



UNIVERSITY OF AGRICULTURE, ABEOKUTA
Department of Animal Physiology

ANP 502: REPRODUCTIVE PHYSIOLOGY
SAMPLE EXAMINATION (SECTION A)

INSTRUCTION: ANSWER ALL QUESTIONS TIME ALLOWED: 2 HOURS

1. Aberrations of genetic sex may arise from any of the following except
(a) Fertilization (b) Mutation (c) Non-disjunction (d) Deletion (e) Translocation
2. The primary sex ratio is the proportion of males in a population at
(a) Birth (b) Puberty (c) Fertilization (d) Sexual maturity
(e) None of the above

Which of the following has nothing to do with thermoregulation of the testis?

- (a) Testicular descent (b) Pampiniform plexus
(c) Cremaster muscle (d) Tunica dartos (e) None of the above
4. Which of the following is false about the mammalian ovary?
(a) Its shape varies with species (b) It has exocrine and endocrine functions
(c) It consists of cortex, medulla and germinal epithelium
(d) It remains within the abdominal cavity (e) None of the above
5. Which of the following is not a function of the cervix?
(a) Reservoir for spermatozoa after mating
(b) Closure to prevent uterine infection
(c) Relaxation during oestrus to ease sperm passage
(d) Dilatation during parturition to permit foetal expulsion
(e) None of the above
6. The steroid hormones with aromatic A-rings are
(a) Progestagens
(b) Carcinogens
(c) Androgens
(d) Glucorticoids
(e) Oestrogens
7. The last stage of spermatogenesis is called
(a) Spermatocytogenesis
(b) Seminiferous epithelial cycle
(c) Sperm maturation
(d) Spermiogenesis
(e) Seminiferous epithelial wave
8. Oogenesis commences in female mammals
(a) At birth
(b) During foetal life
(c) At puberty
(d) At sexual maturity
(e) At fertilization
9. Duration of the oestrous cycle in the ewe is
(a) 21 days (b) 28 days (c) 19 – 25 days (d) 16 – 17 days (e) 4-5 days

10–11 Two applied reproductive physiology techniques for increasing selection differential in animal breeding are (10)_____ and (11)_____

12-15 Complete the following Table:

Organism	Heterogametic sex	Gametes		Zygote
		Sperm	Eggs	
Mammals, most insects including <i>Drosophila</i>	Male	X and Y	All X	(12)..... = Male (13) = Female
Birds, moths, some reptiles and amphibians	Female	All Z	Z & W	ZW= (14) ZZ = (15)

16-19 For normal functioning, the mammalian testis needs to be maintained below body temperature. List any four of the mechanisms by which this is achieved.

(16) _____ (17) _____

(18) _____ (19) _____

20-21 An animal in which the testis is retained in the abdominal cavity is called a (20) _____

In such a case the function of the testis usually affected is (21) _____

22. Which of the following is not a male accessory sex organ?

- (a) Prostate (b) Vestibular glands (c) Ampulla (d) Cowper's gland (e) Epididymis

23. The uterine end of the oviduct is called the: (a) Uterine horn (b) Isthmus

- (c) Infundibulum (d) Cervix (e) Myometrium

24. Which of the following is not a sperm output factor?

- (a) Age (b) Frequency of ejaculation (c) Degree of sexual stimulation
(d) Method of semen collection (e) None of the above

25. The process by which the number of oocytes is continuously reduced, starting from immediately after their formation is called:

- (a) Ovulation (b) Folliculogenesis (c) Ovulation (d) Atresia (e) Oogenesis

26. Androgens, oestrogens and progestagens are:

- (a) Hypophysial hormones (b) Hypothalamic hormones
(c) Secondary hormones of reproduction (d) Gonadal sex steroid hormones
(e) Adrenal hormones

27. Which of the following is not true of oestrus?

- (a) It can occur without ovulation
(b) It lasts for two weeks in cows
(c) Its duration is affected by sexual stimulation
(d) It is caused by high oestrogen levels
(e) None of the above

28. Fusion of ♂ and ♀ nuclei during fertilization is called
 (a) Cleavage
 (b) Zygote
 (c) Syngamy
 (d) Kinocilia
 (e) Zona reaction
29. Extra penetrating sperm despite zona reaction and uterine block are called
 (a) Supplementary sperm
 (b) Fertilizing sperm
 (c) Capacitated sperm
 (d) Supernumerary sperm
 (e) Abnormal sperm
30. Which of the following is not a foetal requirement for normal birth?
 (a) Adequate expulsive forces
 (b) Normal size
 (c) Normal number of foetuses
 (d) Normal positioning
 (e) Normal form
31. What physiologic process normally follows parturition apart from lactation?

