spermatogonia, spermatocytes, spermatozoa, spermatids

Answer: B

Solution:

(b): Spermatogenesis is the process of formation of haploid spermatozoa (sperms) from diploid spermatogonia inside the testes of the male. At sexual maturity, the undifferentiated primordial germ cells divide several times by mitosis to produce a large number of spermatogonia or sperm mother cells. Each spermatogonium actively grows to a larger primary spermatocyte by obtaining nourishment from the nursing cells. The phenomenon of formation of primary spermatocytes from spermatogonia, is called spermatocytogenesis. Each primary spermatocyte undergoes two successive divisions, called maturation divisions. The first maturation division is reductional or meiotic. Hence, the primary spermatocyte divides into two haploid daughter cells called secondary spermatocytes. Both secondary spermatocytes now undergo second maturation division which is an ordinary mitotic division to form four haploid spermatids, by each primary spermatocyte. The transformation of spermatids into spermatozoa is called spermiogenesis or spermateleosis or differentiation phase.

Question53

Which one of the following is not the function of placenta? (NEET 2013)

Options:

A. Facilitates removal of carbon dioxide and waste material from embryo

B. Secretes oxytocin during parturition

C. Facilitates supply of oxygen and nutrients to embryo

D. Secretes estrogen

Answer: B

Solution:

Solution:
(b) : 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 foetal ejection reflex. This triggers release of oxytocin from the maternal pituitary. Oxytocin acts on the uterine muscle and causes stronger uterine contractions, which in turn stimulates further secretion of oxytocin. The stimulatory reflex between the uterine contraction and oxytocin secretion continues resulting in stronger and stronger contractions. This lead to expulsion of the baby out of the uterus through the birth canal.

Question54

Menstrual flow occurs due to lack of (NEET 2013)

Options:

A. oxytocin

B. vasopressin

C. progesterone

D. FSH.

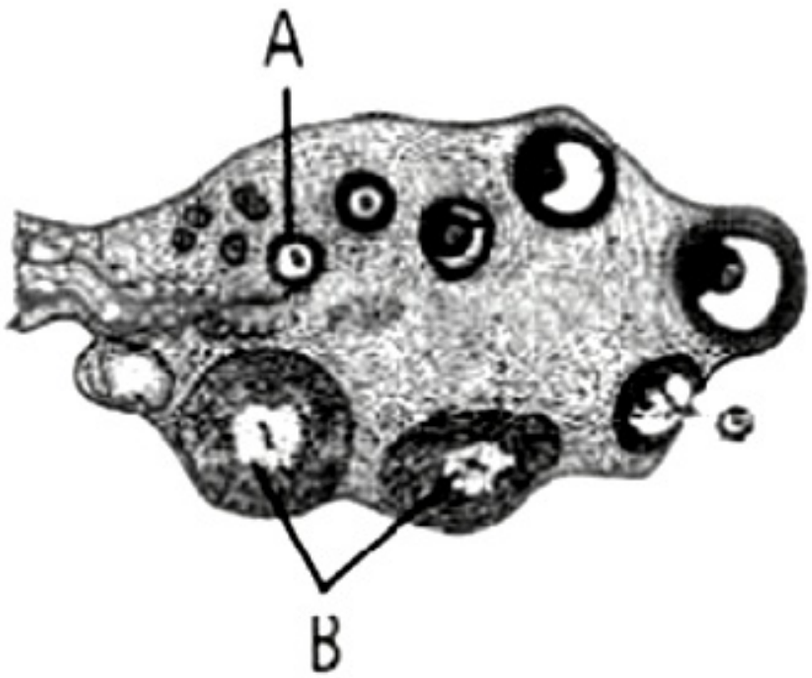
Answer: C

Solution:

Solution:
(c) : The corpus luteum secretes large amounts of progesterone which is essential for maintenance of the endometrium. Such as endometrium is necessary for implantation of the fertilized ovum and other events of pregnancy. In the absence of fertilization, the corpus luteum degenerates. This causes disintegration of the endometrium leading to menstruation. The menstrual flow results due to breakdown of endometrial lining of the uterus and its blood vessels which forms liquid that comes out through vagina.

Question55

The figure shows a section of human ovary. Select the option which gives the correct identification of either A or B with function/ characteristic.



(KN NEET 2013)

Options:

A. B- Corpus luteum - Secretes progesterone

B. A- Tertiary follicle - Forms Graafian follicle

C. B- Corpus luteum - Secretes estrogen

D. A- Primary oocyte - It is in the prophase I of the meiotic division

Answer: A

Solution:

Solution:
(a) : The zona granulosa and theca cells of Graafian follicle remaining in the ovary after ovulation and some surrounding capillaries and connective tissue evolve into the corpus luteum (a temporary endocrine gland). The corpus luteum produces progesterone and, in the event of fertilization, provides the required progesterone until the placenta is formed. In the absence of fertilization, the life span of the corpus luteum is 14 days. It then degenerates into a corpus albicans, which is mainly a scar tissue.

Question56

In our society women are blamed for producing female children. Choose the correct answer for the sex-determination in humans. (KN NEET 2013)

Options:

A. Due to some defect like aspermia in man

B. Due to the genetic make up of the particular sperm which fertilizes the egg

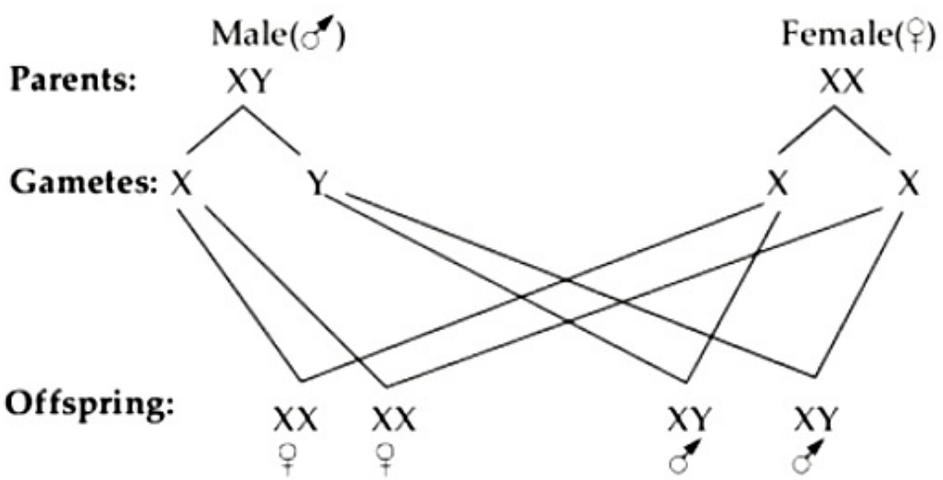
C. Due to the genetic make up of the egg

D. Due to some defect in the women

Answer: B

Solution:

Solution:
(b) : Establishment of sex through differential development in an individual at an early stage of life is called sex determination. It is determined at the time of fertilization and is also called as syngametic sex determination. The female is homomorphic (isomorphic) possessing two similar sex chromosomes, XX and the male is heteromorphic possessing one X chromosome similar to that of female and one shorter and morphologically different Y chromosome. The female is said to be homogametic (produces similar eggs) and the male heterogametic (produces two types of sperms i.e., X or Y). Sex is determined at the time of fertilization by the kind of sperm (X or Y) that fuses with the ovum (X).



