**Subject Name**: Animal Physiology

**Chapter 7.15**: Avian Physiology

IIP ID: VPY (IIPER1699624056)

**1**. Poultry have no teeth and grinding of food occurs in

a. Proventriculus b. Gizzard

c. Jejunum d. Rectum

**2**. There is dilation of esophagus near thoracic inlet in birds known as

a. Crop b. Ingluvies

c. Gizzard d. Both a and b

**3**. Avian stomach has how many compartments

a. One b. Two

c. Three d. Four

**4**. Glandular stomach is also known as

a. Proventriculus b. Gizzard

c. Crop d. Ventriculus

**5**. Ventriculus is another name of

a. Gizzard b. Muscular stomach

c. Proventriculus d. Both a and b

**6**. Remnant of yolk sac at the junction of Jejunum and ileum is

a. Preputial diverticulum b. Meckel’s diverticulum

c. Cloaca d. Bursa of Fabricius

**7**. Lacteals are absent in the villi of

a. Cattle b. Horse

c. Fowl d. Dog

**8**. Birds have how many caeca

a. One b. Two

c. Three d. Four

**9**. Gall bladder is absent in

a. Chicken b. Duck

c. Goose d. Pigeon

**10**. Nerve of Remark (autonomic nerve) unique to birds supplies the

a. Upper digestive tract b. Lower digestive tract

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

**11**. Ventromedial hypothalamic area is concerned with

a. Satiety b. Appetite

c. Thirst d. Both a and b

**12**. Salivary amylase / Ptyalin initiates the digestion of starch in

a. Crop b. Caecum

d. Colon d. Cloaca

**13**. pH of gastric juice in birds is

a. 4 b. 0.5-2.5

c. 3-5 d. 4.5

**14**. Volume of saliva secreted in birds per day is

a. 130-180 ml b. 40-50 ml

c. 7-30 ml d. 2-3 ml

**15**. Which of the following enzyme is absent in birds

a. Maltase b. Sucrase

c. Amylase d. Lactase

**16**. Lipoproteins in chicken enter portal blood and not the lymphatics and are called

a. Chylomicrons b. Porto-microns

c. Apoproteins d. Phospholipids

**17**. Which of the following system is absent in birds

a. Lymphatic system b. Nervous system

c. Excretory system d. Digestive system

**18**. Absorption of fat in birds occur via

a. Lacteals b. Portal vein

c. Chylomicron d. None of the above

**19**. Common pathway for excretory, digestive wastes and reproductive tract in birds is

a. Cloaca b. Rectum

c. Colon d. Ileum

**20**. Distal-most chamber of avian cloaca is

a. Coprodeum b. Proctodeum

c. Urodeum d. Colon

**21**. Birds do not have

a. Soft Palate b. Teeth

c. Salivary glands d. Both a and b

**22**. Pigeon crop secretes

a. Amylase and lactase b. Amylase and invertase

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

**23**. In birds, which of the following organ is not essential for digestion

a. Caeca b. Ileum

c. Proventriculus d. Ventriculus

**24**. Chief site of absorption of carbohydrate, fat and protein is

a. Duodenum b. Jejunum

c. Ileum d. Caecum

**25**. Blood glucose level in birds is

a. 40-60 mg % b. 80-120 mg %

c. 30-40 mg % d. 250 mg %

**26**. Majority of microbial digestion of cellulose in birds occurs in

a. Caeca b. Colon

c. Rectum d. Crop

**27**. In birds, most potent hormone for pancreatic aqueous secretion is

a. CCK b. VIP (Vasoactive Intestinal Peptide)

