**Subject name**: Veterinary Physiology

**Chapter 7.12:** Physiology of growth

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**1**. Which organ of the body grows faster during prenatal life

a. Head and tail b. Legs and tail

c. Head and legs d. None of the above

**2**. True growth is shown by all the organs except

a. Muscle b. Bone

c. Heart d. Adipose tissue

**3**. True growth does not involve the accumulation of

a. Protein b. Adipose tissue

c. Water d. Both b and c

**4**. Failure of organs to develop is

a. Aplasia b. Hypoplasia

c. Atrophy d. Hyperplasia

**5**. During 3rd trimester of pregnancy, pattern of growth is

a. Isometric b. Allometric

c. Both a and b d. None of the above

**6**. True growth involves the accumulation of

a. Protein b. Minerals

c. Adipose tissue d. Both a and b

**7**. Hypertrophy involves increase in size of

a. Nucleus b. Cytoplasm

c. Both a and b d. None of the above

**8**. Amount of DNA in a tissue is an index of

a. Number of cells in that tissue b. Size of cells in that tissue

c. Number of mitochondria d. Size of mitochondria

**9**. Which of the following ratio is an index of cell size and growth

a. DNA: Cytoplasm b. Protein: DNA

c. DNA: Protein d. None of the above

**10**. Under optimal conditions of nutrition and environment, Protein: DNA ratio is

a. Maximum b. Minimum

c. Equal d. None of the above

**11**. Percentage of cells that are capable of growth in adult animals

a. 1% b. 3%

c. 5% d. 10%

**12**. Skeletal muscle and nervous system grow with time by

a. Hypertrophy b. Hyperplasia

c. Atrophy d. Metaplasia

**13**. During embryonic stage, growth occurs mostly by

a. Hypertrophy b. Hyperplasia

c. Atrophy d. Aplasia

**14**. RBC’S and nervous tissue develop from embryonic

a. Ectoderm b. Endoderm

c. Mesoderm d. Epidermis

**15**. From which layer bone develops during prenatal life

a. Ectoderm b. Endoderm

c. Mesoderm d. Epidermis

**16**. Which of the following cell type divides throughout life

a. Labile cells b. Stable cells

c. Permanent cells d. None of the above

**17**. Which of the following cell type cease to divide at embryonic stage

a. Labile cells b. Stable cells

c. Permanent cells d. None of the above

**18**. In which of the following cell types mitotic division occurs in early stage of development while cellular hypertrophy occurs later

a. Expanding cells b. Renewing cells

c. Static cells d. None of the above

**19**. In which of the following cell types cell division continues until adult size of organ is reached

a. Expanding cells b. Renewing cells

c. Static cells d. None of the above

**20**. In which of the following cell types, cells are continuously lost and replaced

a. Expanding cells b. Renewing cells

c. Static cells d. None of the above

**21**. Which of the following are the examples of expanding cell population

a. Liver b. Kidney

c. Lungs d. All the above

**22**. Which of the following are the example of static cell population

a. Striated muscle b. Neurons

c. Rods, cones d. All the above

**23**. Which of the following are the example of renewing cell population

a. Epidermis b. Endometrium

c. Haemopoietic tissue d. All the above

**24**. Insulin is required for growth because it stimulates

a. Protein synthesis b. RNA production

c. Both and b d. None of the above

**25**. During starvation, which of the following changes occur

a. Tissue protein and DNA increases

b. Tissue protein and DNA decreases

c. Tissue protein increase and DNA decreases

d. Tissue protein decrease while DNA remains same

**26**. Compensatory growth occurs in which of the following organs

a. Liver b. Kidney

c. Thyroid gland d. All the above

**27**. Arrange the following organs in sequence of maximum growth rate

a. CNS > bone > muscle > adipose tissue b. CNS < bone < muscle < adipose tissue

c. Adipose tissue > CNS > muscle > bone d. CNS > muscle > bone > adipose tissue

**28**. Body water content is estimated by injecting

a. Tritiated water b. Deuterated water (D2O)

