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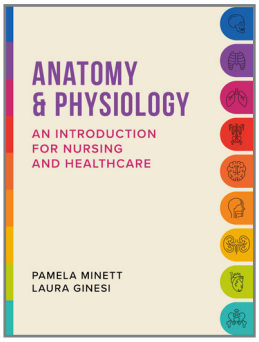

Questions to accompany *Anatomy and Physiology*

CHAPTER 12 THE REPRODUCTIVE SYSTEMS

Multiple Choice Questions (MCQs)

Each question consists of a stem statement or question, and 5 options.
You must pick the one correct answer.

1. An essential organ of reproduction is known as a:

A. gamete
B. gender
C. gluteal
D. glucagon
E. gonad

2. In adult males, sperm are produced in the:

A. epididymis
B. testis
C. vas deferens
D. scrotum
E. ovary

3. In adult males, what are the cells which produce testosterone known as?

A. spermatogonia
B. Leydig cells
C. Sertoli cells
D. spermatids
E. varicocele

4. What is the steroid hormone which is produced by a corpus luteum after ovulation?

A. progesterone
B. prolactin
C. testosterone
D. inhibin
E. perineum

5. What is the tube through which both urine and semen leave a man's body called?

A. epididymis
B. spermatic cord
C. seminiferous tubule
D. urethra
E. ureter

6. What is the membrane that covers the opening of the vagina called?

A. the mons pubis
B. the labia minora
C. the hymen
D. the labia majora
E. the perineum

7. Which phase of the ovarian cycle is characterised by growth and development of follicles?

A. luteal phase
B. ovulation
C. menstruation
D. follicular phase
E. LH surge

8. If an ovum (egg) is fertilised by a sperm, it usually takes place in the:

A. ovary
B. fallopian tube (oviduct)
C. endometrium
D. myometrium
E. cervix

9. The fertilised egg is known as a _____ before it begins to divide.

A. blastocyst
B. morula
C. trophoblast
D. embryo
E. zygote

10. The onset of reproductive maturity is known as:

A. menstruation
B. menarche
C. puberty
D. climacteric
E. childhood

11. Which of the following changes is NOT characteristic of the effects of testosterone?

A. sex organs grow and function
B. increase in muscle mass
C. voice deepens
D. broadening of the pelvis
E. hair growth on face and body

12. What is the physiological process that marks the onset of the first menstrual period?

A. menopause
B. menarche
C. menorrhagia
D. amenorrhoea
E. climacteric

13. Production of oestrogen by the ovaries falls during the perimenopausal period in women because:

A. the ovaries become increasingly less sensitive to gonadotrophins
B. bone remodelling increases
C. the ovaries become less sensitive to gonadotrophins
D. the corpus luteum becomes a corpus albicans
E. there is a surge of LH from the pituitary gland

14. Which of the following is NOT a physiological function of the placenta during pregnancy?

A. exchanging nutrients and waste
B. delivery of oxygen
C. removal of carbon dioxide
D. producing antibodies
E. producing hormones

Critical thinking: ARQs (assertion reasoning questions)

These questions consist of two statements:

- an assertion, and
- a reason.

You must first determine whether each statement is *TRUE* or *FALSE*.

- If both statements are true, you must next determine whether the reason correctly explains the assertion. The answer will be option 1 or option 2.
- If one statement is true and the other is false then the answer is option 3 or option 4, depending on which of the statements is correct.
- If both statements are false, then the answer is option 5.

There is one option for each possible outcome.

Question 15

A = the Assertion	**R = the Reason**
Testing for the presence of progesterone in urine is the basis for pregnancy testing	If an egg is fertilised, the corpus luteum continues to produce and secrete progesterone, which acts to support the lining of the uterus and provide the right environment for growth of the embryo
Options	
1) Both A and R are true and R is the correct explanation of A	
2) Both A and R are true but R is NOT the explanation of A	
3) A is true but R is false	
4) A is false but R is true	
5) Both A and R are false	

Question 16

A = the Assertion	**R = the Reason**
Spermatocytes divide by mitosis to produce spermatids, which, in turn, become transformed into spermatozoa	Spermatogonia divide by meiosis to produce spermatocytes during spermatogenesis
Options	
1) Both A and R are true and R is the correct explanation of A	
2) Both A and R are true but R is NOT the explanation of A	
3) A is true but R is false	
4) A is false but R is true	
5) Both A and R are false	

Question 17

A = the Assertion	R = the Reason
The ovarian reserve is an estimate of the number of ova (eggs) that could be fertilised during a woman's reproductive life, and it declines with age	At birth, a baby girl has about 1 million potential eggs – known as primordial follicles – in her ovaries and that is all she will ever have
Options	
1) Both A and R are true and R is the correct explanation of A	
2) Both A and R are true but R is NOT the explanation of A	
3) A is true but R is false	
4) A is false but R is true	
5) Both A and R are false	

Question 18

Complete the table about the menstrual cycle, using the characteristics A to L in the list, below.
An example answer is included for you.