Question57

The foetal ejection reflex in humans triggers the release of (KN NEET 2013)

Options:

A. oxytocin from foetal pituitary

B. human chorionic gonadotropin (hCG) from placenta

C. human placental lactogen (hPL) from placenta

D. oxytocin from maternal pituitary.

Answer: D

Question58

Which one of the following statements is false in respect of viability of mammalian sperm? (2012)

Options:

A. Sperm is viable for only up to 24 hours.

B. Survival of sperm depends on the pH of the medium and is more active in alkaline medium.

C. Viability of sperm is determined by its motility.

D. Sperms must be concentrated in a thick suspension.

Answer: A

Solution:

(a) : Sperms remain viable for 48 hours to 72 hours.

Question59

Signals for parturition originate from (2012)

Options:

A. both placenta as well as fully developed foetus

B. oxytocin released from maternal pituitary

C. placenta only

D. fully developed foetus only.

Answer: A

Question60

In a normal pregnant woman, the amount of total gonadotropin activity was assessed. The result expected was (2012)

Options:

A. high level of circulating FSH and LH in the uterus to stimulate implantation of the embryo

B. high level of circulating hCG to stimulate endometrial thickening

C. high levels of FSH and LH in uterus to stimulate endometrial thickening

D. high level of circulating hCG to stimulate estrogen and progesterone synthesis.

Answer: D

Solution:

(d) : During pregnancy, placenta also acts as an endocrine tissue and produces several hormones like human chorionic gonadotropin (hCG), human placental estrogen, progesterone, etc. The hCG stimulates and maintains the corpus luteum to secrete progesterone.

Question61

The Leydig's cells as found in the human body are the secretory source of
(2012)

Options:

A. progesterone

B. intestinal mucus

C. glucagon

D. androgens.

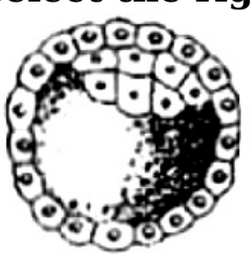
Answer: D

Solution:

Solution:
(d) : Interstitial cells or Leydig cells are the cells interspersed between the seminiferous tubules of the testis. They secrete androgens (e . g., testosterone) in response to stimulation by luteinizing hormone from the anterior pituitary gland.

Question62

Identify the human developmental stage shown below as well as the related right place of its occurrence in a normal pregnant woman, and select the right option for the two, together.



Developmental stage − Site of occurrence

(Mains 2012)

Options:

A. Late morula − Middle part of Fallopian tube

B. Blastula − End part of Fallopian tube

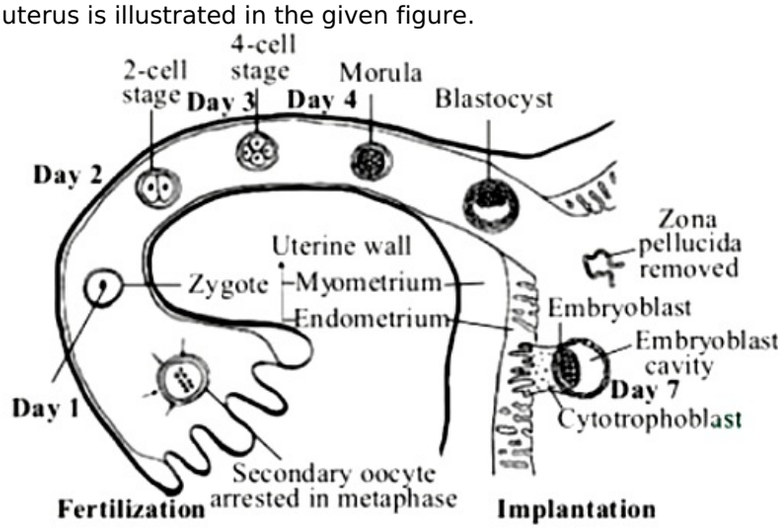
C. Blastocyst − Uterine wall

D. 8 -celled morula − Starting point of Fallopian tube

Answer: C

Solution:

Solution:
(c) : After fertilization, zygote undergoes rapid mitotic divisions, called cleavage, which is characterized by absence of growth of daughter cells. This leads to the conversion of single celled zygote into a multicellular structure called blastocyst or blastula. Implantation or embedding of zygote into endometrium of uterus occurs in blastocyst stage. The various stages in the journey of a fertilized egg from fertilization in the Fallopian tube to the implantation site in the uterus is illustrated in the given figure.



Blastocyst comes in contact with the endometrium in the region of embryonal knob or embryonic disc. It adheres to the same. The surface cells of trophoblast secrete lytic enzymes which cause corrosion of endometrial lining. They also give rise to finger-like outgrowths called chorionic villi. Chorionic villi and uterine tissue become interdigitated. Villi not only help in fixation but also absorption of nourishment.

Question63

The secretory phase in the human menstrual cycle is also called (Mains 2012)

Options:

A. luteal phase and lasts for about 6 days

B. follicular phase and lasts for about 6 days

C. luteal phase and lasts for about 13 days

D. follicular phase and lasts for about 13 days.

Answer: C

Solution:

Solution:
(c) : After ovulation which occurs in the middle of menstrual cycle, empty Graafian follicle continues growth under the influence of LH. The follicular cells are converted into lutein cells by deposition of yellowish lipid inclusions. The phenomenon is called luteinization. The ruptured Graafian follicle is now called corpus luteum. It secretes hormones, mainly progesterone and small quantity of estrogen. Both LH and progesterone help in further growth and thickening of endometrium. The major change is that the endometrial glands become secretory. The uterine wall becomes ready for nourishing and anchoring blastocyst if fertilization takes place. Hence, this phase of menstrual cycle is called luteal or secretory phase. The phase lasts for about 13 days i . e., 15 − 28 days of 28 days menstrual cycle.