c. Antipyrine d. All the above

**29**. Muscle content in the body is estimated by using

a. Iodine b. Potassium (40K)

c. Hydrogen d. Antipyrines

**30**. In vivo technique for fat estimation in animals is

a. Ultrasonics b. Dilution technique

c. Both a and b d. None of the above

**31**. Shape of growth curve in animals is

a. Linear b. Sigmoid

c. Hyperbola d. None of the above

**32**. Which of the following organs are exception to sigmoid curve (i.e., show cyclic growth)

a. Gonads b. Mammary gland

c. Both a and b d. None of the above

**33**. Which of the following statements about growth curve is true

a. Body weight is plotted on X – axis and age is plotted on Y – axis

b. Body weight is plotted on Y – axis and age is plotted on X – axis

c. Body weight is plotted on Y – axis and surface area is plotted on X – axis

d. None of the above

**34**. Shape of growth curve is determined by

a. Growth accelerating force b. Growth retarding force

c. Both a and b d. None of the above

**35**. During early stages of life, which of the following force is dominant

a. Growth accelerating force b. Growth retarding force

c. Both a and b d. None of the above

**36**. A particular point on growth curve that represents maximum growth rate

a. Point of inclination b. Point of inflection

c. Point of acceleration d. All the above

**37**. The point of inflection usually follows the attainment of

a. Puberty b. Maturity

c. Senescence d. Death

**38**. Epinephrine increases the mitotic inhibition in epidermis in presence of

a. Promine b. Chalone

c. Epidermal growth factor d. None of the above

**39**. The process by which cellular division of zygote occurs without increase in volume is

a. Cleavage b. Karyokinesis

c. Cytokinesis d. Gastrulation

**40**. Most common measurement of growth in animals is

a. Increase in surface area b. Increase in live weight

c. Increase in size d. All the above

**41**. Weight gain per unit time is

a. Absolute growth rate b. Relative growth rate

c. Cumulative growth rate d. Instantaneous growth rate

**42**. Body measurement which shows highest correlation with body weight is

a. Muscle size b. Fat deposition

c. Heart girth d. water content

**43**. During cleavage, the zygote divides into cells called

a. Trophoblast b. Blastomeres

c. Inner cell mass d. None of the above

**44**. Placenta arises from

a. Trophoblast b. Inner cell mass

c. Blastomere d. None of the above

**45**. A solid 16 cell stage of embryo is known as

a. Blastocyst b. Gastrula

c. Morula d. Blastocoele

**46**. Competition for space and nutrients occurs more in

a. Monotocous species b. Polytocous species

c. Both a and b d. None of the above

**47**. The size of the fetus is measured by

a. Crown-rump length b. Fetal weight

c. Total fetal length d. All the above

**48**. Absolute growth per initial dimension is

a. Relative growth b. Cumulative growth

c. Instantaneous growth d. None of the above

**49**. The birth weight of fetus is approximately how much percent of total weight of conceptus

a. 40 % b. 50%

c. 60% d. 70 %

**50**. How much percent does the fetal membranes and placental fluids make out of the total weight of conceptus

a. 40 % b. 50 %

c. 60 % d. 70 %

**51**. Match the column

**Species Placenta weight: Birth weight**

a. Cattle (i) 1: 9

b. Sheep (ii) 1: 25

c. Swine (iii) 1: 10

**52**. Negative growth occurs at the time of

a. Puberty b. Maturity

c. Old age d. All the above

**53**. Which of the following statements is true

a. The maternal contribution to variation in fetal size is more than paternal contribution

