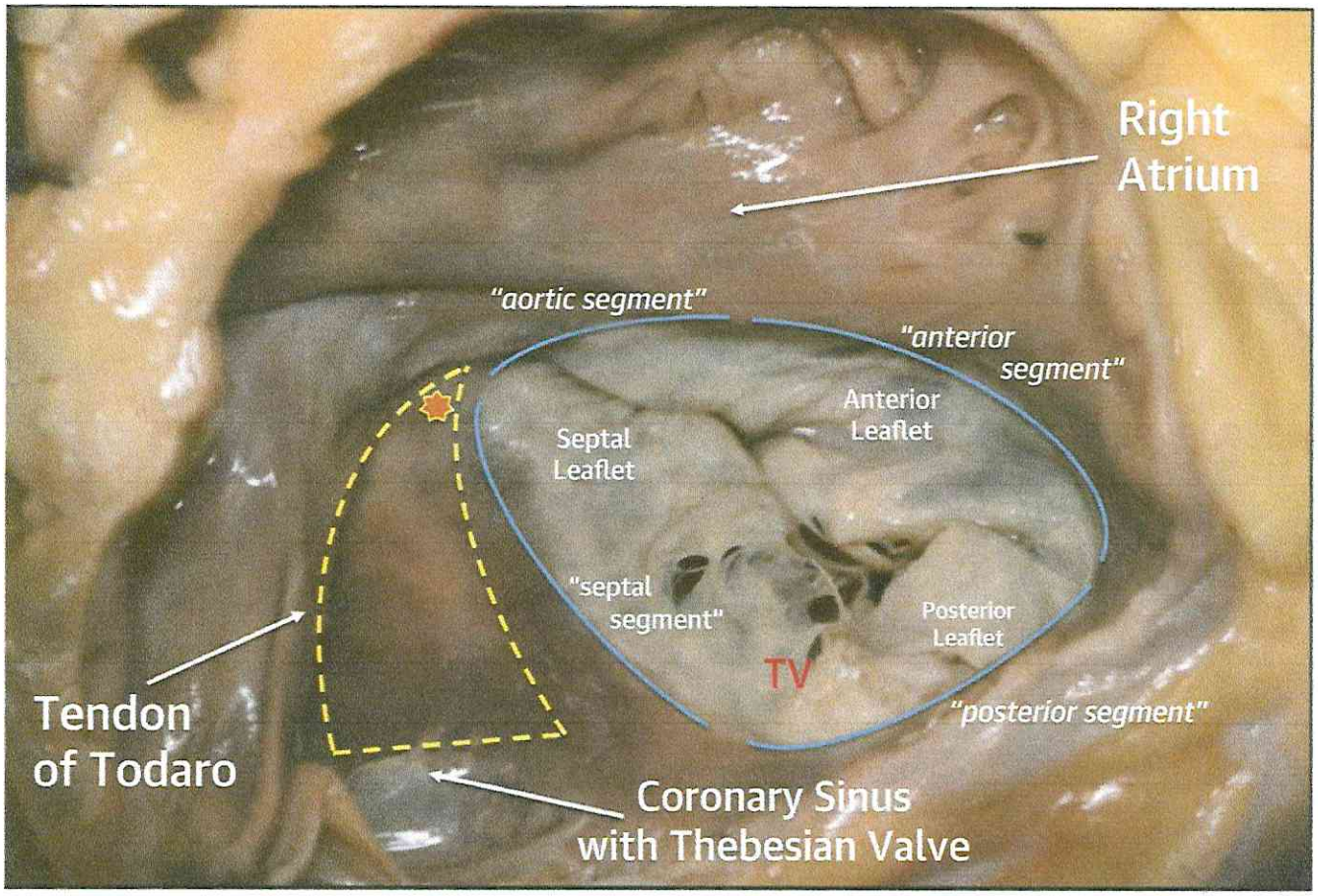
BASIC AND APPLIED HUMAN ANATOMY AND DEVELOPMENT

Unveiling Doctor Mukape's Mind



- WITH MCQS FROM VARIOUS PAST PAPERS
- SCENARIO'S
- HIGH YIELD DIAGRAMS

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DEVELOPMENTAL ANATOMY

1. **The anatomist who published the famous and influential book titled De Humani Carporis Fabrica Libri Septem is:**
    A. Aristotle
    B. Hippocrates of Kos
    C. Andreas Vesalius
    D. Claudius Galen
2. **The book in Question 1 above was published in which year?**
    A. 1443
    B. 1543
    C. 1643
    D. 1743
3. **Regarding the balanced chromosomal reciprocal translocation carrier, there is:**
    A. Abnormal number of chromosomes
    B. Normal amount of genetic material
    C. Normal arrangement of genetic material
    D. Decreased risk of reproductive loss e.g miscarriages
4. **In meiosis:**
    A. Crossover occurs during prophase of second meiotic division
    B. X and Y chromosomes undergo end-to-end synapsis between their short arms
    C. Non-disjunction produces euploid gametes
    D. Replication of DNA occurs during prophase 1
5. **The first meiotic division of the primary oocyte:**
    A. Results in two cells with haploid number of chromosomes
    B. Results in two secondary oocytes
    C. Is completed after fertilization
    D. Is always followed by second meiotic division
6. **How many Barr bodies are in Triple X syndrome(XXX)**
    A. 1
    B. 2
    C. 3
    D. 4
7. **Aneuploidy include the following EXCEPT:**
    A. Turner syndrome
    B. Edward syndrome
    C. Lesch-Nyhan syndrome
    D. Patau's syndrome
8. **The most common cause of miscarriages is:**
    A. Chromosomal defects
    B. Congenital infections
    C. Uterine anomalies
    D. Maternal medical conditions