c. Gatrin d. Secretin

**28**. Koilin, a thick cuticle which lines the mucosal surface of proventriculus is a

a. Carbohydrate b. Protein

c. Lipid d. Carbohydrate-Protein complex

**29**. Bursa of Fabricius in bird’s projects dorsally from

a. Coprodeum b. Urodeum

c. Proctodeum d. Rectum

**30**. Proctodeum open’s externally through

a. Vent b. Colon

c. Rectum d. Caecum

**31**. In caeca, volatile fatty acids arise from decomposition of

a. Urea b. Ammonia

c. Uric acid d. All the above

**32**. Antiperistalsis occurs continuously in colon to

a. Move urine from cloaca to colon and caeca for water absorption

b. Filling of caeca

c. Both a and b

d. None of the above

**33**. Primary site of chemical digestion in birds is

a. Proventriculus b. Ventriculus

c. Crop d. small intestine

**34**. Intestinal droppings have greenish granular texture while caecal droppings have

a. Yellowish granular texture b. Brown homogenous texture

c. Brown granular texture d. Greenish homogenous texture

**35**. Optimal pH of intestinal tract in birds is

a. 1-2 b. 2-4

c. 4-6 d. 6-8

**36**. Urogenital system develops from embryonic

a. Ectoderm b. Endoderm

c. Mesoderm d. All the above

**37**. Avian excretory system differs from mammalian type in

a. Presence of two major nephron types

b. Presence of renal portal system

c. Post-renal modification of ureteral urine

d. All the above

**38**. Avian kidney has how many lobes

a. One b. Two

c. Three d. Four

**39**. In birds, hypertonicity of medullary cone is regulated mainly by

a. Glucose b. NaCl

c. Urea d. All the above

**40**. Types of nephrons present in avian kidney are

a. Reptilian type b. Mammalian type

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

**41**. Reptilian type nephrons are characterized by

a. Absence of loop of Henle b. Unable to concentrate urine

c. Presence in cortex d. All the above

**42**. Main function of mammalian type nephron is

a. Absorption of urine b. Concentration of urine

c. Secretion of urine d. None of the above

**43**. Unique feature of Avian kidney is

a. Retroperitoneal structures b. Renal portal system

c. Vasa recta d. None of the above

**44**. Renal portal system is a

a. Portal venous system b. Portal arterial system

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

**45**. Amount of blood supplied by renal portal system to the avian kidneys

a. 1/3 b. 1/2-2/3

c. 1/4 d. 2/5

**46**. Reptilian type nephrons mostly shut down when there is

a. Hunger b. Thirst

c. Salt load d. All the above

**47**. Blood flow to the kidneys by renal portal system is greater at the time of

a. Fright b. Fleeing

c. Salt load d. Both a and b

**48**. In birds, type of nephron associated with countercurrent mechanism is

a. Reptilian type b. Mammalian type

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

**49**. Which of the following hormone in birds has the same function as vasopressin in mammals

a. Arginine vasotocin b. Antidiuretic hormone

c. Vasopressin d. All the above

**50**. End product of nitrogenous metabolic waste in birds in

a. Ammonia b. Urea

c. Uric acid d. Creatinine

