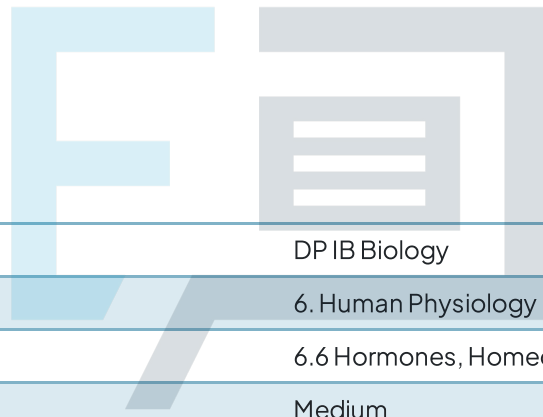




6.6 Hormones, Homeostasis & Reproduction

Mark Schemes



Course	DP IB Biology
Section	6. Human Physiology
Topic	6.6 Hormones, Homeostasis & Reproduction
Difficulty	Medium

Exam Papers Practice

To be used by all students preparing for DP IB Biology SL
Students of other boards may also find this useful

1

The correct answer is **A** because LH shows the greatest increase near the time of ovulation (day 14 in this case), then levels drop dramatically.

B is incorrect as it represents oestrogen which also spikes during the time of ovulation, but shows a second increase during luteal phase.

C is incorrect as it represents progesterone which remains low during follicular phase but increases during luteal phase, before decreasing prior to menstruation.

D is incorrect as it represents FSH which peaks towards the end of the menstrual cycle.

2

The correct answer is **C** because the endometrium is shed during menstruation. A lack of menstruation will lead to an abnormal buildup of the endometrium which could increase the chances of developing cancer.

A is incorrect as the endometrium thickens the most after ovulation occurs during the luteal phase, so a lack of ovulation will not lead to thickening of the endometrium.

B is incorrect as the lack of ovulation will lead to fewer menstruation events, so the endometrium will not be shed too often.

D is incorrect as the endometrium is shed during menstruation, not ovulation.

3

The correct answer is **B** because the suprachiasmatic nucleus affects the secretion of melatonin by the pineal gland. This in turn has an effect on your circadian rhythm which determines sleep patterns. A decrease in melatonin production would disrupt sleep patterns and lead to irritability.

A is incorrect as these are symptoms of diabetes which involve insulin.

C and D are incorrect as these are symptoms of hypothyroidism (lack of thyroxin).

4

The correct answer is **D** because the presence of testosterone will cause the female fetus to develop more "male-like" characteristics.

A is incorrect as sperm production will only begin at the onset of puberty, not during fetal development.

B is incorrect as the presence of sex hormones such as testosterone will not delay the development of genitalia in a fetus, it will change the way in which they develop.

C is incorrect as the presence of testosterone will not lead to more pronounced female characteristics to develop, since it is a male sex hormone.

5

The correct answer is **C** because it matches the numbers with the correct labels.

A, B & D are incorrect as they do not match all the numbers with the correct labels.

6

The correct answer is **B** because it correctly matches the numbers with the steps.

A, C & D are incorrect as they do not correctly match all the numbers with the steps.

7

The correct answer is **C** because thyroxin increases the metabolic rate, which supports a higher rate of protein synthesis and generates more heat.

A is incorrect as thyroxin will not only increase the rate of protein synthesis, but also the generation of body heat.

B is incorrect as adipose tissue is not a metabolically active region.

D is incorrect as adipose tissue is not a metabolically active region and thyroxin does not decrease appetite.

8

Exam Papers Practice

The correct answer is **A**; a failure to lose weight in the presence of leptin is most often caused by the target cells in the hypothalamus not responding to the hormone.

B is incorrect as the gene mutation would prevent the body from producing sufficient leptin, it should not prevent weight loss if injected with the hormone.

C is incorrect as the target cells for leptin are located in the appetite control centre of the hypothalamus.

D is incorrect as this would lead to elevated levels of leptin in the blood, which would suppress the appetite even further.



9

The correct answer is **B** because Type I diabetes is most common amongst young children due to the destruction of the beta cells in the islets of Langerhans.

A is incorrect as Type I diabetes is due to insufficient levels of insulin in the body, not due to a failure to respond to the hormone.

C & D are incorrect as Type II diabetes are prevalent amongst older people, not young children.

10

The correct answer is **D** because glucagon, which is secreted by the alpha cells, is the hormone responsible for increasing the breakdown of glycogen to glucose by the liver.

A is incorrect as insulin will increase the conversion of glucose to glycogen in the liver.

B is incorrect as the alpha cells secrete glucagon.

C is incorrect as a meal high in carbohydrates would stimulate the secretion of insulin, which would increase the conversion of glucose to glycogen.

Exam Papers Practice