32. In which fluid are spermatozoa flushed out of the testis?
 (a) Seminal fluid
 (b) Epididymal fluid
 (c) Follicular fluid
 (d) Rete testis fluid
 (e) Testicular fluid
33. Which of the following is not a maturation change of epididymal sperm?
 (a) Elongation of spermatid
 (b) Acquisition of motility
 (c) Stabilization of nuclear chromatin
 (d) Increase in fertilizing capacity
 (e) Movement of cytoplasmic droplet to distal end of sperm
34. Fertilization occurs in the oviduct near the (a) Ampullary-isthmic junction
 (b) Utero-tubal junction (c) Vagina (d) Uterine horn. (e) cervix
35. The type of uterus having caruncles on its luminal surface is
 (a) Bicornuate (b) Simplex (c) Duplex (d) Bipartite (e) None of the above
36. The glandular portion of the uterus is the (a) Endometrium
 (b) Myometrium (c) Stratum vasculare (d) Serosa (e) Vesicular gland
37. Which of the following is not true? In old male mammals, reproductive efficiency declines, due to:
 (a) Decline in testosterone secretion
 (b) Decline in spermatogenic efficiency
 (c) Total loss of libido
 (d) Increasing fibrosis of the testis
 (e) Normal loss of body vigour due to aging
38. Mixed sex rearing of farm animals results in: (a) Early puberty
 (b) Late puberty (c) No effect on puberty (d) Delayed sexual maturity (e) Precocious puberty

39-43. List 5 functions of the mammalian uterus:

- 39. _____
- 40. _____
- 41. _____
- 42. _____
- 43. _____

44-53. List the 5 main classes of steroid hormones and their major sites of synthesis:

<u>Class of steroid hormone</u>	<u>Major site of synthesis</u>
(44) _____	(49) _____
(45) _____	(50) _____
(46) _____	(51) _____
(47) _____	(52) _____
(48) _____	(53) _____

54. Which of the following is not associated with the female tubular genitalia?
(a) Mesovarium (b) Mucosa (c) Muscularis (d) Serosa (e) None of the above

55. In which of these species does vaginal stimulation result in ovulation?
(a) Rabbit (b) Sheep (c) Pig (d) Horse (e) None of the above

56. The site of secretion of follicle stimulating hormone (FSH) is the
(a) Graafian follicle
(b) Ovary
(c) Vesicular gland
(d) Adenohypophysis
(e) Neurohypophysis

57. Which of the following statements is correct?
(a) Ovulation comes before oestrus
(b) The follicular phase in cattle is longer than the luteal phase
(c) Sexual stimulation in the ewe increases variability in ovulation time
(d) Dioestrus is the period of sexual rest
(e) Oestrus cannot occur without ovulation

58. Sheep in higher latitudes undergo an anoestrus season principally due to
(a) Declining day-length (b) Cold winter (c) Hot summer
(d) Lack of feed (e) Increasing day-length

59. What is mating? _____

60. Briefly discuss the various phases involved in the process of parturition

61. How does spermatocytogenesis differ from spermiogenesis

62. Clearly state whether this statement is True or False. In oogenesis, ovulation precedes folliculogenesis. _____
63. The number of eggs (ova) produced at each oestrus in small ruminant animals is more than that produced in cattle. True or False? _____
- 64-67. List four factors that can be responsible for reproductive failure in farm animals.
- (64) _____
- (65) _____
- (66) _____
- (67) _____
- (68) In birds, the heterogametic sex is
- (a) Female, with two X sex chromosomes
- (b) Male, with one X and one Y chromosomes
- (c) Female with one X and one Y chromosomes
- (d) Male with one Z and one W chromosomes
- (e) Female with one Z and one W chromosomes
- (69) According to the genic balance theory, sex is determined by
- (a) The balance between the X and Y chromosomes
- (b) Temperature of incubation of eggs
- (c) The balance between X and autosomal chromosomes
- (d) The balance between genotype and environment
- (e) The balance between super male and super female
- (70) In which of the following is sex reversal most common?
- (a) Crocodile (b) Grasshopper (c) Fish (d) Sheep (e) Moth
- (71) The main storage site for spermatozoa is in the
- (a) Epididymal tail (b) Testis (c) Vesicular glands
- (d) Epididymal head (e) Interstitial cells
- (72) The fastest growing reproductive organ of the ram during postnatal development is the
- (a) Penis (b) Epididymis (c) Vesicular gland (d) Testis (e) Bulbourethral glands
- (73) Identify the secondary hormone of reproduction
- (a) ACTH (b) LH (c) Progesterone (d) FSH (e) Testosterone
- 74-77. Genetic progress per year, ΔG_y in farm animals can be quantified by the equation:

$$\Delta G_y = (h^2 \times SD) / GI$$

Where h^2 = heritability for the trait under selection
 SD = selection differential
 GI = generation interval

- (74) Which of the parameters on the right side of the equation is neutral to reproductive efficiency?
- (75) What is the best technique that can be used to substantially increase SD on the male side?
- (76) What is the best technique that can be used to substantially increase SD on the female side?

(77) Define GI

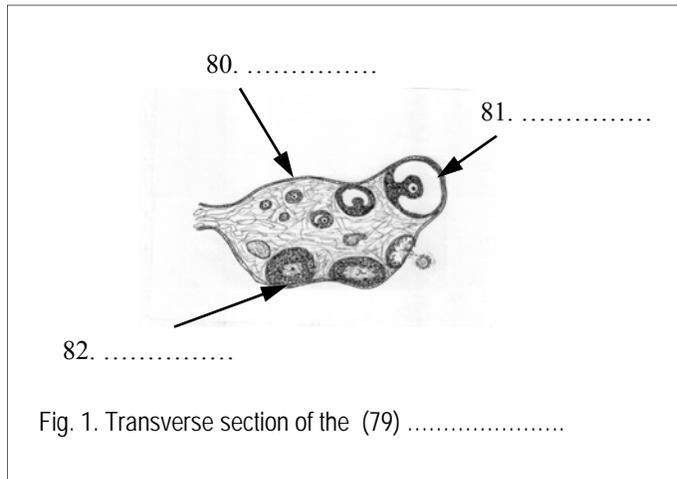
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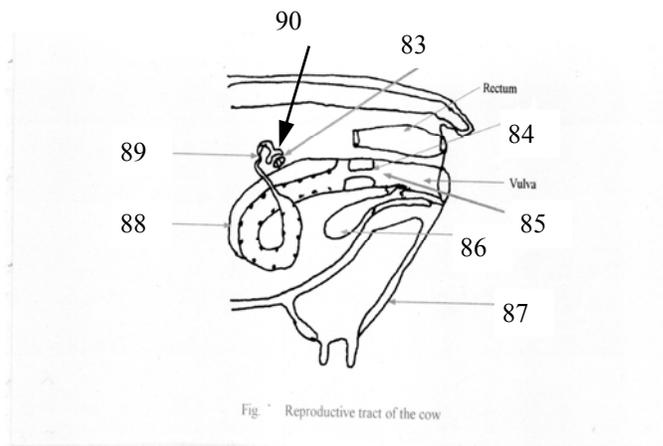
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78. During oestrus detection in sheep, the eversion of the ram's upper lip after sniffing the female's vulva or urine is called reaction.

79-82. Label the parts in Fig. 1 below.



83-90. Label the parts in Fig. 2 below.



91-100. Label the parts in Fig. 3.

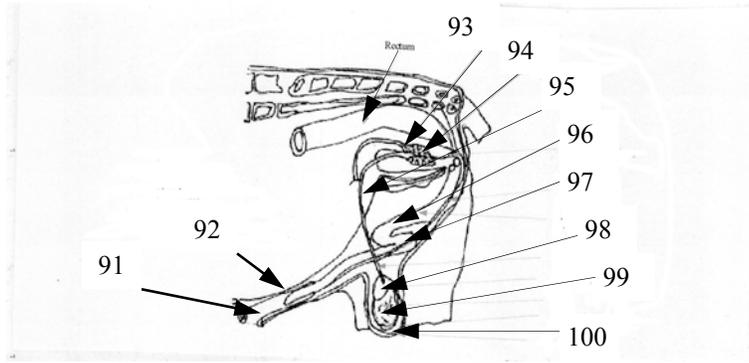


Fig. 3. Bull Reproductive Tract