Biology of Reproduction-**BSCI342**

READ ALL INSTRUCTIONS CAREFULLY. BE SURE TO FILL IN YOUR NAME AND ID ON THE ANSWER SHEET. This exam consists of 50 questions worth 2 points each. Mark your answers clearly, as ambiguous letters or words will be marked wrong.
I. **MULTIPLE CHOICE**: There is only one answer per question.

1. The heterogametic sex (individual that determines the sex of the offspring) in birds is the _____ and in mammals the heterogametic sex is the _____.

   A. female/female B. male/female C. male/male D. female/male

2. Of the following which one represents the step that **immediately** follows the binding of a hormone to membrane bound receptors? (Assume the receptors have changed configuration.)

   A. G-proteins are activated.
   B. A section of DNA is opened allowing for transcription.
   C. Protein Kinase is activated.
   D. Ca++ is released.
   E. Additional ligands bind to the hormone.

3. Of the following whom is credited with discovering that ovaries contained ovum?

   A. Darwin **B**. McClung **C**. Brown
   D. Graaf **E**. Kinsey

4. Axon terminals from cells in the hypophysiotropic area terminate in the
   A. anterior pituitary. **B**. median eminence. **C**. posterior pituitary.
   D. supraoptic nucleus. **E**. pituitarty stalk.

5. Of the following statements which is/are correct regarding the ovary at birth?
   A. Eggs have not yet formed.
   B. It is already producing high levels of estrogen.
   C. At birth the ovary already contains all the eggs (ovum) that it will ever have.
   D. The ovaries do not form until well after birth.
   E. More than one of the above

6. Prior to an ejaculation the majority of sperm to be released during an ejaculation is stored in the

   A. vastus rectus. **B**. ejaculatory duct. **C**. efferent ducts.
   D. seminiferous tubules. **E**. ampulla of the vas deferens.

7. During an ejaculation the first gland to add fluid to the passing sperm is
   A. Cowper's. B. seminal vesicle. C. prostate. D. urethral.

8. Down regulation occurs when the presences of a hormone causes

A. the amount of hormone circulating in the blood to decrease.
B. the number of hormonal receptors to decrease.
C. the affinity of the hormonal receptor to decrease.

9. Steroid hormones are transported in the blood via carrier molecules. This occurs because

A. steroid can only enter a target cell while bound to a carrier molecule.
B. steroids are released as prohormones and the carrier molecule convert them to active h
C. unbound steroids bind to membrane receptors instead of entering the cell.
D. steroids are lipids.

10. Ca++ is essential to the proper functioning of both nerves and muscles. When ca++ levels are low the parathyroid secret parahormone (PTH) causing the release of ca++ from bones. Increasing blood levels of ca++ levels turn trigger a decrease in the production of PTH. Based only upon t

A. positive feedback. **B**. down-regulation. **C**. ultimate causation.
D. negative feedback. **E**. more than one of the above.

11. This endocrine gland is important in reproduction, in many species, as it produces prolactin that stimulates the production of milk.

A. pineal gland **B**. adrenal cortex **C**. mammary
D. thyroid **E**. anterior pituiatry

12. Shortly after ovulation the finger-like projections of this portion of the oviduct (fallopian tubule) contract creating a current to draw the ovum and associated cells into the oviduct.

A. infundibulum **B**. ampulla **C**.isthmus
D. body **E**. fimbria

13. High levels of DHT (dihydrotestoserone) can lead to hyperplasia in the

A. prostate gland. **B**. endometrium. **C**. testis.
D. anterior pituitary. **E**. heart.

14. The hypophysiotropic area primarily produces

A. releasing and inhibiting factors. **B**. non-tropic hormones **C**. autocrine compounds
D. paracrine compounds. **E**. steroids.

15. Increasing levels of estrogen indirectly inhibit the production of GnRH (gonadotropin releasing hormone) by the hypothalamus. When this happens

A. estrogen is acting via a positive feedback mechanism.
B. estrogen is functioning as a neurohormone.
C. estrogen is functioning as a tropic hormone.
D. it is an example of up-regulation.
E. More than one of the above

16. The acidic environment of the vagina

A. prevents coagulation of seminal fluid.

B. inhibits the growth of bacteria and yeast.
C. helps to thin mucus in the cervix.
D. helps prevent white blood cells from attacking sperm cells.
E. is found in females prior to puberty, but changes to a basic pH in adults.

17.Jack Caldwell ran an experiment in which he conjugated a protein to estrogen (this means he bound a protein molecule to an estrogen molecule). He then gave females the conjugated protein followed by oxytocin. He found that in the presences of conjugated estrogen oxytocin still facilitated sexual behavior in females. It was already known that estrogen is required if oxytocin is to stimulate sexual behavior. This experiment was important because it demonstrated that

A. oxytocin can work through direct gene activation.
B. membrane bound receptors for estrogen exist.
C. this is one of the few systems that works by positive feedback.
D. estrogen does not have to work by up-regulating oxytocin receptors.