**51**. Formation of uric acid in birds occurs in

a. Liver b. Kidney

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

**52**. Uric acid appears as white coagulum in urine of

**53**. Post-renal modification of ureteral urine in birds occurs mainly in

**54**. Mucus is generally present in urine of

**55**. Urinary bladder is absent in

**56**. What is true about the avian salt glands/ nasal glands

a. They secrete only NaCl, and no other substance secreted by kidney

b. They are paired structures

c. They are active only when there is salt load

d. All the above

**57**. Excretion of nitrogenous waste obligates water excretion

**58**. Nasal glands/ salt glands are present in

**59**. Uric acid results from the metabolism of

**60**. In birds, urine is transported by ureters from kidneys to

**61**. Nucleated erythrocytes and Nucleated thrombocytes are present in

a. Birds b. Mammals

c. Cattle d. Horse

**62**. Most numerous leukocytes in poultry are

a. Monocyte b. Neutrophils

c. Lymphocyte d. Eosinophil

**63**. Leukocytes comparable to neutrophil in birds is

a. Heterophil b. Monocyte

c. Eosinophil d. Lymphocyte

**64**. Average life span of erythrocytes in chicken is

a. 120 days b. 20-30 days

c. 140-150 days d. 70 days

**65**. Total RBC count in birds (million per µl of blood)

a. 9 b. 7

c. 3 d. 5

**66**. Shape of avian RBC’s is

a. Elliptical b. Biconcave

c. Square d. Sickle

**67**. Average life span of erythrocytes in duck is

a. 150 days b. 120 days

c. 20-30 days d. 30-40 days

**68**. In birds, B lymphocytes were first discovered in

a. Bursa of Fabricius b. Spleen

c. Bone marrow d. Liver

**69**. Nucleus persists throughout life in erythrocytes of

a. Horse b. Poultry

c. Goat d. Dog

**70**. Surface area of erythrocytes in birds is approximately

a. 23 m₂/Kg b. 33 m2/Kg

c. 55 m2/Kg d. 66 m2/Kg

**71**. Approximate number of blood group system in poultry is

a. 8 b. 11

c. 3 d. 14

**72**. Relative number of erythrocytes to leukocytes in chicken is approximately

a. 1300: 1 b. 1200: 1

c. 800: 1 d. 100: 1

**73**. Megakaryocytes are absent in

a. Birds b. Horse

c. Dog d. Camel

**74**. Hemoglobin concentration in chicken is approximately

a. 4-5 gram/dl b. 5-6 gram/dl

c. 6.5-9 gram/dl d. 9-11 gram/dl

**75**. Average blood pressure in birds (mm Hg, Systole/ Diastole)

a. 40-80 b. 80-120

c. 60-110 d. 130-270

**76**. Basic unit of gaseous exchange in birds is

a. Alveoli b. Air sacs

c. Parabronchi d. Lungs

**77**. Unlike mammals, avian tracheal rings are

a. Complete b. C- shaped

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

**78**. Double trachea is present in

a. Emu and ruddy ducks b. Some penguins

c. Petrels d. Both b and c

**79**. Which of the following male birds have a tracheal bulbous expansion

a. waterfowls b. Pigeon

c. Emu d. Turkey

**80**. Typical bird trachea is how many times longer than that of comparably sized mammal

a. 0.5 times b. 1.5 times

c. 2.7 times d. 3.5 times

**81**. Organ of phonation in birds is

a. Lungs b. Trachea

c. Bronchi d. Syrinx

**82**. Inner surface of tubular parabronchi is pierced by numerous pentagonal and hexagonal openings into chambers known as