b. Large maternal size directly influences faster prenatal growth

c. Young ones born from aged obese animals are often small

d. All the above

**54**. Species which are capable of moving around on their own soon after hatching are known as

a. Precocial b. Altricial

c. Both a and b d. None of the above

**55**. Anabolic action of growth hormone is due to its influence on formation of

a. Proteins b. Nucleic acids

c. Lipids d. Both a and b

**56**. Catabolic action of growth hormone is due to its

a. Lipolytic effect b. Diabetogenic effect

c. Both a and b d. None of the above

**57**. Growth hormone mediates its action via

a. Somatomedin b. Somatostatin

c. Myostatin d. None of the above

**58**. Which of the following hormones is known as protein sparer

a. Insulin b. Growth hormone

c. Thyroxine d. Epinephrine

**59**. Which of the following hormone helps in partitioning of nutrients for growth

a. Prolactin b. Growth hormone

c. Insulin d. Both a and b

**60**. Which of the following hormone brings premature closure of epiphyseal plate of long bones if used during prepuberty

a. Prolactin b. Androgen

c. Insulin d. Thyroxine

**61**. Excess secretion of growth hormone in adults causes

a. Acromegaly b. Gigantism

c. Dwarfism d. None of the above

**62**. Which of the following statements is true

a. IGF I is growth hormone dependent and is produced by liver

b. IGF II is growth hormone independent and is functional during fetal period

c. IGF I is originally known as somatomedin C

d. All the above

**63**. Deficiency of growth hormone cause

a. Gigantismb. Acromegaly

c. Dwarfism d. None of the above

**64**. Deficiency of thyroid hormone in young and adult animals respectively causes

a. Cretinism, Myxedema b. Myxedema, Cretinism

c. Dwarfism, Acromegaly d. None of the above

**65**. Which of the following hormone is released by adipose tissue and decreases appetite

a. Ghrelin b. Leptin

c. Glucagon d. CCK

**66**. Growth factors are actually

a. Carbohydrates b. Lipids

c. Proteins/ polypeptides d. All the above

**67**. Which of the following growth factor inhibits mitotic activity

a. Promine b. Retine

c. Chalone d. Both b and c

**68**. Which of the following organ secretes chalones

a. Liver b. Kidney

c. Pancreas d. Both a and b

**69**. Calf thymus gland secretes which growth regulator

**70**. Sub maxillary gland of mice secretes

**71**. Which growth factor promotes growth

**72**. If different body parts grow at different rate, then this type of growth is

**73**. Maximum growth occurs

**74**. Which is the most reliable measure for determining fetal age

**75**. Term used for regulation or control of growth is

**76**. Intermuscular fat is known as

**77**. Gas used for measurement of body weight by dilution technique is

**78**. Computed tomography, a valuable in-vivo method is used for measuring which content of body

a. Fat and energy b. Protein and water

c. Fat and protein d. Protein and fat

**79**. Prenatal growth is affected by

a. Heredity b. Size and age of dam

c. Maternal nutrition d. All the above

**80**. Protein deficiency disease is humans is

a. Kwashiorkor b. Pellagra

c. Scurvy d. Marasmus

**81**. Embryonic diapause occurs in which of the following animal

a. Kangaroo b. Weasels

c. Badgers d. All the above

**82**. Most common formula for measuring body weight in cattle and buffalo is

a. Shaffer’s formula b. Agarwal’s modified Shaffer’s formula

c. Mullick’s formula d. Minnesota formula

**83**. Most widely used formula for measuring body weight in Indian cattle is

a. Shaffer’s formula b. Agarwal’s modified Shaffer’s formula

c. Mullick’s formula d. Minnesota formula

**84**. Most widely used formula for measuring body weight specially in buffaloes is

a. Shaffer’s formula b. Agarwal’s modified Shaffer’s formula

c. Mullick’s formula d. Minnesota formula

**85**. One seer is equal to how many Kilogram

a. 1 kg b. 0.93 kg

c. 0.85 kg d. 0.55 kg

**86**. Shaffer’s formula for measuring body weight in pounds is

a. Weight = LG2/ 300 b. Weight = LG2/ 660

c. Weight = LG/ Y d. Weight = LG2 / 500

**87**. Water is important for growth in animals because

a. It is economical

b. It is a solvent and carrier of nutrients

c. It is required in plenty before the development of circulatory system

d. All the above

**88**. Average length of life in cattle has been found to be longer when they are reared on

a. More carbohydrates than proteins b. On high plane of nutrition

c. On low plane of nutrition d. None of the above

**89**. Which of the following is the gradual encroachment of retarding force which finally overpowers the accelerating force