18. On average an egg is viable (can still be fertilized) how many hours after ovulation?

A. 2 **B**. 24 **C**. 48 **D**. 74 **E**. 100

19.Eggs are found in the

A. corpus luteum **B**. the ovarian cortex **C**. ovarian follicles
D. seminiferous tubules **E**. More than one of the above

20.Fibrinolytic enzymes, compounds responsible for liquefying seminal fluid in the vagina, are

A. testis. **B**. epididymis. **C**. seminal vesicle.
D. prostate gland. **E**. bulbourethral gland.

21.G. W. Harris and associates provided important insight into the functioning of the endocrine system by demonstrating

A. that the endocrine system is under neural control.
B. that the ovary is an endocrine gland.
C. that the anterior pituitary was not part of the brain.
D. the mechanism of direct gene activation.

22.Sertoli cells
A. are found in the ovarian cortex.
B. produce testosterone.
C. provide nourishment for developing sperm.
D. secrete prostatic fluid.
E. produce vasopressin in the paraventricular nucleus.

23.The chemical structure of a hormone is related to the type of tissue the endocrine gland is derived from. Of the following hormones or hormone-like compounds which one is produced by glands derived from ectoderm?

A. estrogen **B**. progesterone **C**. androgens
D. epinephrine **E**. None of the above

24.When a female is fertile these molecules change their orientation in the cervical mucus creating passageways for sperm.

A. biogenic amines **B**. lipids **C**. proteoglycans
D. neuromodulators. **E**. glucagon

25.The secondary capillary plexus of the hypothalamic-hypophysial portal system surrounds the

A. paraventricular and supraoptic nuclei.
B. pituitary stalk.
C. cells of the anterior pituitary.
D. median eminence.
E. hypophysiotropic area.

26. The human female reproductive system differs from the male system in that
A. it does not directly produce hormones.
B. it produces diploid gametes.
C. the urethra is not part of the female reproductive system.
D. reproductive products produced by the female never leave the body.
E. eggs are continually produced while sperm is made in cycles.

27.In the anterior pituitary tropic hormones are produced by

A. alpha cells. **B**. acidophil cell. **C**. delta cells.
D. chief cells. **E**. basophil cells.

28.Hormones can affect target cells in a variety of ways. Of the following which affect is associated with **ALL** hormones?

A. stimulating or inhibiting mitosis
B. stimulating or inhibiting meiosis
C. stimulating or inhibiting cellular secretion
D. altering the metabolism of the cell
E. affecting another endocrine gland

29.Of the following statements regarding parthenogenesis which one is correct?

A. It is a type of sexual reproduction.
B. It only occurs in plants.
C. It results in the production of an asexual spore.

D. The offspring produced are haploid.
E. It is a type of asexual reproduction in which an egg is produced.

30. If pregnancy does not occur which of the following would be the path that an unfertilized egg would follow?

A. oviduct, uterus, cervix, vagina
B. oviduct, uterus, cervix, vagina
C. vagina, cervix, uterus, oviduct
D. vagina, uterus, cervix, oviduct
E. oviduct, cervix, uterus, vagina

II. **Short Answer-**write your answer in the space below the question**.**

31.The _____ produces a basic pH that helps neutralize acidic urine prior to an ejaculation.

32. Upon entering the vagina the first thing that semen does is?

33. Testosterone is produced by _____. (you must be specific)

34. Name one female secondary sexual characteristic.

35. Sex chromosomes are chromosomes that carry factors that directly determine the sex of the individual. In fruit flies the sex of the individual is determined by

36. Endometriosis occurs when tissue from this organ grows into areas where is does not belong.

Name the organ.

37. Trivers argued that the cost of reproduction is generally higher for females than males. Provide one cost of reprodcution that is greater for a female than a male.

38 + 39. Name the two nuclei within the hypothalamus that produce vasopressin and oxytocin.

40. After ovulation the remaining follicle cells develop into the _____, which produces steroid hormones.

41. Name a type of spongy tissue that fills with “blood” during an erection in a human male.

Matching-There is only one answer per question, but an answer may be used more than once.
I. Match the gland with the correct structure, function or characteristic.

A. ovaries
B. pineal gland
C. anterior pituitary
D. pancreas
E. adrenal cortex
F. thyroid
G. testis
H. posterior pituitary

42. _____ neural tissue.

43. _____ FSH stimulates the production of estrogen in this gland.

44. _____ functions in setting biological rhythms.

45._____ produces and secretes LH.

46. _____ produces glucocorticoids

II. Match the hormone with the correct structure, function or characteristic.

A. testosterone
B. oxytocin
C. GnRH
D. LH
E. progesterone
F. Growth hormone
G. FSH

47. _____ this hormone typically acts as an antagonist to reproductive activity.

48. _____ facilitates maternal behavior in female mammals.

49. _____ secreted into the primary capillary plexus of the hyopthalamic-hypophysial portal

50. _____ triggers ovulation.