Question64

If for some reason, the vasa efferentia in the human reproductive system get blocked, the gametes will not be transported from (2011)

Options:

A. testes to epididymis

B. epididymis to vas deferens

C. ovary to uterus

D. vagina to uterus.

Answer: A

Solution:

Solution:
Vasa efferentia is the duct that carries the sperms from testis to epididymis.
The path of the transport of sperm is:
It is produced in seminiferous tubules, then it is transported to rete testis. From there, it is transported to epididymis via vasa efferentia. So, if vasa efferentia is blocked, then sperms will not be able to enter epididymis from testis.

Question65

The testes in humans are situated outside the abdominal cavity inside a pouch called scrotum. The purpose served is for (2011)

Options:

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.

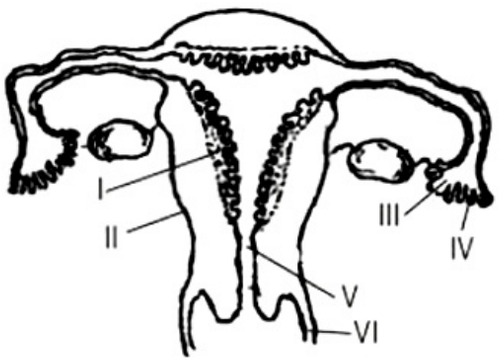
Answer: A

Solution:

Solution:
(a) : The testes are situated outside the abdominal cavity within a pouch called scrotum. The scrotum helps in maintaining the low temperature of the testes ($2-2.5^{\circ}\mathrm{C}\,\mathrm{right}$. lower than the normal internal body temperature) necessary for spermatogenesis.

Question66

The figure given below depicts a diagrammatic sectional view of the human female reproductive system. Which set of three parts out of I-VI have been correctly identified?



(2011)

Options:

A. (II) endometrium, (III) infundibulum, (IV) fimbriae

B. (III) infundibulum, (IV) fimbriae,(V) cervix

C. (IV) oviducal funnel, (V) uterus, (VI) cervix

D. (I) perimetrium,(II) myometrium,(III) Fallopian tube

Answer: B

Solution:

Solution:
(b) : The oviducts (Eallopian tubes), uterus and vagina constitute the female accessory ducts. Each Fallopian tube is about $10-12\mathrm{cm}$ long and extends from the periphery of each ovary to the uterus, the part closer to the ovary is the funnel-shaped infundibulum. The edges of the infundibulum possess finger-like projections called fimbriae, which help in collection of the ovum after ovulation. The uterus is single and it is also called womb, open into vagina through a narrow cervix. So, III is infundibulum, IV is fimbriae and V is cervix.

Question67

What happens during fertilization in humans after many sperms reach close to the ovum?

(Mains 2011)

Options:

A. Secretions of acrosome helps one sperm enter cytoplasm of ovum through zona pellucida.

B. All sperms except the one nearest to the ovum lose their tails.

C. Cells of corona radiata trap all the sperms except one.

D. Only two sperms nearest the ovum penetrate zona pellucida.

Answer: A

Solution:

Solution:
(a) : The process of fusion of a sperm with an ovum is called fertilization. During fertilization, a sperm comes in contact with the zona pellucida layer of the ovum and induces changes in the membrane that block the entry of additional sperms. Thus, it ensures that only one sperm can fertilize an ovum. The secretions of the acrosome help the sperm enter into the cytoplasm of the ovum through the zona pellucida and the plasma membrane. In contact with the surface of egg covering, the acrosome releases its contained hydrolytic enzymes, also called sperm lysins. It is known as acrosomal reaction. Acrosome reaction results in dissolving of corona cells and degeneration of zona pellucida which helps in sperm penetration.

Question68

About which day in a normal human menstrual cycle does rapid secretion of LH (popularly called LH surge) normally occurs? (Mains 2011)

Options:

A. 14^{th} day

B. 20^{th} day

C. 5^{th} day

D. 11^{th} day

Answer: A

Solution:

Solution:
(a) : Both LH and FSH attain a peak level in the middle of menstrual cycle (about 14^{th} day). Rapid secretion of LH leading to its maximum level during the mid-cycle called LH surge induces rupture of Graafian follicle and thereby the release of ovum (ovulation).

Question69

Sertoli cells are found in (2010)

Options:

A. ovaries and secrete progesterone

B. adrenal cortex and secrete adrenaline

C. seminiferous tubules and provide nutrition to germ cells

D. pancreas and secrete cholecystokinin.

Answer: C

Solution:

Solution:
(c) : Sertoli cells (named after Italian histologist Enrico Sertoli) are found in the walls of the seminiferous tubules of the testis. Compared with the germ cells they appear large and pale. They anchor and probably nourish the developing germ cells, especially the spermatids, which become partly embedded within them.

Question70

Vasa efferentia are the ductules leading from (2010)

Options:

A. testicular lobules to rete testis

B. rete testis to vas deferens

C. vas deferens to epididymis

D. epididymis to urethra.

Answer: B

Solution:

Solution:
(b) : The seminiferous tubules are closed at one end but on the other side they join to a network the rete testis from where fine ciliated ductules, the vasa efferentia arise. Cilia help in conducting sperms. The rete testis is a network of tubules conducting sperm from the seminiferous tubules of the testis to the vasa efferentia.

Question71

Seminal plasma in human males is rich in (2010)

Options:

A. fructose and calcium

B. glucose and calcium

C. DNA and testosterone

D. ribose and potassium.

Answer: A

Solution:

Solution:
(a) : Semen or seminal fluid or seminal plasma is the fluid ejaculated from the penis at sexual climax. Each ejaculate may contain 300 − 500 million spermatozoa suspended in a fluid secreted by the prostate gland and seminal vesicles with a small contribution from Cowper's glands. It is rich in fructose, calcium and certain enzymes. It provides a fluid medium for transport of sperms, nourishes and activates sperms, lubricates the reproductive tract of female and neutralizes the acidity of the vagina of female to protect the sperms.