a. Senescence b. Maturity

c. Puberty d. None of the above

**90**. Which of the following hormone is catabolic but has supportive role in growth process

a. Insulin b. Androgen

c. Glucocorticoids d. Thyroxine

**91**. The most common observation with respect to ageing is

a. Decrease in muscular performance b. Increase in muscular performance

c. Decrease in kidney function d. Decrease in digestive function

**92.** The growth rate in animals reduces mainly due to

a. Reduction in feed intake b. Differential growth of body organs

c. Increase in energy expenditure for heat dissipation d. All the above

**93**. The internal environment of animal is maintained almost constant within a narrow range except

a. Oxygenation of blood b. Body temperature

c. Chronological age d. Concentration of blood cells

**94**. Double muscling condition in cattle is due to a mutation that causes production of inactive

a. Myostatin b. IGF-I

c. Growth hormone d. None of the above

**95**. The shape of growth curve is almost similar in farm and lab animals except man where it is different due to

a. Short prepubertal period b. Long prepubertal period

c. Both a and b d. None of the above

**96**. The birth weight of animal is about how much percent of mature weight

a. 1-2 % b. 2-3 %

c. 3-4 % d. 5-7 %

**97**. Bovine somatotropin (bST), a genetically prepared growth hormone increases the milk production in cattle by how much percent

a. 30 % b. 50 %

c. 70 % d. 100 %

**98**. Release of growth hormone from the anterior pituitary is regulated by

a. Somatocrinin b. Somatostatin

c. Somatomedin d. None of the above

**99**. Which of the following is an example of precocial animal

a. Rabbit b. Dog

c. Owls d. Calf

**100**. Term used for programmed cell death is

a. Apoptosis b. Atrophy

c. Hypoplasia d. None of the above

**101**.Point of inflection in humans, cattle and sheep occur respectively at

a. 14 months, 5 months, 2 months b. 14 years, 5 months, 2 months

c. 14 months, 2 months, 5 months d. 14 years, 2 months, 5 months

**102**.Which of following is an example of isometric growth

a. Prepubertal growth of mammary gland b. Growth of mammary gland at pregnancy

c. Growth of mammary gland at lactation d. All the above

**103**. The state of reduced metabolic activity in animals

a. Torpor b. Mania

c. Anxiety d. None of the above

**1**. c **31**. b **61**. **a 91**. a

**ANSWERS**

**2**. d **32**. c **62**. d **92**. d

**3**. d **33**. b **63**. c **93**. c

**4**. a **34**. c **64**. a **94**. a

**5**. b **35**. a **65**. b **95**. b

**6**. d **36**. b **66**. c **96**. d

**7**. b **37**. a **67**. d **97**. a

**8**. a **38**. b **68**. d **98**. a

**9**. b **39**. a **69**. Promine **99**. d

**10**. a **40**. b **70**. Epidermal growth factor 100. a

**11**. b **41**. a **71**. Promine **101**. b

**12**. a **42**. c **72**. Allometric growth **102**. a

**13**. b **43**. b **73**. At time of puberty **103**. a

**14**. a **44**. a **74**. Crown rump length

**15**. c **45**. c **75**. Homeorhesis

**16**. a **46**. b **76**. Seam fat

**17**. c **47**. d **77**. Krypton

**18**. c **48**. a **78**. a

**19**. a **49**. c **79**. d

**20**. b **50**. a **80**. a

**21**. d **51**. a (iii), b(ii), c(i) **81**. d

**22**. d **52**. c **82**. a

**23**. d **53**. d **83**. b

**24**. c **54**. a **84**. c

**25**. d **55**. d **85**. b

**26**. d **56**. c **86**. a

**27**. a **57**. a **87**. d

**28**. d **58**. b **88**. c

**29**. b **59**. d **89**. a

**30**. a **60**. b **90**. c