9. **In organogenesis:**
    A. Neural tube develops on the ventral surface of the embryo
    B. Vitellointestinal duct may persist as Meckel's diverticulum
    C. Paraxial mesoderm divides into splanchnopleure and somatopleure
    D. Buccopharyngeal membrane of the stomatodeum breaks down at the 6th week of life
10. **Which of the following structures is believed to be a primary organizer or inducer during organogenesis?**
    A. Notochord
    B. Somites
    C. Metanephric blastema
    D. Lens placode
11. **Which statement about the cell cycle is TRUE?**
    A. G1 phase, cells rest
    B. M phase, organelles mature
    C. G0 phase, DNA is duplicated
    D. G2 phase, karyokinesis occurs
12. **About the anterior fontanelle (AF):**
    A. A bulging AF may indicate increased intracranial pressure
    B. In hydrocephalus, closure of the AF is usually at 18 months
    C. Is triangular in shape
    D. After closure, the site is called lambda
13. **Newborn vs adult skull:**
    A. Paranasal air sinuses are rudimentary in the adult skull
    B. Posterior fontanelle closes at 2-3 months
    C. Coronal suture separates the two parietal bones from the occipital bone
    D. Metopic suture splits occipital bone
14. **The following is not a cyanotic congenital heart disease?**
    A. Tetralogy of Fallot
    B. Persistent ductus arteriosus
    C. Transposition of Great Vessels
    D. Persistent truncus arteriosus
15. **The human oocyte:**
    A. Commences it's meiotic division at the age of puberty
    B. At ovulation is smaller than the human sperm
    C. Contains a haploid number of chromosomes as a primary oocyte
    D. Is connected to the surrounding granulosa cells by microvilli
16. **The amniotic cavity develops:**
    A. On the tenth day
    B. Within the outer cell mass
    C. Within inner cell mass near cytotrophoblast
    D. In extraembryonic mesoderm

17. The decidua over the abembryonic pole is called?

- **A.** Decidua basalis
- **B.** Decidua parietalis
- **C.** Decidua vera
- **D.** Decidua capsularis

18. During development, the notochordal process:

- A. Arises from involuting endodermal cells
- B. Extends from prochordal plate to primitive node
- C. Is involved in the induction of the primitive gut
- D. Becomes the appendicular skeleton

19. Ovarian follicle:

- A. At the beginning of a normal menstrual cycle, 5-10 follicles become gonadotrophin-dependent and commence rapid growth
- B. Primordial follicles may stay in first meiotic prophase for up to 50 years
- C. Peripheral cells have more follicle stimulating hormone (FSH) receptors
- D. Cells of the theca externa of the follicle are the primary source of oestrogen

20. The corpus luteum:

- A. Due to the effect of follicle-stimulating hormone (FSH) shortly after ovulation, the ruptured follicle will change to become the corpus luteum
- B. If pregnancy does not occur, the corpus luteum degenerates approximately 4 days before the next menses
- C. Luteinization is a process in which fluid rich in carotene is deposited within the cytoplasm of granulosa and theca interna cells, giving the characteristic whitish colour
- D. Mainly produces oestrogen

21. The blastocele becomes the:

- A. Primary yolk sac
- B. Amniotic cavity
- C. Extraembryonic coelom
- D. Chorionic cavity

22. Synapsis occurs in which phase of prophase 1 of meiosis?

- A. Pachytene
- B. Diplotene
- C. Zygotene
- D. Leptotene

23. Regarding primordial germ cells:

- A. Develop from surface epithelium of the gonad
- B. Reach the developing gonad by 7th week
- C. Have an inductive influence in the development of gonads
- D. Are haploid cells

24. Almost all of the internal organs are well laid down at_____ months

- A. 4 weeks
- B. 8 weeks
- C. 12 weeks

D. 16 weeks

25. Chromosomal translocations are common for the following chromosomes except:

A. Chromosome 20
B. Chromosome 22
C. Chromosome 14
D. Chromosome 15

26. The following cells are diploid except:

A. Primary oocytes
B. Type B spermatogonia
C. Secondary spermatocytes
D. Oogonia

27. In cell division of somatic cells:

A. During interphase the Y body may be seen
B. During the G1 stage replication takes place
C. Metaphase occurs after anaphase
D. The G1 stage occurs after the S stage

28. In meiosis:

A. The first division results in diploid cells
B. During zygotene bivalents are formed
C. During pachytene the bivalents contains two strands
D. Terminalization of the chiasmata occurs during pachytene

29. In spermatogenesis:

A. Four spermatocytes are produced from one spermatid
B. The process occurs continuously from birth
C. A spermatozoon is produced in two months
D. Spermatogonia line the basal lamina of the epididymis

30. After folding of the head region, the structure lying just caudal to the pericardial cavity is the:

A. Developing heart
B. Connecting stalk
C. Liver
D. Septum transversum

31. The following is correct regarding recurrent laryngeal nerves:

A. Left branch is more vulnerable to damage
B. Branch off from superior laryngeal nerves
C. Right branch crosses the aortic arch
D. Left branch hooks on the subclavian artery