Question72

The first movements of the foetus and appearance of hair on its head are usually observed during which month of pregnancy? (2010)

Options:

A. Fourth month

B. Fifth month

C. Sixth month

D. Third month

Answer: B

Solution:

Solution:
(b) : In human beings, after one month of pregnancy, the embryo's heart is formed. By the end of the second month of pregnancy, the foetus develops limbs and digits. By the end of 12 weeks (first trimester), most of the major organ systems are formed. The first movements of the foetus and appearance of hair on the head are usually observed during the fifth month. By the end of 24 weeks (second trimester), the body is covered with fine hair, eye-lids separate, and eyelashes are formed. By the end of nine months of pregnancy, the foetus is fully developed and is ready for delivery.

Question73

The second maturation division of the mammalian ovum occurs (2010)

Options:

A. shortly after ovulation before the ovum makes entry into the Fallopian tube

B. until after the ovum has been penetrated by a sperm

C. until the nucleus of the sperm has fused with that of the ovum

D. in the Graafian follicle following the first maturation division.

Answer: B

Solution:

Solution:
(b) : Oogenesis starts with division of oogonia (gamete mother cells) giving rise to primary oocyte which enters into prophase I of the meiotic divison and get temporarily arrested at this stage. These primary oocyte gets surrounded by primary, secondary and tertiary follicles respectively. The tertiary follicle grow in size and completes its first meiotic divison to give rise to haploid secondary oocyte. This secondary oocyte forms a new membrane called zona pellucida surrounding it. During fertilisation the sperm enter into the cytoplasm of the ovum through the zona pellucida and the plasma membrane. This induces the completion of the meiotic division (2^{nd} right. divison) of the secondary oocyte. The second meiotic division is also unequal and results in the formation of a second polar body and a haploid ovum (ootid).

Question74

Which one of the following statements about human sperm is correct? (2010)

Options:

A. Acrosome has a conical pointed structure used for piercing and penetrating the egg, resulting in fertilisation.

B. The sperm lysins in the acrosome dissolve the egg envelope facilitating fertilisation.

C. Acrosome serves as a sensory structure leading the sperm towards the ovum.

D. Acrosome serves no particular function.

Answer: B

Solution:

Solution:
(b) : Acrosome is the cap-like structure on the front end of a spermatozoan. It breaks down just before fertilisation (the acrosome reaction), releasing a number of hydrolytic enzymes, also called sperm lysins that assist penetration between the follicle cells that still surround the ovum, thus facilitating fertilisation. Failure of the acrosome reaction is a cause of male infertility.

Question75

Which one of the following statements about morula in humans is correct?
(2010)

Options:

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 an uncleaved zygote.

Answer: A

Solution:

Solution:
(a) : A morula is an embryo at an early stage of embryonic development, consisting of cells (called blastomeres) in a solid ball contained within the zona pellucida. The morula is produced by embryonic cleavage, the rapid division of the zygote. The increase in number of cells does not change the size of the original mass. The divisions are rapid because there is no net growth of the embryo-the cell cycle alternates between DNA replication and mitosis. In the absence of growth, the cell number in the embryo increases while the cell size decreases. Thus, it has almost equal quantity of cytoplasm as an uncleaved zygote but much more DNA.

Question76

The part of Fallopian tube closest to the ovary is
(2010)

Options:

A. isthmus

B. infundibulum

C. cervix

D. ampulla.

Answer: B

Solution:

Solution:
(b) : Each Fallopian tube is about $10-12\text{cm}$ long and extends from the periphery of each ovary to the uterus, the part closer to the ovary is the funnel-shaped infundibulum. The edges of the infundibulum possess finger-like projections

called fimbriae, which help in collection of the ovum after ovulation. The infundibulum leads to a wider part of the oviduct called ampulla. The last part of the oviduct, isthmus has a narrow lumen and it joins the uterus.

Question77

Signals from fully developed foetus and placenta ultimately lead to parturition which requires the release of (Mains 2010)

Options:

A. estrogen from placenta

B. oxytocin from maternal pituitary

C. oxytocin from foetal pituitary

D. relaxin from placenta.

Answer: B

Question78

In human female the blastocyst (Mains 2010)

Options:

A. forms placenta even before implantation

B. gets implanted into uterus 3 days after ovulation

C. gets nutrition from uterine endometrial secretion only after implantation

D. gets implanted in endometrium by the trophoblast cells.

Answer: D

Solution:

Solution:
(d) : Implantation in endometrial uterine wall takes place at blastocyst stage of embryonic development. Before implantation, the blastomeres of early blastocyst get arranged into an outer layer called trophoblast and an inner group of cells attached to trophoblast called inner cell mass. It is the trophoblast layer through which blastocyst gets attached to the endometrium and the inner cell mass gets differentiated as the embryo.

Question79

Secretions from which one of the following are rich in fructose, calcium and some enzymes?
(Mains 2010)

Options:

A. Male accessory glands

B. Liver

C. Pancreas

D. Salivary glands

Answer: A

Solution:

Solution:
(a) : The male accessory glands include paired seminal vesicles, a prostate and paired bulbourethral glands. Secretions of these glands constitute the seminal plasma which is rich in fructose, calcium and certain enzymes. The secretions of bulbourethral glands also helps in the lubrication of the penis.

Question80

Seminal plasma in humans is rich in
(2009)

Options:

A. fructose and calcium but has no enzymes

B. glucose and certain enzymes but has no calcium

C. fructose and certain enzymes but poor in calcium

D. fructose, calcium and certain enzymes.

Answer: D

Question81

Which one of the following is the correct matching of the events occurring during menstrual cycle?
(2009)

Options:

A. Proliferative phase: Rapid regeneration of myometrium and maturation of Graafian follicle

B. Secretory phase : Development of increased secretion corpus luteum and 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

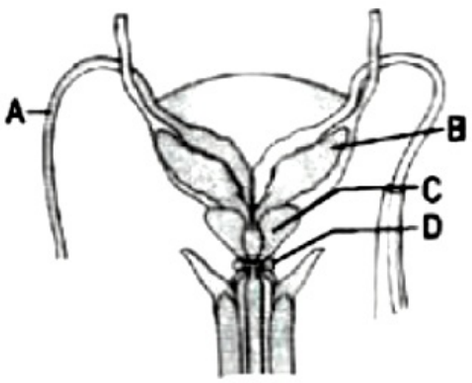
Answer: B

Solution:

Solution:
(b) : Secretory phase is also called as luteal phase. The luteinising hormone or LH is secreted by the anterior lobe of pituitary gland. LH causes ovulation. LH stimulates cells of ovarian follicles to develop corpus luteum. Corpus luteum secretes large amount of progesterone.