A. Ovarian cells secrete oestrogen, which stimulates the endometrium to form a new lining
B. LH surge triggers the release of the ovum into the oviduct (fallopian tube)
C. The corpus luteum grows and secretes increasing amounts of oestrogen and progesterone
D. Rising levels of oestrogen stimulate secretion of LH
E. The endometrium comes away in a flow of blood
F. The cells of the remaining follicle enlarge and become filled with golden-coloured lipid substance
G. The endometrium grows in thickness under the influence of progesterone from the corpus luteum
H. The follicle completes its development in the ovary
I. GnRH starts to be secreted by the hypothalamus and stimulates the anterior pituitary gland
J. FSH stimulates the development of a follicle and the ovum it contains
K. Progesterone prepares the endometrium to receive fertilised ovum
L. If the ovum is not fertilised, progesterone levels fall and the endometrial lining is shed

Follicular phase	Ovulation	Luteal phase	Menstrual phase
		F	
	—		
	—		
	—		—

Question 19

Pregnancy lasts about 40 weeks and ends with **parturition** – the process of giving birth, approximately 270 days after fertilisation of an egg (around 40 weeks since the first day of the mother's last menstrual bleed). Write short notes that describe each of the three stages of labour.

Question 20

Compare and contrast the adult and foetal circulatory systems. Use the following words:

- Foetal haemoglobin
- Heart
- Aorta
- Shunts
- Placenta
- Lungs
- Liver
- Pulmonary artery
- Pulmonary vein
- Umbilical arteries
- Umbilical vein

Answers to questions

Answers are supplied to most, but not all questions. Some may require you to carry out further research using the book.

1. An essential organ of reproduction is known as a:

E. gonad

2. In adult males, sperm are produced in the:

B. testis

3. In adult males, what are the cells which produce testosterone known as?

B. Leydig cells

4. What is the steroid hormone which is produced by a corpus luteum after ovulation?

A. progesterone

5. What is the tube through which both urine and semen leave a man's body called?

D. urethra

6. What is the membrane that covers the opening of the vagina called?

C. the hymen

7. Which phase of the ovarian cycle is characterised by growth and development of follicles?

D. follicular phase

8. If an ovum (egg) is fertilised by a sperm, it usually takes place in the:

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9. The fertilised egg is known as a _____ before it begins to divide.

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C. the ovaries become less sensitive to gonadotrophins

14. Which of the following is NOT a physiological function of the placenta during pregnancy?

D. producing antibodies

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There is one option for each possible outcome.

Question 15

A = the Assertion	R = the Reason
Testing for the presence of progesterone in urine is the basis for pregnancy testing	If an egg is fertilised, the corpus luteum continues to produce and secrete progesterone, which acts to support the lining of the uterus and provide the right environment for growth of the embryo

4. A is false but R is true

Explanation

The Assertion (A) is *FALSE*. Pregnancy testing kits measure the presence or absence of the hormone human chorionic gonadotrophin (hCG) that is being excreted in urine.
The Reason (R) is *TRUE*. The corpus luteum develops after an ovum has been released at ovulation.
The function of the corpus luteum and the progesterone that it secretes is to maintain the endometrium (lining of the uterus) so that a fertilised egg can implant. The embryo secretes hCG as a signal to the corpus luteum to continue secretion of progesterone until the placenta is mature.

The correct answer for this problem is option 4.

Question 16

A = the Assertion	R = the Reason
Spermatocytes divide by mitosis to produce spermatids, which, in turn, become transformed into spermatozoa	Spermatogonia divide by meiosis to produce spermatocytes during spermatogenesis

5. Both A and R are false

Explanation

The Assertion (A) is *FALSE*. Spermatogenesis is the process of formation of mature spermatozoa in the seminiferous tubules of the testes. Spermatogonia – the stem cells that line the seminiferous tubules – are dividing continuously to form spermatocytes, not spermatids.

The Reason (R) is also *FALSE*. When spermatogonia divide, they divide by mitosis, not by meiosis. The products of these divisions are spermatids.

Since both statements are untrue, **the only answer for this problem is option 5.**

Question 17

A = the Assertion	R = the Reason
The ovarian reserve is an estimate of the number of ova (eggs) that could be fertilised during a woman's reproductive life, and it declines with age	At birth, a baby girl has about 1 million potential eggs – known as primordial follicles – in her ovaries and that is all she will ever have

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

Explanation

The Assertion (A) is *TRUE*. Although it is not possible to directly measure the total number of primordial (earliest) follicles stored in an individual's ovary, the term ovarian reserve provides an estimate and is sometimes known as an "egg count". The ovarian reserve declines with time and age, but the rate of decline and the quality of the eggs can vary significantly from one woman to another. The percentage of normal eggs is directly related to age, with younger women having mostly normal eggs.

The Reason (R) is also *TRUE*. The formation of primordial follicles occurs while in utero and females are born with 1–2 million. Each of them has four possible outcomes – to remain dormant, to die, to begin development or to be ultimately released at ovulation, followed by formation of a corpus luteum. During a woman's reproductive life, about 400 of these will develop, so the vast majority of primordial follicles never reach maturity; by the age of 37 years, a woman has about 25,000 follicles left.

Both statements are true, but the Reason (R) is not the correct explanation of the Assertion (A), so **option 2 is the right answer.**

Question 18

Complete the table (below) about the menstrual cycle using the characteristics in the list A to L, below. An example answer is included for you.

A. Ovarian cells secrete oestrogen, which stimulates the endometrium to form a new lining
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K. Progesterone prepares the endometrium to receive fertilised ovum
L. If the ovum is not fertilised, progesterone levels fall and the endometrial lining is shed

Follicular phase	Ovulation	Luteal phase	Menstrual phase
A	B	F	E
D	—	C	I
H	—	G	L
J	—	K	—