32. In spermiogenesis:

A. Nuclear material forms the acrosomal cap
B. Mitochondria form a sheath for the neck of the spermatozoon
C. The axial filaments derives from the centriole
D. Spermatozoa may remain linked at cytoplasmic bridges

33. In oogenesis:

A. Early development of primitive germ cells in ovary during intrauterine life is meiotic
B. Primary oocytes are formed after 37 weeks of gestation
C. Division of the secondary oocyte occurs at the time of ovulation
D. Maximum total number of oocytes occur around the 20th week of intra-uterine life

34. In fertilization:

A. Acrosome reaction precedes capacitation
B. The ovum reaches the uterus within 24h
C. After penetration cortical granules appear around perimeter of egg
D. First division of the ovum occurs 6 h after fertilization

35. In early development and implantation:

A. Zygote is a multipotential cell
B. Morula is contained within the blastocyst
C. Embryo forms from inner cells
D. Blastocyst implants about 10 days after fertilization

36. Which of the following are components of the definitive chorion?

A. Extraembryonic somatic mesoderm and cytotrophoblast
B. Extraembryonic somatic mesoderm and syncytiotrophoblast
C. Extraembryonic somatic mesoderm, cytotrophoblast, and syncytiotrophoblast
D. Extraembryonic visceral mesoderm, cytotrophoblast, and syncytiotrophoblast

37. Extraembryonic mesoderm is found between which two layers?

A. Syncytiotrophoblast and cytotrophoblast
B. Syncytiotrophoblast and endometrium
C. Exocoelomic membrane and syncytiotrophoblast
D. Exocoelomic membrane and cytotrophoblast

38. Which of the following structures degenerate during 'hatching' ?

A. Endometrium in progestational phase
B. Zona Pellucida
C. Syncytiotrophoblast
D. Cytotrophoblast

39. The notochord is replaced by the:

A. Spinal cord
B. Nucleus pulposus
C. Spinal canal
D. Dorsal roots

40. The following has a dual origin of germ layers except:

A. Pituitary gland
B. Thymus
C. Pancreas
D. Adrenal glands

41. Intermediate mesoderm will give rise to the

A. Neural tube
B. Heart
C. Kidneys and gonads
D. Vertebral column

42. Concerning the luteal phase of the menstrual cycle within the ovary:

A. Is characterized by production of progesterone from the corpus albicans
B. The ovum from the Graffian follicle is within the ovary
C. The corpus luteum converts to corpus albicans within 1 week
D. Beta-hCG is needed for survival of corpus luteum

43. Concerning the notochord

A. It develops from the mesoderm
B. It is an acellular structure
C. It's remnants is the annulus fibrosus
D. It is an extension of the primitive streak

44. Cardiac precursor cells form from which layer?

A. Hypoblast
B. Ectoderm
C. Epiblast
D. Endoderm

45. The transverse pericardial sinus forms from the breaking away of?

A. Somites
B. Notochord
C. Axial Mesentery
D. Dorsal mesentery

46. On which day does the heart start to beat?

A. 22
B. 24
C. 26
D. 28

47. What structure does the proximal third of the bulbus cordis become?

A. Right ventricle
B. Left ventricle
C. Ventricular outflow tracts
D. Aorta & pulmonary artery

48. What structure does the middle third (conus cordis) of the bulbus cordis become?

A. Right ventricle
B. Left ventricle
C. Ventricular outflow tracts
D. Aorta & pulmonary artery

49. What structure does the distal third (truncus arteriosus) of the bulbus cordis become?

A. Right ventricle
B. Left ventricle

C. Ventricular outflow tracts
D. Aorta & pulmonary artery

50. What major structure is formed by the sinus Venosus?

A. Left ventricle
B. Right ventricle
C. Left Atrium
D. Right Atrium

51. Where is the ostium primum formed ?

A. Between right and left ventricles
B. Between right and left atria
C. Between right atrium and ventricle
D. Between left atrium and ventricle

52. Which of the following is NOT associated with an Atrial Septal Defect?

A. Persistent ostium secundum
B. Endocardial cushion defect
C. Probe patency
D. Transposition of the Great Vessels

53. Which of the following is NOT associated with Tetralogy of Fallot?

A. Pulmonary stenosis
B. Pulmonary atresia
C. Ventricular septal defect
D. Right ventricular hypertrophy

54. The septum transversum separates the thoracic and abdominal cavities and is initially_____?

A. For communication
B. Incomplete
C. Complete
D. On the same side as cervical somites

55. The dorsal mesentery runs the entire length of the gut tube. Which of the following structures is a derivative of this mesentery and NOT attached to the liver?

A. Greater omentum
B. Falciform ligament
C. Lesser omentum
D. Spleen

56. The ventral mesentery is associated with the foregut. Which of the following structures is NOT a derivative of this mesentery and is attached to the liver?