Question82

Given below is a diagrammatic sketch of a portion of human male reproductive system. Select the correct set of the names of the parts labelled A, B, C, D.



(2009)

Options:

A. A-Vas deferens, B-Seminal vesicle, C-Prostate, D-Bulbourethral gland

B. A-Vas deferens, B-Seminal vesicle, C-Bulbourethral gland, D-Prostate

C. A-Ureter, B-Seminal vesicle, C-Prostate,D-Bulbourethral gland

D. A-Ureter, B-Prostate, C-Seminal vesicle, D-Bulbourethral gland

Answer: A

Question83

Foetal ejection reflex in human female is induced by (2009)

Options:

A. release of oxytocin from pituitary

B. fully developed foetus and placenta

C. differentiation of mammary glands

D. pressure exerted by amniotic fluid.

Answer: B

Question84

The correct sequence of spermatogenetic stages leading to the formation of sperms in a mature human testis is (2009)

Options:

A. spermatogonia - spermatocyte - spermatid- sperms

B. spermatid - spermatocyte - spermatogonia sperms

C. spermatogonia - spermatid - spermatocyte sperms

D. spermatocyte - spermatogonia - spermatid- sperms.

Answer: A

Question85

Which one of the following is the most likely root cause why menstruation is not taking place in regularly cycling human female? (2009)

Options:

A. Maintenance of the hypertrophical endometrial lining

B. Maintenance of high concentration of sexhormones in the blood stream

C. Retention of well-developed corpus luteum

D. Fertilisation of the ovum

Answer: D

Solution:

Solution:
Fertilization of the ovum
Explanation for the correct option:
Periodic vaginal bleeding, or menstruations, is a normal aspect of a woman's monthly cycle. Your body gets ready for pregnancy each month.
A woman's egg and a man's sperm fuse during fertilization to create an embryo.
Usually, the fallopian tube, which joins an ovary to the uterus, is where fertilization occurs.
If the fertilized egg successfully travels via the fallopian tube and implants in the uterus, an embryo begins to develop.
Explanation for the incorrect options:
Option B:
The corpus luteum creates from an ovarian follicle during the luteal period of the monthly cycle or estrous cycle.
Option C:
Menstruation can begin or end depending on the blood levels of oestrogen and progesterone.
High levels of sex hormones interfere with ovulation, implantation, and alter the cervical mucus' quality, which delays or hinders sperm entry.
Option D:
Endometrial hyperplasia has an impact on the female reproductive system.
The endometrium, the lining of the uterus, develops improperly when there are too many cells (hyperplasia).
Final Answer: The most likely root cause why menstruation is not taking place in regularly cycling human females is the fertilization of the ovum.

Question86

A change in the amount of yolk and its distribution in the egg will affect (2009)

Options:

A. pattern of cleavage

B. number of blastomeres produced

C. fertilization

D. formation of zygote.

Answer: A

Solution:

Solution:
(a) : Cleavage is a series of cell divisions by which a single fertilized egg cell is trans formed into a multicellular body, the blastula. Characteristically no growth occurs during cleavage, the shape of the embryo is unchanged except for the formation of central cavity (the blastocoel), and the ratio of nuclear material (DNA) to cytoplasm increases. The mode of cleavage is determined by the amount of yolk and its distribution. On this basis cleavage may be holoblastic and meroblastic.

Question87

In humans, at the end of the first meiotic division, the male germ cells differentiate into the
(2008)

Options:

A. spermatids

B. spermatogonia

C. primary spermatocytes

D. secondary spermatocytes.

Answer: D

Solution:

Solution:
(d) : During embryonic development the primordial germ cells migrate to the testis where they become spermatogonia. At puberty the spermatogonia proliferate rapidly by mitosis. Some undergo growth phase to become primary spermatocytes that further undergo through meiotic division I to become secondary spermatocytes. After completion of meiotic division II the secondary spermatocytes produce spermatids which differentiate to form spermatozoa.

Question88

In human adult females oxytocin
(2008)

Options:

A. stimulates pituitary to secrete vasopressin

B. causes strong uterine contractions during parturition

C. is secreted by anterior pituitary

D. stimulates growth of mammary glands.

Answer: B

Solution:

Solution:
(b) : In human adult female oxytocin is a hormone released by the pituitary gland (neurohypophysis), that causes contraction of the uterus during labour and stimulates milk flow from the breasts by causing contraction of muscle fibres in the milk ducts.

Question89

Which one of the following statements is incorrect about menstruation? (2008)

Options:

A. At menopause in the female, there is especially abrupt increase in gonadotropic hormones.

B. The beginning of the cycle of menstruation is called menarche.

C. During normal menstruation about 40mL blood is lost.

D. The menstrual fluid can easily clot.

Answer: D

Solution:

Solution:
(d) : Menstruation is a process which involves discharge of blood ($45 - 100\text{mL}$), serous fluid, cell debris and mucosal-fragments from cast off endometrial lining due to reduce titre of both estrogen and progesterone hormone. Blood clotting does not occur due to presence of fibrinolysin.

Question90

Which extraembryonic membrane in humans prevents desiccation of the embryo inside the uterus? (2008)

Options:

A. Yolk sac

B. Amnion

C. Chorion

D. Allantosis

Answer: B

Solution:

Solution:
(b) : Amnion is a type of extraembryonic membrane formed by the amniogenic cells inside and splanchnopleuric extraembryonic mesoderm outside. Amnion surrounds the embryo creating the amniotic cavity that is filled with amniotic fluid. The amniotic fluid serves as a shock absorber for the foetus, regulates foetal body temperature and prevents desiccation.

Question91

Which part of ovary in mammals acts as an endocrine gland after ovulation?
(2007)

Options:

A. Stroma

B. Germinal epithelium

C. Vitelline membrane

D. Graafian follicle

Answer: D

Solution:

Solution:
(d) : The Graafian follicle is fluid-filled capsule that surrounds and protects the developing egg cell inside the ovary during the menstrual cycle. Graafian follicle represents the final stage of follicular development before ovulation. Shortly before ovulation the follicle swells and develops a stigma. At ovulation, the stigma ruptures, releasing the secondary oocyte and corona radiata into the peritoneal cavity to be taken up by the oviduct. The zona granulosa and theca cells remaining in the ovary after ovulation and some surrounding capillaries and connective tissue evolve into the corpus luteum (a temporary endocrine gland) i.e., after the egg cell has been released, the follicle remains and is known as a corpus luteum. The corpus luteum produces progesterone and, in the event of fertilization, provides the required progesterone until the placenta is formed. The corpus luteum also produces some estrogen.