a. Atria b. Holes

c. Pores d. Ventricle

**83**. Diffusing capacity of blood-gas barrier is most appropriately estimated by

a. Surface area b. Harmonic mean thickness

c. weight d. All the above

**84**. Avian lung is more efficient gas exchanger than mammalian lung due to

a. More surface area b. Less surface area

c. Thinner Harmonic mean thickness d. Both a and c

**85**. Which of the following have only Paleo pulmonic parabronchi

a. Penguin b. Emu

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

**86**. Which of the following have both paleo pulmonic and neo pulmonic parabronchi

a. Penguin b. Pigeon

c. Duck d. Both b and c

**87**. Neo pulmonic parabronchi are more developed in

a. Fowl like birds b. Songbirds

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

**88**. Unidirectional flow of gas occurs in which parabronchi

a. Paleo pulmonic b. Neo pulmonic

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

**89**. Number of air sacs in birds are

a. 7 b. 8

c. 9 d. 10

**90**. Only unpaired air sac in birds is

a. Cranial thoracic b. Caudal thoracic

c. Abdominal d. Clavicular

**91**. Which of the following statements about air sacs is true

a. They are lined with simple squamous epithelium

b. They are poorly vascularized

c. They significantly do not contribute to gaseous exchange

d. All the above

**92**. Muscular diaphragm is absent in

a. Birds b. Cattle

c. Camel d. Horse

**93**. In birds, both inspiration and expiration are

a. Active b. Passive

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

**94**. In birds, gas exchange efficiency compared to mammalian lung is

a. Greater b. Lesser

c. Equal d. None of the above

**95**. Birds have ability to maintain cerebral blood flow even at PaCo2 values of

a. 20 mmHg b. 8-10 mmHg

c. 30 mmHg d. 50 mmHg

**96**. More prevalent form of hemoglobin in birds is

a. Hb A b. Hb D

c. Hb F d. None of the above

**97**. Binding of one oxygen molecule facilitates the binding of next oxygen molecule and this is known as

a. Coordination b. Cooperativity

c. Synchronization d. Harmonization

**98**. Degree of cooperativity of Hb molecule is expressed by

a. Hill coefficient b. Ionization

c. Coordination d. None of the above

**99**. A generally accepted Hill coefficient for mammalian Hb is

a. 2.8 b. 3.5

c. 4 d. 5

**100**. A generally accepted Hill coefficient for Avian Hb is

a. 2.8 b. 3.5

c. 4 d. 5

**101**. One of the features of avian Hb is its interaction with

a. Inositol Penta phosphate b. Inositol tetra phosphate

c. BPG d. Both a and b

**102**. Phrenic nerve is absent in

a. Fowl b. Cattle

c. Horse d. Camel

**103**. Intrapulmonary chemoreceptors unique to the birds are sensitive to

a. Hypoxia b. Pressure

c. Carbon dioxide d. Temperature

**104**. Proprioceptors found in the joint and muscle are absent in

a. Birds b. Mammals

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

**105**. True panting species are

a. Birds b. Dog, cat

c. Cattle d. Both a and b

**106**. In birds, surfactant is secreted by

a. Granular cells b. Type I pneumocytes

c. Type II pneumocytes d. cells of ostia

**107**. Surfactant in birds is a lipo-proteinaceous substance that forms a

a. Trilaminar substance b. Bilaminar substance

c. Tetra laminar substance d. None of the above

**108**.Hyperventilation in birds cause the formation of

a. Thin eggshell b. Thick eggshell

c. Mottled eggshell d. None of the above

**109**. Accessory sex glands are absent in

a. Stallion b. Boar

c. Dog d. Chicken

**110**.Testes are located within the abdominal cavity in

a. Birds b. Elephant

c. Stallion d. Both a and b

**111**.Rudimentary testis in birds is known as

a. Phallus b. Prostrate

c. Scrotum d. Penis

**112**.Testis in birds are

a. Symmetrical b. Asymmetrical

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

**113**. Birds are

a. Oviparous b. Viviparous

c. Ovoviviparous d. None of the above

**114**. Which of the following gland is important for photo refractoriness in birds

a. Pituitary gland b. Thyroid gland

c. Hypothalamus d. Adrenal gland

**115**. Sperm concentration per ml in fowl is approximately

a. 120 million b. 1200 million

c. 3500 million d. 9000 million

**116**. Avian GnRH I differs from mammalian form by how many amino acids

a. One b. Two

c. Three d. Four

**117.** Which of the following hormone is more potent in stimulating LH release invitro

a. GnRH I b. GnRH II

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

**118**. In songbirds, ductus deferens is elongated at distal end and is known as

a. Seminal glomus b. Seminal vesicle

c. Phallus d. Diverticulum

**119**.Pseudo penis, a well-developed penis occurs in

a. Turkey b. Duck

c. Geese d. Both b andc

**120**. Ductus deferens opens on the dorsal wall of cloaca in

a. Papillae b. Penis

c. Bursa of Fabricius d. Phallus

**121**. Which of the following ovary is rudimentary in birds

a. Right ovary b. Left ovary

c. Both ovaries d. None of the above

**122**. Shape of ovary in birds is

a. Bean shape b. Almond shape

c. Bunch of grapes d. Kidney shape

**123**. Spermatogenesis in birds occur at

a. 4-5℃ less than body temperature b. At body temperature (41℃ - 42℃)