A. Lesser omentum
B. Falciform ligament
C. Coronary ligaments
D. Right and left triangular ligaments

57. **As the stomach rotates to the left, the_____ is formed within the greater omentum. The epiploic foramen of Winslow is the communication from this space to the greater sac (peritoneal cavity)**
    A. Lesser omentum
    B. Omental bursa
    C. Cardiac foramen
    D. Falciform
58. **A newborn baby presents with fluid drainage from the umbilicus onto the skin. Testing of the fluid identifies it as urine. What is the most likely diagnosis?**
    A. Urachal cyst
    B. Urachal fistula
    C. Exstrophy of the bladder
    D. Horseshoe kidney
59. **Which of the following does not contribute in the formation of the skeletal system?**
    A. Parietal layer of lateral plate mesoderm
    B. Visceral layer of lateral plate mesoderm
    C. Paraxial mesoderm
    D. Neural crest cells
60. **When the cranium fails to form, the condition is known as?**
    A. Cranioschisis
    B. Craniosynostosis
    C. Achondroplasia
    D. Brachycephaly
61. **Which of the following statements about muscle tissue development is false?**
    A. All muscle develop from the mesoderm
    B. Smooth muscles develop from lateral plate mesoderm
    C. Cardiac muscles develop from the visceral layer of lateral plate mesoderm
    D. Some smooth muscles develop from neural crest cells
62. **The anterior fontanelle is usually closed by**
    A. Age 6 months
    B. Age 18 months
    C. Age 2 months
    D. Age 5 months
63. **During ultrasound examination, numerous fractures of the long bones of the fetus are observed. This condition is called_____**
    A. Achondroplasia
    B. Osteogenesis imperfecta
    C. Cretinism
    D. Acromegaly

64. The extrinsic eye muscles develop from which of the following?

A. Cervical somites
B. Epimere
C. Hypomere
D. Preotic somites

65. The biceps brachii muscle develops from which of the following?

A. Hypomere
B. Epimere
C. Anterior condensation
D. Posterior condensation

66. The biceps femoris muscle develops from which of the following?

A. Hypomere
B. Epimere
C. Anterior condensation
D. Posterior condensation

67. The ventral cells of the fourth pharyngeal pouch form the ultimobranchial body which forms?

A. Follicular cells of the thyroid gland
B. Para follicular cells of the thyroid gland
C. Superior parathyroid gland
D. Inferior parathyroid gland

68. Which of the following terms best describe the condition of shortness of the digits (fingers or toes) in terms of length?

A. Syndactyly
B. Brachydactyly
C. Meromelia
D. Polydactyly

69. Which of the following terms best defines the condition of webbing between the digits?

A. Brachydactyly
B. Polydactyly
C. Syndactyly
D. Talipes equinovarus

70. The condition in which there is prenatal closure of sagittal suture is known as?

A. Craniosynostosis
B. Scaphocephaly
C. Brachycephaly
D. Trygocephaly

71. Hyperthyroidism in infants may cause over enlargement of soft tissues, visceral organs, bones of the face, hands and feet. This condition is called?

A. Gigantism
B. Acromegaly
C. Cretinism
D. Hashimoto disease

72. The following embryonic tissues contribute to the development of the diaphragm except?

A. Septum transversum
B. Pleuriperitoneal membranes
C. Ventral mesentery of the esophagus
D. Muscular ingrowth from lateral body walls

73. The following organs are retroperitoneal EXCEPT?

A. Pancreas
B. Spleen
C. Ascending colon
D. Kidney

74. Ligamentum teres is a remnant of?

A. Lesser oomentum
B. Ductus venosum
C. Left umbilical vein
D. Left umbilical artery

75. Which of the following statements about the cell is correct?

A. A human cell has all it's organelles membrane bound
B. Peripheral proteins attach to the surface of the membrane
C. Polar heads of the phospholipids regulate membrane fluidity
D. Glycocalyx are oligosaccharide chains attached to proteins and lipids

76. Which of the following structures is not bound by a membrane?

A. Proteasomes
B. Cell
C. Mitochondria
D. Nucleus

77. Which of the following chromosome compositions in a sperm normally results in the production of a genetic female if fertilization occurs?

A. 23 homologous pairs of chromosomes
B. 22 homologous pairs of chromosomes
C. 22 autosomes plus an X chromosome
D. 23 autosomes plus a Y chromosome

78. The secondary oocyte remains arrested in_____ till fertilization occur.

A. Prophase
B. Metaphase
C. Anaphase
D. Telophase

79. _____separates trophoblast from amniotic cavity and yolk sac

A. Extra embryonic mesoderm
B. Intra embryonic mesoderm
C. Extra embryonic coelom
D. Intra embryonic coelom

80. The trophoblast and underlying somatopleuric mesoderm forms a membrane called_____

A. Amnion
B. Chorion
C. Cloacal membrane
D. Buccopharyngeal membrane

81. Extraembryonic mesoderm is found between which two layers?

A. Syncytiotrophoblast and cytotrophoblast
B. Syncytiotrophoblast and endometrium
C. Exocoelomic membrane and syncytiotrophoblast
D. Exocoelomic membrane and cytotrophoblast

82. The lateral mesoderm is divided into two distinct layers by the formation of the

A. Chorionic cavity
B. Intra embryonic coelom
C. Amniotic sac
D. Yolk sac

83. Cloacal membrane is made up of which of the following?

A. Ectoderm and mesoderm
B. Mesoderm and endoderm
C. Ectoderm and endoderm
D. Ectoderm, mesoderm and endoderm

84. Septum transversum is made up of which of the following?

A. Intra embryonic mesoderm
B. Extra embryonic mesoderm
C. Intra embryonic coelom
D. Extra embryonic coelom

85. Sclerotome helps to form which one of the following structures?

A. Dermis of skin
B. Skeletal muscle
C. Vertebrae column and ribs
D. Pericardium and heart

86. _____undergo division to form dermatome, myotome, sclerotome

A. Somites
B. Extra embryonic mesoderm
C. Intra embryonic mesoderm
D. Embryonic disc

87. Occipital myotome gives rise to

A. Muscle of the tongue
B. Muscle of pharynx
C. Muscle of larynx
D. Muscle of soft palate

88. **Development of the placental membrane consists of all the following except;**
    A. Syncytiotrophoblast
    B. Embryonic connective tissue
    C. Cytotrophoblast
    D. Placental cotyledons
89. **During labour, what membrane raptures?**
    A. Amniochorionic
    B. Amnion
    C. Chorionic
    D. Decidua capsularis
90. **The condition shown below is a result of:**