Question92

In the human female, menstruation can be deferred by the administration of
(2007)

Options:

A. combination of FSH and LH

B. combination of estrogen and progesterone

C. FSH only

D. LH only.

Answer: B

Question93

Withdrawal of which of the following hormones is the immediate cause of menstruation?
(2007)

Options:

A. Progesterone

B. Estrogen

C. F SH

D. FSH-RH

Answer: A

Solution:

Solution:
(a) : The menstrual cycle consists of three phases; proliferative phase, secretory phase and menstrual phase. During menstrual phase the production of LH is considerably reduced. The withdrawal of this hormone causes degeneration of the corpus luteum and, therefore, progesterone production is reduced. The endometrium degenerates and breaks down. Thus menstruation begins.

Question94

Sertoli cells are regulated by the pituitary hormone known as
(2006)

Options:

A. LH

B. FSH

C. GH

D. prolactin

Answer: B

Solution:

(b) : Sertoli cells are present in the germinal epithelium of the seminiferous tubules. These cells nourish the developing sperms. These cells differentiate spermatogonia into sperms. They are under the influence of F SH released by anterior pituitary gland.

Question95

Grey crescent is the area
(2005)

Options:

A. at the point of entry of sperm into ovum

B. just opposite to the site of entry of sperm into ovum

C. at the animal pole

D. at the vegetal pole.

Answer: B

Solution:

Solution:
(b) : Grey crescent is the area just opposite to the site of entry of sperm into ovum. It marks the future dorsal side of the embryo.

Question96

If mammalian ovum fails to get fertilized, which one of the following is unlikely?
(2005)

Options:

A. Corpus luteum will disintegrate.

B. Progesterone secretion rapidly declines.

C. Estrogen secretion further increases.

D. Primary follicle starts developing.

Answer: C

Solution:

Solution:
(c) : If the mammalian ovum fails to fertilize choices, (a) and (b) are obvious. since corpus luteum declines so progesterone also decreases rapidly (progesterone is essential for maintenance of pregnancy). Also estrogen continues to cause growth of the endometrium which ultimately becomes thick enough to breakdown and cause menstruation. Hence choice(c) is incorrect as estrogen secretion does not decrease further. Primary follicles continue developing irrespective of ovulatory condition.

Question97

Ovulation in the human female normally takes place during the menstrual cycle
(2004)

Options:

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.

Answer: D

Solution:

Solution:
(d) : Ovulation (the release of secondary oocyte from the graafian follicle) takes place at the end of proliferative phase of menstrual cycle. During this phase, the follicle stimulating hormone (FSH) secreted by the anterior lobe of the pituitary gland stimulates the ovarian follicle to secrete estrogen. Estrogen stimulates the proliferation of the endometrium of the uterine wall. The endometrium becomes thicker by rapid cell multiplication and this is accompanied by an increase of uterine glands and blood vessels. This phase ends when the ovarian follicle ruptures and ovulation occurs and at the same time the production of estrogen stops.

Question98

Which of the following hormones is not a secretion product of human placenta?
(2004)

Options:

A. Human chorionic gonadotropin

B. Prolactin

C. Estrogen

D. Progesterone

Answer: B

Solution:

Solution:
(b) : Prolactin is secreted by anterior pituitary gland which stimulates mammary gland development during pregnancy and lactation after child birth.

Question99

During embryonic development, the establishment of polarity along anterior/ posterior, dorsal/ventral or medial/lateral axis is called (2003)

Options:

A. organizer phenomena

B. axis formation

C. anamorphosis

D. pattern formation.

Answer: A

Solution:

Solution:
(a) : During embryonic development, the establishment of polarity along anterior/posterior, dorsal/ventral or medial/lateral axis is called organizer phenomenon. The organizer is the part of an embryo consisting of undifferentiated cells that follow a specific course of development by identifying the polarity of particular region.

Question100

What is true for cleavage? (2002)

Options:

A. Size of embryo increases.

B. Size of cells decreases.

C. Size of cells increases.

D. Size of embryo decreases.

Answer: B

Solution:

Solution:
(b) : During cleavage, the zygote divides repeatedly to convert the large cytoplasmic mass into a large number of small blastomeres. It involves cell division without growth in size because cells continue to be retained within the zona pellucida. However, cell size decreases during cleavage.

Question101

Which set is similar?
(2001)

Options:

A. Corpus luteum - Graafian follicles

B. Sebum - Sweat

C. Bundle of His - Pace maker

D. Vitamin B_7 - Niacin

Answer: A

Solution:

Solution:
(a) : A mature ovarian follicle is called Graafian follicle. It contains follicular cells, an antrum, and an oocyte. After ovulation, the empty Graafian follicle shows deposition of leutin and forms corpus luteum that ultimately degenerates.

Question102

Blastopore is the pore of
(2000)

Options:

A. archenteron

B. blastocoel

C. coelom

D. alimentary canal.

Answer: A

Solution:

Solution:
(a) : Archenteron is known as the primitive gut that forms during gastrulation in the developing blastula. It develops into the digestive tract of an animal. The open end of the archenteron is called blastopore.

Question103

The middle piece of the sperm contains (1999)

Options:

A. proteins

B. mitochondria

C. centriole

D. nucleus.

Answer: B

Solution:

Solution:
(b) : The sperm consists of head, neck, middle piece and tail. The middle piece of hüman sperm contains the mitochondria coiled around the axial filament called mitochondrial spiral. They provide energy for the movement of the sperm.

Question104

After ovulation Graafian follicle regresses into (1999)

Options:

A. corpus artesia

B. corpus callosum

C. corpus luteum

D. corpus albicans.

Answer: C

Question105

Fertilizin is a chemical substance produced from (1997)

Options:

A. polar bodies

B. middle piece of sperm

C. mature eggs

D. acrosome.

Answer: C

Solution:

Solution:
(c) : Mature egg (ovum) secretes a chemical named fertilizin (composed of glycoprotein = monosaccharides + amino acids). Sperm has on its surface a protein substance called antifertilizin (composed of acidic amino acids). The fertilizin of an egg interacts with the antifertilizin of a sperm of the same species. This interaction makes the sperms stick to the egg surface. The adhesion of sperm to the egg of the same species through chemical recognition is known as agglutination.