c. 4-5℃ more than body temperature d. Below body temperature

**124**.Nuclear material in female oocyte is present in which region

a. Germinal disc b. Blastopore

c. Germinal spot d. Blastula

**125**. Main site of sperm storage in birds is

a. Cloaca b. Uterovaginal junction

c. Phallus d. Ampullary – isthmic junction

**126**. Site of fertilization in birds is

a. Ampullary – isthmic junction b. Uterovaginal junction

c. Infundibulum d. Magnum

**127**. Longest part of oviduct in birds is

a. Infundibulum b. Magnum

c. Isthmus d. Uterus

**128**. Which of the following is also known as shell gland

a. Ovary b. Infundibulum

c. Uterus d. Vagina

**129**. Species in which specific number of eggs get matured and ovulated

a. Determinant species b. Indeterminant species

c. Discriminate species d. indiscriminate species

**130**. Act of egg laying in birds is known as

a. Ovulation b. Oviposition

c. Fertilization d. Evolution

**131**. Which of the following hormone is responsible for oviposition in birds

a. Prolactin b. Estrogen

c. Arginine – Vasotocin d. Vasopressin

**132**. Which of the following hormone is essential for broodiness in poultry

a. Arginine b. Prolactin

c. Estrogen d. LH

**133**. Hormone responsible for preovulatory LH surge in birds

a. GnRH b. Estrogen

c. Progesterone d. Inhibin

**134**. Preovulatory LH surge by progesterone in birds occurs

a. 4-6 hours before ovulation b.15 minutes before ovulation

c. 4-6 hours after ovulation d. 15 minutes after ovulation

**135**.Total time required for oviposition in birds is

a. 16-18 hours b. 24-26 hours

c. 18-20 hours d. 26-28 hours

**136**. Which of the following hormone is released by oocyte

a. GDF-9 b. BMP-15

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

**137**. In poultry, females are

a. Heterozygous with ZW chromosomes b. Homozygous with ZZ chromosomes

c. Heterozygous with XY chromosomes d. Homozygous with XX chromosomes

**138**. In poultry, photoreceptors are located in

a. Pituitary gland b. Hypothalamus

c. Pons d. Cerebrum

**139**. Inseminated sperms in chicken and turkey respectively remain fertile for how many days

a. 7-14, 40-50 b. 20-30, 50-100

c. 40-50, 100-150 d. 50-60, 150-200

**140**. In poultry, nonhierarchical follicles are known as

a. Black follicles b. White follicles

c. Blue follicles d. Green follicles

**141**. Which of the following gland is known as third eye

a. Pineal gland b. Thyroid gland

c. Pituitary gland d. Adrenal gland

**142**. Hormone secreted by pineal gland is

a. Melanin b. Melatonin

c. Thyroxine d. Epinephrine

**143**. Melatonin secretion is stimulated by

a. Darkness b. Light

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

**144**. How many hours birds must be exposed to light and darkness respectively each day to induces egg laying around the year

a. 14-15, 9-10 b. 15-30, 10-20

c. 30-40, 20-30 d. 40-50, 30-40

**145**. Circadian rhythm is regulated by

a. Thyroid gland b. Pineal gland

c. Pituitary gland d. Adrenal gland

**146**.The main form of vasopressin in birds is

a. Arginine vasopressin b. Lysine vasopressin

c. Vasotocin d. None of the above

**147**. Pain receptors are

a. Thermoreceptors b. Nociceptors

c. Proprioceptors d. Pacinian corpuscles

**148**. In poultry, ear ossicles are replaced by a structure

a. Columella b. Cochlea

c. Stereocilia d. Scala tympani

**149**. Cells abundant in retina of birds

a. Rods b. Cones

c. Ganglionic cells d. None of the above

**150**. Tibial dyschondroplasia is a leg disorder in

a. Broilers b. Layers

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

**ANSWERS**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1**  b | **2**  d | **3**  b | **4**  a | **5**  d | **6**  b | **7**  c | **8**  b | **9**  d | **10**  b |
| **11**  a | **12**  a | **13**  b | **14**  c | **15**  d | **16**  b | **17**  a | **18**  b | **19**  a | **20**  b |
| **21**  d | **22**  b | **23**  a | **24**  c | **25**  d | **26**  a | **27**  b | **28**  d | **29**  c | **30**  a |
| **31**  c | **32**  c | **33**  d | **34**  b | **35**  d | **36**  c | **37**  d | **38**  c | **39**  b | **40**  c |
| **41**  d | **42**  b | **43**  b | **44**  a | **45**  b | **46**  c | **47**  d | **48**  b | **49**  a | **50**  c |
| **51**  c | **52**  Fowl | **53**  Colon | **54**  Horse, Dog | **55**  Fowl | **56**  d | **57**  Urea | **58**  Fowl | **59**  Purine | **60**  Cloaca |
| **61**  a | **62**  c | **63**  a | **64**  b | **65**  c | **66**  a | **67**  d | **68**  a | **69**  b | **70**  d |
| **71**  d | **72**  d | **73**  a | **74**  c | **75**  d | **76**  c | **77**  a | **78**  d | **79**  a | **80**  c |
| **81**  d | **82**  a | **83**  b | **84**  d | **85**  c | **86**  d | **87**  c | **88**  a | **89**  c | **90**  d |
| **91**  d | **92**  a | **93**  **a** | **94**  a | **95**  b | **96**  a | **97**  b | **98**  a | **99**  a | **100**  c |
| **101**  d | **102**  a | **103**  c | **104**  a | **105**  d | **106**  a | **107**  a | **108**  a | **109**  d | **110**  d |
| **111**  a | **112**  b | **113**  a | **114**  b | **115**  c | **116**  a | **117**  b | **118**  a | **119**  d | **120**  a |
| **121**  a | **122**  c | **123**  b | **124**  a | **125**  b | **126**  c | **127**  b | **128**  c | **129**  a | **130**  b |
| **131**  c | **132**  b | **133**  c | **134**  a | **135**  b | **136**  c | **137**  a | **138**  b | **139**  a | **140**  b |
| **141**  a | **142**  b | **143**  a | **144**  a | **145**  b | **146**  c | **147**  b | **148**  a | **149**  b | **150**  a |