Sacrococcygeal teratoma

    A. Enlarged terminal part of the spinal cord
    B. Persistent notochord
    C. Hypertrophy of gluteal muscles
    D. Persistent primitive streak

91. Meckel's cartilage is the cartilage of_____

A. 2nd arch
B. 1st arch
C. 3rd arch
D. 4th arch

92. Where is the inferior parathyroid gland derived from?

A. 1st pharyngeal pouch
B. 2nd pharyngeal pouch
C. 3rd pharyngeal pouch
D. 4th pharyngeal pouch

93. Hypobranchial eminence is related to which one of the following?

A. 1st and 2nd arch
B. 3rd and 4th arch
C. 5th and 6th arch
D. 2nd and 3rd arch

94. Which one of the following is the structure formed from the truncus arteriosus?

A. Descending aorta
B. Ascending aorta
C. Arch of aorta
D. Thoracic aorta

95. Which of the following is the structure derived from 3rd arch artery?

A. Subclavian artery
B. Common carotid artery
C. Pulmonary artery
D. Artery of gut

96. A physician monitoring a newborn's infants heart sounds using a stethoscope hears the characteristic murmur of a patent ductus arteriosus. How soon after birth should this murmur normally disappear?

A. 1-2 months
B. 1-2 weeks
C. 1-2 days
D. 1-2 hours

97. Tetralogy of Fallot is a cardiac malformation that involves which of the following septal?

A. Aorticopulmonary septum
B. Atrial septum
C. Atrioventricular septum
D. Interventricular septum

98. The anterior and posterior neuropores close during which week of embryonic development?

A. Week 3
B. Week 4
C. Week 5
D. Week 6

99. Pancreatic islets consists of alpha, beta, and delta cells, which secrete glucagon, insulin, and somatostatin, respectively. These cells are derived from

A. Mesoderm
B. Endoderm
C. Ectoderm
D. Neuroectoderm

100. Which of the following arteries supplies foregut derivatives of the digestive system?

A. Celiac trunk
B. Superior mesenteric artery
C. Inferior mesenteric artery
D. Right umbilical artery

101. The respiratory diverticulum initially is in open communication with the primitive foregut. Which of the following embryonic structures is responsible for separating these two structures?

A. Laryngotracheal groove
B. Posterior esophageal folds
C. Laryngotracheal diverticulum
D. Tracheoesophageal septum

102. Development of which one of the following is the first sign of respiratory system development?

A. Tracheoesophageal septum
B. Primitive foregut
C. Tracheoesophageal fistula
D. Respiratory diverticulum

103. What artery prevents the horse shoe kidney (metanephric mesodermal fusion) from ascending high into the abdomen

A. Coeliac trunk
B. Inferior mesenteric artery
C. Left renal artery
D. Right renal artery

104. From what type of tissue is the urogenital sinus made?

A. Muscle
B. Nerve
C. Connective
D. Epithelial

105. Which one of the following is a major characteristic of meiosis I?

A. Splitting of the centromere
B. Pairing of homologous chromosomes
C. Reducing the amount of DNA to 1N
D. Achieving the diploid number of chromosomes

106. A normal somatic cell contains a total of 46 chromosomes. What is the normal complement of chromosomes found is a sperm?

A. 22 autosomes plus a sex chromosome
B. 23 autosomes plus a sex chromosome
C. 22 autosomes
D. 23 autosomes

107. Which of the following describes the number of chromosomes and amount of DNA in a gamete?

A. 46 chromosomes, 1N
B. 46 chromosomes, 2N
C. 23 chromosomes, 1N
D. 23 chromosomes, 4N

108. In the process of meiosis, DNA replication of each chromosome occurs thereby forming a structure consisting of two sister chromatids attached to a single centromere. What is this structure?

A. A duplicated chromosome
B. Two chromosomes
C. A synapsed chromosome
D. A homologous pair

109. All primary oocytes are formed by_____

A. Week 4 of embryonic life
B. Month 5 of fetal life
C. Birth
D. Month 5 of infancy

110. When does formation of primary spermatocytes begin?

A. During week 4 of embryonic life
B. During month 5 of fetal life
C. At puberty
D. At birth
E. During month 5 of infancy

111. In the production of female gametes, which of the following cells can remain dormant for 12 to 40 years?

A. Primordial germ cell
B. Primary oocyte
C. Secondary oocyte
D. First polar body
E. Second polar body

112. In the production of male gametes, which of the following cells remains dormant for 12 years?

A. Primordial germ cell
B. Primary spermatocyte
C. Secondary spermatocyte
D. Spermatid
E. Sperm

113. A young woman enters puberty with approximately 40,000 primary oocytes in her ovary. About how many of these oocytes will be ovulated over the entire reproductive life of the woman?

A. 40,000
B. 35,000
C. 480
D. 48
E. 12

114. Fetal sex can be diagnosed by noting the presence or absence of the Barr body in cells obtained from the amniotic fluid. What is the etiology of the Barr body?

