

11.4 Sexual Reproduction

Question Paper

Course	DP IB Biology
Section	11. Animal Physiology (HL Only)
Topic	11.4 Sexual Reproduction
Difficulty	Medium

Time allowed: 20
Score: /10
Percentage: /100

Question 1

Which of the following statements about spermatogenesis are correct?

- I. Spermatogenesis involves meiosis and mitosis.
- II. Spermatogonia form from the germinal epithelium.
- III. Primary spermatocytes form by differentiation from spermatids.

- A. I only
- B. I and II only
- C. II and III only
- D. I, II, and III

[1 mark]

Question 2

Some of the stages of oogenesis are listed below.

- I. The oogonia enter meiosis I.
- II. Ovulation releases the secondary oocyte from the ovary.
- III. Cells in the germinal epithelium divide by mitosis.
- IV. FSH stimulates a primary follicle to mature and divide.
- V. The secondary oocyte completes meiosis II.

Which of the following gives the correct process of oogenesis?

- A. III → I → IV → V → II
- B. IV → III → I → V → II
- C. III → I → IV → II → V
- D. III → IV → I → II → V

[1 mark]

Question 3

Which of the following does **not** form part of the fertilisation process in humans?

- A. The cortical granules release glycoproteins to harden the zona pellucida.
- B. The cell surface membranes of the oocyte and sperm cell fuse together.
- C. The sperm cell binds to proteins on the surface of the oocyte.
- D. Digestive enzymes released from the acrosome break down the zona pellucida.

[1 mark]

Question 4

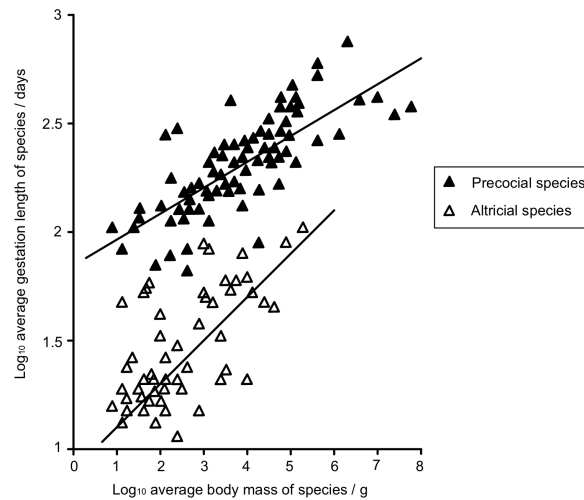
Which of the following gives a correct difference between a 48-hour-old embryo and a week-old blastocyst?

	Embryo	Blastocyst
A	Undergoes the process of mitosis	Begins the process of implantation
B	Contains around 50 cells	Contains around 100 cells
C	Located in the ovary	Located in the uterus
D	Moved by the action of hairs known as cilia	Moves due to the contraction of muscles in the uterus wall

[1 mark]

Question 5

What can be concluded about the gestation periods of different mammal species from the graph below?



- A. Precocial species have longer gestation lengths than altricial species.
- B. Species with a larger body mass have a longer gestation length.
- C. There is a positive correlation between body mass and gestation length for both precocial and altricial species.
- D. Precocial species need longer gestation lengths to allow them to give birth to less dependent offspring.

[1 mark]

Question 6

Which of the following statements about human chorionic gonadotropin (hCG) are correct?

- I. hCG is released by the ovaries.
- II. hCG stimulates the corpus luteum to continue secreting oestrogen and progesterone.
- III. Once hCG secretion stops, oestrogen and progesterone secretion also stops.

- A. I and II only
- B. II only
- C. I, II, and III
- D. II and III only

[1 mark]

Question 7

Which of the hormone functions shown below are correct?

	hCG	Progesterone	Oestrogen	Oxytocin
A	Stimulates release of hormones by the corpus luteum	Inhibits oxytocin production	Inhibits progesterone production	Stimulates relaxation of the cervix
B	Stimulates release of hormones by the corpus luteum	Stimulates oxytocin production	Inhibits progesterone production	Stimulates contractions in the muscles of the uterus wall
C	Causes loss of the uterus lining	Inhibits oxytocin production	Decreases sensitivity of uterus wall to oxytocin	Stimulates relaxation of the cervix
D	Inhibits loss of the uterus lining	Inhibits oxytocin production	Increases sensitivity of uterus wall to oxytocin	Stimulates contractions in the muscles of the uterus wall

[1 mark]

Question 8

Which of the following statements can be correctly applied to the placenta?

- A. Substances that move across the placenta from mother to foetus include oxygen, glucose, antibodies, carbon dioxide, and urea.
- B. The placenta is needed because the surface area to volume ratio of the foetus becomes larger as it grows.
- C. The placenta releases the hormone oxytocin in the late stages of pregnancy.
- D. The placenta enables the passage of antibodies by the process of endocytosis.

[1 mark]

Question 9

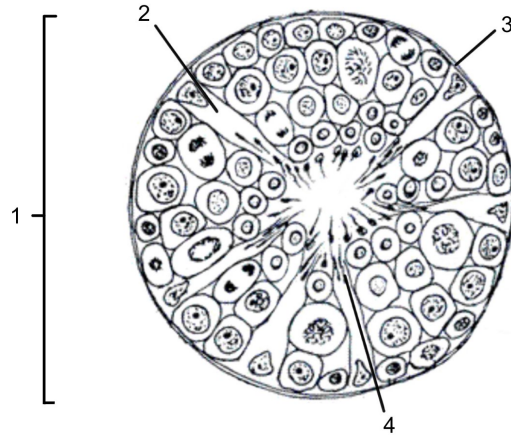
Why was it important to carry out a full risk analysis of the female contraceptive pill?

- A. The contraceptive pill could lower birth rates around the world.
- B. There is currently not enough evidence to prove a causal link between the female contraceptive pill and feminisation in fish.
- C. The synthetic oestrogen in the contraceptive pill can make its way into bodies of water where it can have previously unforeseen consequences.
- D. Some people have moral objections to the use of birth control.

[1 mark]

Question 10

Which structures have been identified in the cross-section through part of a testis shown below?



	1	2	3	4
A	Germinal epithelium	Sertoli cell	Cell surface membrane	Mature sperm
B	Seminiferous tubule	Sertoli cell	Germinal epithelium	Spermatid
C	Epididymis	Leydig cell	Testis endothelium	Spermatocyte
D	Seminiferous tubule	Leydig cell	Germinal epithelium	Mature sperm

[1 mark]