Question106

In human beings, the eggs are (1997)

Options:

A. mesolecithal

B. alecithal

C. microlecithal

D. macrolecithal.

Answer: B

Solution:

Solution:
(b) : In human beings, the eggs are alecithal, i.e., they do not contain yolk. Mesolecithal eggs contain moderate amount of yolk e . g., frog. Microlecithal eggs contain a little amount of yolk e . g., Amphioxus. Macrolecithal eggs contain large amount of yolk e . g. birds.

Question107

In the fertile human female, approximately on which day of the menstrual cycle does ovulation take place? (1997)

Options:

A. Day 14

B. Day 18

C. Day 1

D. Day 8

Answer: A

Solution:

Solution:
(a) : Ovulation is the releasing of egg by ruptured graafian follicle. The wall of graafian follicle is ruptured by sudden increase in the level of luteinising hormone. The length of menstruation cycle is 28 days (average) from the start of one menstruation period to the start of the next. At about 14^{th} day of the cycle, the distended follicle ruptures and the ovum is extruded into the Fallopian tube.

Question108

The mammalian corpus luteum produces (1995)

Options:

A. luteotrophic hormone

B. luteinizing hormone

C. estrogen

D. progesterone.

Answer: D

Solution:

Solution:
(d) : Progesterone is secreted by the corpus luteum of the ovary. It stimulates further development of the uterine epithelium and mammary glands. It is also required for the formation of the placenta and for the maintenance of pregnancy. Luteotrophichormone and luteinizing hormone are secreted by the anterior lobe of pituitary gland. Estrogen is secreted by the cells of the Graafian follicles.

Question109

In an egg, the type of cleavage is determined by (1995)

Options:

A. the amount and distribution of yolk

B. the number of egg membranes

C. the shape and size of the sperm

D. the size and location of the nucleus.

Answer: A

Solution:

Solution:
(a) : The anount of yolk and how it is distributed determines the type of eleavage. On this basis cleavage is of two types:
(i) Holoblastic (total cleavage) - where the segmentation line passes through the entire egg. It occurs in alecithal (without yolk), microlecithal (with very little amount of yolk) and mesolecithal (little amount of yolk) egg.
(ii) Meroblastic (partial cleavage) - where segmentation line does not pass through the egg and remained confined to a part of the egg. It occurs in megalecithal (large amount of yolk) egg.

Question110

What is true about cleavage in the fertilized egg in humans? (1994)

Options:

A. It starts while the egg is in Fallopian tube.

B. It starts when the egg reaches uterus.

C. It is meroblastic.

D. It is identical to the normal mitosis.

Answer: A

Solution:

Solution:
(a) : Cleavage is a series of rapid mitotic divisions of the zygote which convert the single celled zygote into a multicellular structure called blastula (blastocyst).
About thirty hours after fertilization, the newly formed zygote divides into two cells, the blastomeres, in the upper portion of the Fallopian tube.
This is the first cleavage. The next division occurs within forty hours after fertilization.

The third division occurs about three days after fertilization. During these early cleavages, the young embryo is slowly moving down the Fallopian tube towards the uterus. At the end of fourth day, the embryo reaches the uterus. It has thirty two cells.

Question111

The extra embryonic membranes of the mammalian embryo are derived from
(1994)

Options:

A. trophoblast

B. inner cell mass

C. formative cells

D. follicle cells.

Answer: A

Solution:

Solution:
(a) : Trophoblast is the layer of cells encircling the blastocoel and the inner cell mass. The latter gives rise to the embryo. The cells of the trophoblast form the placenta and foetal membrane.

Question112

In the 28 day human ovarian cycle, the ovulation takes place typically on
(1994)

Options:

A. day 14 of the cycle

B. day 28 of the cycle

C. day 1 of the cycle

D. day 5 of the cycle.

Answer: A

Solution:

Ovarian cycle is the event of menstrual cycle which take place in ovaries, menstrual cycle start after attaining puberty in female, in which follicular, ovulation and luteal phase are take place. Onset of menstrual cycle is known as menarche and

offset of menstrual cycle marked as menopause.

Ovulation is the rupturing of mature Graafian follicle which is released in ovulation, it is the second phase of ovarian cycle and it occurs around 14 of a 28- day menstrual cycle. This process is stimulated by a rising level of luteinizing hormone (LH) in blood from the pituitary gland. The surge in LH starts around the 12th day of the cycle and lasts for two days. Menstrual cycle is the natural change in the female reproductive system in every month of the year, until menopause starts. Day 1 is started when bleeding begins from the uterus, bleeding occurs due to shedding of the uterus endometrium wall. Ovarian cycle is divided into three phases such as follicular phase, ovulation phase and luteal phase. In the follicular phase it is marked as the first phase and lasts for 12 to 14 days of the cycle, in this phase ovarian follicles are stimulated to begin the maturation, one called graafian follicle. Follicle maturation occurs due to FSH hormone.
Ovulation phase:- in this phase mature graafian follicle rupture and release egg, this is influenced by LH hormone.
Luteal phase:- it is marked as the third phase of the ovarian cycle and it lasts about 14 days and under the influence of FSH and LH graafian follicle release the egg to transform into corpus luteum.

Question113

Extrusion of second polar body from egg nucleus occurs (1993)

Options:

A. after entry of sperm before completion of fertilization

B. after completion of fertilization

C. before entry of sperm

D. without any relation of sperm entry.

Answer: A

Solution:

Solution:
(a) : The entry of sperm stimulates the secondary oocyte to resume and complete the suspended meiosis II. This produces a haploid mature ovum and a second polar body. The second polar body immediately degenerates and sperm tail as well.

Question114

Termination of gastrulation is indicated by (1993)

Options:

A. obliteration of blastocoel

B. obliteration of archenteron

C. closure of blastopore

D. closure of neural tube.

Answer: A

Solution:

(a) : Gastrulation is the process through which the presumptive areas of organ specific rudiments present on the surface of blastula move to their specific positions where these occur in the adult. Gastrulation results in setting apart of the three primary germinal layers i.e., the ectoderm, mesoderm and endoderm from single layer of cells, the blastoderm, and in the formation of primordial gut or archenteron. At the onset of gastrulation, the blastoderm at the vegetal pole becomes flat. It gradually bends inwards till the embryo assumes the appearance of a double-walled cup. The cavity formed by invagination is called archenteron or primitive gut. Its opening is called blastopore and the embryo at this stage is gastrula.
As a result of invagination, the presumptive endoderm, mesoderm and notochord are shifted from the surface to the interior of the embryo. The blastocoel is gradually obliterated till the two layers come in contact. By the completion of gastrulation, the lateral horns of mesodermal crescent converge and come to lie on either side of the presumptive notochord.