A. Inactivation of both X chromosomes
B. Inactivation of homologous chromosomes
C. Inactivation of one Y chromosomes
D. Inactivation of one X chromosome
E. Inactivation of one chromatid

115. How much DNA does a primary spermatocyte contain?

A. 1N
B. 2N
C. 4N
D. 6N
E. 8N

116. During meiosis, pairing of homologous chromosomes occurs, which permits large segments of DNA to be exchanged. What is this process called?

A. Synapsis
B. Nondisjunction
C. Crossing over
D. Alignment
E. Disjunction

117. A 20-year old woman presents at the emergency department with severe abdominal pain on the right side with signs of internal bleeding. She indicated that she has been sexually active without contraception and missed her last menstrual period. Based on this information, which of the following disorders must be included as an option in the diagnosis?

A. Ovarian cancer
B. Appendicitis
C. Normal pregnancy
D. Ectopic tubal pregnancy
E. Toxemia

118. When does a secondary oocyte complete it's second meiotic division to become a mature ovum?

A. At ovulation
B. Before ovulation
C. At fertilization
D. At puberty
E. Before birth

119. How soon after fertilization occurs within the uterine tube does the blastocyst begin implantation?

A. Within minutes
B. By 12 hours
C. By day 1
D. By day 2
E. By day 7

120. Where does the blastocyst normally implant?

A. Functional layer of the cervix
B. Functional layer of the endometrium
C. Basal layer of the endometrium
D. Myometrium
E. Perimetrium

121. Which of the following events is involved in cleavage of the zygote during week 1 of development?

A. A series of meiotic divisions forming blastomeres
B. Production of highly differentiated blastomeres
C. An increased cytoplasmic content of blastomeres
D. An increase in size of blastomeres
E. A decrease in size of blastomeres

122. Which of the following structures must degenerate for blastocyst to occur?

A. Endometrium in progestational phase
B. Zona Pellucida
C. Syncytiotrophoblast
D. Cytotrophoblast
E. Functional layer of the endometrium

123. **Which of the following is the origin of the mitochondrial DNA of all human adult cells?**
    A. Paternal only
    B. Maternal only
    C. Combination of paternal and maternal
    D. Either paternal or maternal
    E. Unknown origin

124. **Individual blastomeres were isolated from blastula at the 4-cell stage. Each blastomere was cultured in vitro to the blastocyst stage and individually implanted into four pseudopregnant foster mothers. Which of the following would you expect to observe 9 months later?**
    A. Birth of one baby
    B. Birth of four genetically different babies
    C. Birth of four genetically identical babies
    D. Birth of four grotesquely deformed babies
    E. No births

125. **Embryonic carsinoma (EC) cells were isolated from a yellow-coated mouse with a teratocarcinoma. The EC cells were then micro injected into the inner cell mass of a blastocyst isolated from a black-coated foster mouse. The blastocyst was subsequently implanted into the uterus of a white-coated foster mouse. Which of the following would be observed after full term pregnancy?**
    A. A yellow-coated offspring
    B. A black-coated offspring
    C. A white-coated offspring
    D. A yellow-and black-coated offspring
    E. A yellow- and white-coated offspring

126. **Which of the following components plays the most active role in invading the endometrium during blastocyst implantation?**
    A. Epiblast
    B. Syncytiotrophoblast
    C. Hypoblast
    D. Extraembryonic somatic mesoderm
    E. Extraembryonic visceral mesoderm

127. **Between which two layers is the extraembryonic mesoderm located?**
    A. Epiblast and hypoblast
    B. Syncytiotrophoblast and cytotrophoblast
    C. Syncytiotrophoblast and endometrium
    D. Exocoelomic membrane and syncytiotrophoblast
    E. Exocoelomic membrane and cytotrophoblast

128. **During week 2 of development, the embryoblast receives it's nutrients via**
    A. Diffusion
    B. Osmosis
    C. Reverse osmosis
    D. Fetal capillaries
    E. Yolk sac nourishment

129. Which of the following are components of the definitive chorion?

A. Extraembryonic somatic mesoderm and epiblast
B. Extraembryonic somatic mesoderm and cytotrophoblast
C. Extraembryonic somatic mesoderm and syncytiotrophoblast
D. Extraembryonic somatic mesoderm, cytotrophoblast, and syncytiotrophoblast
E. Extraembryonic visceral mesoderm, cytotrophoblast, and syncytiotrophoblast

130. A 16-year-old girl presents on May 10 in obvious emotional distress. On questioning, she relates that on May 1 she experienced sexual intercourse for the first time, without any means of birth control. Most of her anxiety stems from her fear of pregnancy. What should the physician do to alleviate her fear?

A. Prescribe diazepam and wait to see if she misses her next menstrual period
B. Use ultrasonography to document pregnancy
C. Order a laboratory assay for serum hCG
D. Order a laboratory assay for serum progesterone
E. Prescribe diethylstilbestrol ("morning after pill")

131. Carcinoembryonic antigen (CEA) is an oncofetal antigen that is generally associated with which one of the following tumors?

A. Hepatoma
B. Germ cell tumor
C. Squamous cell carcinoma
D. Colorectal carcinoma
E. Teratocarcinoma

132. A 42-year-old woman presents with complaints of severe headaches, blurred vision, slurred speech, and loss of muscle coordination. Her last pregnancy 5 years ago resulted in a hydatidiform mole. Laboratory results show a high hCG level. Which of the following conditions is a probable diagnosis?

A. Vasa previa
B. Placenta previa
C. Succenturiate placenta
D. Choriocarcinoma
E. Membranous placenta

133. Which germ layers are present at the end of week 3 of development (day 21)?

A. Epiblast only
B. Epiblast and hypoblast
C. Ectoderm and endoderm
D. Ectoderm, mesoderm and endoderm
E. Epiblast, mesoderm, and hypoblast

134. Which process establishes the three definitive germ layers?

A. Neurulation
B. Gastrulation
C. Craniocaudal folding
D. Lateral folding
E. Angiogenesis

135. The first indication of gastrulation in the embryo is

A. Formation of the primitive streak
B. Formation of the notochord
C. Formation of the neural tube
D. Formation of extraembryonic mesoderm
E. Formation of tertiary chorionic villi

136. Somites may differentiate into which of the following?

A. Urogenital ridge
B. Kidneys
C. Notochord
D. Epimeric and hypomeric muscles
E. Epithelial lining of the GI tract

137. Intermediate mesoderm gives rise to the

A. Neural tube
B. Heart
C. Kidneys and gonads
D. Somites
E. Notochord

138. The developing embryo has a distinct human appearance by the end of_____

A. Week 4
B. Week 5
C. Week 6
D. Week 7
E. Week 8

139. The lateral mesoderm is divided into two distinct layers by the formation of the_____

A. Extraembryonic coelom
B. Intra embryonic coelom
C. Cardiogenic region
D. Notochord
E. Yolk sac

140. Very often the first indication that a woman has that she is pregnant is a missed menstrual period. In which week of embryonic development does a woman experience her first missed menstrual period?

A. Start of week 3
B. Start of week 4
C. Start of week 5
D. Start of week 8
E. End of week 8

141. A female newborn was found to have a large midline tumor in the lower sacral area, which was diagnosed as a sacrococcygeal tumor. Which of the following courses of treatment is recommended for this child?

A. Immediate chemotherapy and radiation treatment
B. Surgical removal of the tumor by age 6 months

C. Surgical removal of the tumor at age 4-5 years
D. Surgical removal of the tumor at age 13-15 years
E. No treatment because this tumor normally regresses with age

142. The left recurrent laryngeal nerve recurs around the

A. Left primary bronchus
B. Left subclavian artery
C. Left subclavian vein
D. Ductus arteriosus
E. Left common carotid artery

143. Which of the following primary germ layers forms the histological definitive endocardium of the adult heart?

A. Ectoderm
B. Endoderm
C. Mesoderm
D. Epiblast
E. Hypoblast

144. The hepatic sinusoids that can be observed histologically in an adult liver are derived from the

A. Supracardinal veins
B. Anterior Cardinal veins
C. Posterior Cardinal veins
D. Vitelline veins
E. Subcardinal veins

145. Which of the following arterial malformations is very common in premature infants?

A. Patent ductus arteriosus
B. Coarctation of the aorta
C. Right aortic arch
D. Double aortic arch
E. Abnormal origin of the right subclavian artery

146. How soon after birth does the foramen ovale close?

A. 1-2 months
B. 1-2 weeks
C. 1-2 days
D. 1-2 hours
E. Immediately

147. A 9-year-old boy presents with complaints of numbness and tangling in both feet. Examination reveals no pulse in the femoral artery, increased blood pressure in the arteries of the upper extremity, and enlarged intercostal veins, which of the following abnormalities would be suspected?

A. Double aortic arch
B. Tetralogy of Fallot
C. Post ductal coarctation of the aorta

D. Right aortic arch
E. Abnormal origin of the right subclavian artery

148. The coronary sinus is derived from which of the following?

A. Truncus arteriosus
B. Bulbus cordis
C. Primitive ventricle
D. Primitive atrium
E. Sinus venosus

149. The conus arteriosus is derived from which of the following?

A. Truncus arteriosus
B. Bulbus cordis
C. Primitive ventricle
D. Primitive atrium
E. Sinus venosus

150. The proximal part of the aorta is derived from which of the following?

A. Truncus arteriosus
B. Bulbus cordis
C. Primitive ventricle
D. Primitive atrium
E. Sinus venosus

151. The trabeculated part of the right ventricle is derived from which of the following?

A. Truncus arteriosus
B. Bulbus cordis
C. Primitive ventricle
D. Primitive atrium
E. Sinus venosus

152. Tricuspid atresia is a cardiac malformation that involves which of the following septa?

A. Aorticopulmonary septum
B. Atrial septum
C. Atrioventricular septum
D. Interventricular septum

153. A muscular VSD is a cardiac malformation that involves which of the following septa?

A. Aorticopulmonary septum
B. Atrial septum
C. Atrioventricular septum
D. Interventricular septum

154. Tetralogy of Fallot is a cardiac malformation that involves which of the following septa?

A. Aorticopulmonary septum
B. Atrial septum
C. Atrioventricular septum
D. Interventricular septum

155. D-Transposition of the great arteries is a cardiac malformation that involves which of the following septa?

A. Aorticopulmonary septum
B. Atrial septum
C. Atrioventricular septum
D. Interventricular septum

156. An insufficient amount of AV cushion material will result in which of the following?

A. Persistent truncus arteriosus
B. Ebstein's anomaly
C. Transposition of the great arteries
D. Common ventricle
E. Tricuspid atresia