Question115

In telolecithal egg the yolk is found (1993)

Options:

A. all over the egg

B. on one side

C. both the sides

D. centre.

Answer: B

Solution:

Solution:
(b) : Eggs with abundant yolk concentrated in one hemisphere of the egg are termed telolecithal. This occurs in many invertebrates and in all vertebrates lower than marsupial mammals.

Question116

Acrosome reaction in sperm is triggered by (1993)

Options:

A. capacitation

B. release of lysin

C. influx of Na^+

D. release of fertilizin.

Answer: B

Solution:

Solution:
Sperm cells go through a process known as the acrosome reaction which is the reaction that occurs in the acrosome of the sperm as it approaches the egg. The acrosome is a cap-like structure over the anterior half of the sperm's head. As the sperm approaches the zona pellucida of the egg, which is necessary for initiating the acrosome reaction, the membrane surrounding the acrosome fuses with the plasma membrane of the oocyte, exposing the contents of the acrosome. The contents include surface antigens and numerous enzymes which are responsible for breaking through the egg's tough coating and allowing fertilization to occur. This reaction is triggered by release of lysin
So, the correct answer is 'Release of lysin'

Question117

Male hormone is produced in the testis by cells of (1993)

Options:

A. Sertoli

B. epithelial

C. spermatocytes

D. Leydig.

Answer: D

Question118

Meroblastic cleavage is a division which is (1992)

Options:

A. horizontal

B. partial/parietal

C. total

D. spiral.

Answer: B

Question119

Eye lens is formed from (1992)

Options:

A. ectoderm

B. mesoderm

C. endoderm

D. ectoderm and mesoderm.

Answer: A

Solution:

Solution:
(a) : Ectoderm, mesoderm and endoderm are the three germ layers that give rise to the specific tissues, organs and organ-systems. Ectoderm gives rise to conjunctiva, cornea, lens of eye, muscles of iris, vitreous humour, retina, lacrimal gland along with other parts of the body.

Question120

Blastopore is (1992)

Options:

A. opening of neural tube

B. opening of gastrocoel

C. future anterior end of embryo

D. found in blastula.

Answer: B

Solution:

(b) : Blastopore is the opening by which the cavity of the gastrula (gastrocoel), communicates with the exterior. It is formed as a result of invagination of endoderm during embryonic development. During maturation of some animals it evolves into the anus or the mouth; in others it is covered over and contributes to the canal joining the primitive gut with the cavity of the neural tube.

Question121

Fertilizins are emitted by (1991)

Options:

A. immature eggs

B. mature eggs

C. sperms

D. polar bodies.

Answer: B

Question122

During cleavage, what is true about cells? (1991)

Options:

A. Nucleocytoplasmic ratio remains unchanged.

B. Size does not increase.

C. There is less consumption of oxygen.

D. The division is like meiosis.

Answer: B

Question123

Freshly released human egg has (1991)

Options:

A. one Y-chromosome

B. one X-chromosome

C. two X-chromosome

D. one X-chromosome and one Y-chromosome.

Answer: B

Solution:

Solution:
(b) : The egg released is haploid (has only one X-chromosome and 22 autosomes) as it is formed due to meiotic division of diploíd primary oocyte having XX chromosome and 44 autosomes.

Question124

Location and secretion of Leydig's cells are (1991)

Options:

A. liver-cholesterol

B. ovary-estrogen

C. testis-testosterone

D. pancreas-glucagon.

Answer: C

Question125

Middle piece of mammalian sperm possesses (1991)

Options:

A. mitochondria and centriole

B. mitochondria only

C. centriole only

D. nucleus and mitochondria.

Answer: A

Solution:

Solution:
A mature mammalian sperm cell consists of four parts: Head, Neck, Middle piece and Tail.
1. Head contains the nucleus having haploid number of chromosomes and an acrosome which contains the hydrolytic enzymes.
2. Neck contains a pair of centrioles lying at right angle to each other.
3. Middle piece is enlarged by the presence of many mitochondrion arranged in spiral turns around the axial filament (that contains centrioles) called mitochondrial spiral. Energy for movement of sperm is provided by mitochondria.
4. Tail is composed of cytoplasm and axoneme occurs throughout it.
Hence, middle piece of mammalian sperm possess mitochondria and centriole.
So, the correct answer is 'Mitochondria and centriole'.

Question126

Gonads develop from embryonic (1990)

Options:

A. ectoderm

B. endoderm

C. mesoderm

D. both mesoderm and endoderm.

Answer: C

Solution:

Solution:
(c) : Gonads, muscles, dermis, kidneys, etc., develop from mesoderm. Ectoderm produces epidermis, glands, nervous system, etc. Pancreas, lining of urinary bladder, etc., develop from endoderm.

Question127

How many sperms are formed from a secondary spermatocyte?
(1990)

Options:

A. 4

B. 8

C. 2

D. 1

Answer: C

Solution:

Solution:
Spermatogenesis is the process of formation of spermatid(n) from spermatogonia(2n). The process goes as follows:-
Spermatogonia(2n)⟶ Primary Spermatocyte(2n)⟶2 Secondary Spermatocyte(n)⟶4 Spermatid(n)⟶4 Sperms(n)
So each secondary spermatocyte produces 2 sperms.

Question128

Cells become variable in morphology and function in different regions of the embryo. The process is
(1989)

Options:

A. differentiation

B. metamorphosis

C. organisation

D. rearrangement.

Answer: A

Solution:

(a) : Differentiation are the changes from simple to more complex forms undergone by developing tissues and organs so that they become specialized for particular functions. Differentiation occurs during embryonic development and regeneration.

Question129

Human eggs are

(1989)

Options:

A. alecithal

B. microlecithal

C. mesolecithal

D. macrolecithal.

Answer: A

Question130

Egg is liberated from ovary in (1989)

Options:

A. secondary oocyte stage

B. primary oocyte stage

C. oogonial stage

D. mature ovum stage.

Answer: A

Solution:

(a) : In humans, ovum is released from the ovary in the secondary oocyte stage. The wall of the ovary gets ruptured to release the oocyte. In humans ovulation occurs about 14 days before the onset of the next menstruation. Ovulation is induced by LH.