157. Partial development of the AP septum results in which of the following?

A. Persistent truncus arteriosus
B. Ebstein's anomaly
C. Transposition of the great arteries
D. Common ventricle
E. Tricuspid atresia

158. A failure of the tricuspid leaflets to attach to the annulus fibrosus results in which of the following?

A. Persistent truncus arteriosus
B. Ebstein's anomaly
C. Transposition of the great arteries
D. Common ventricle
E. Tricuspid atresia

159. A faulty fusion of the right and left bulbar ridges and AV cushion results in which of the following?

A. Persistent truncus arteriosus
B. Ebstein's anomaly
C. Transposition of the great arteries
D. Common ventricle
E. Membranous VSD

160. The proximal part of the internal carotid artery is derived from which of the following?

A. Aortic arch 1
B. Aortic arch 2
C. Aortic arch 3
D. Aortic arch 4
E. Aortic arch 6

161. A portion of the arch of the aorta is derived from which of the following?

A. Aortic arch 1
B. Aortic arch 2
C. Aortic arch 3
D. Aortic arch 4

E. Aortic arch 6

162. The proximal part of the right subclavian artery is derived from which of the following?

A. Aortic arch 1
B. Aortic arch 2
C. Aortic arch 3
D. Aortic arch 4
E. Aortic arch 6

163. The portal vein is derived from which of the following?

A. Vitelline veins
B. Umbilical veins
C. Anterior Cardinal veins
D. Posterior Cardinal veins
E. Subclavian veins

164. The renal veins are derived from which of the following?

A. Vitelline veins
B. Umbilical veins
C. Anterior Cardinal veins
D. Posterior Cardinal veins
E. Subcardinal veins

165. During the later stages of pregnancy, maternal blood is separated from fetal blood by

A. Syncytiotrophoblast only
B. Cytotrophoblast only
C. Syncytiotrophoblast and cytotrophoblast
D. Syncytiotrophoblast and fetal endothelium
E. Cytotrophoblast and fetal endothelium

166. The intervillous space of the placenta contains

A. Maternal blood
B. Fetal blood
C. Maternal and fetal blood
D. Amniotic fluid
E. Maternal blood and amniotic fluid

167. A young insulin-dependent diabetic woman in her first pregnancy is concerned that her daily injection of insulin will cause a congenital malformation in her baby. What should the physician tell her?

A. Insulin is highly teratogenic; discontinue treatment
B. Insulin does not cross the placental membrane
C. Insulin crosses the placental membrane but is degraded rapidly
D. Insulin will benefit her baby by increasing glucose metabolism
E. Insulin crosses the placental membrane but is not teratogenic

168. What is a normal amount of amniotic fluid at term?

- **A.** 50mL
- **B.** 500mL
- **C.** 1000mL
- **D.** 1500mL
- **E.** 2000mL

169. Which of the following best describes the placental components of dizygotic twins?

- **A.** One placenta, two amniotic sacs, one chorion
- **B.** One placenta, two amniotic sacs, two chorions
- **C.** Two placetas, two amniotic sacs, one chorion
- **D.** Two placetas, two amniotic sacs, two chorions
- **E.** One placenta, two amniotic sacs, two chorions

170. A 26-year old pregnant woman experiences repeated episodes of bright red vaginal bleeding at week 28, week 32, and week 34 of pregnancy. The bleeding spontaneously subsided each time. Using ultrasound, the placenta is located in the lower right portion of the uterus over the internal os. What is the diagnosis?

- A. Hydatidiform mole
- B. Vasa previa
- C. Placenta previa
- D. Placental abruption
- E. Premature rupture of the amniochorionic membrane

171. The external granular layer of the cerebellum gives rise to which of the following?

- A. Outer stellate cells
- B. Purkinje cells
- C. Granule cells
- D. Basket cells
- E. Giant cells of Betz

172. Which of the following statements best describes the pathogenesis of hydranencephaly?

- A. Results from failure of midline cleavage of the embryonic forebrain
- B. Results from atresia of the outlet foramina of the fourth ventricle
- C. Results from blockage of the cerebral aqueduct
- D. Results from internal carotid artery occlusion
- E. Results from failure of the anterior neuropore to close

173. The anterior and posterior neuropores close during which week of embryonic development?

- A. Week 2
- B. Week 3
- C. Week 4
- D. Week 5
- E. Week 6

174. At birth, the conus medullaris is found at which vertebral level?

- A. T-12
- B. L-1
- C. L-3

D. S-1
E. S-4

175. Which of the following structures is derived from the telencephalon?

A. Pineal gland
B. Hypothalamus
C. Hippocampus
D. Optic nerve (CN II)
E. Globus pallidus

176. Which of the following conditions results from failure of the anterior neuropore to close?

A. Hydrocephalus
B. Anencephaly
C. Mongolism
D. Craniosynostosis
E. Meningoencephalocele

177. Which of the following structures is derived from the diencephalon?

A. Caudate nucleus
B. Cerebellum
C. Olfactory bulb
D. Neurohypophysis
E. Adenohypophysis

178. Caudal herniation of the cerebellar tonsils and medulla through the foramen Magnum is called

A. Dandy-Walker syndrome
B. Down syndrome
C. Arnold-chiari syndrome
D. Cranium bifidum
E. Myeloschisis

179. The flexor that develops between the metencephalon and myelencephalon is called the

A. Cephalic flexure
B. Mesencephalic flexure
C. Pontine flexure
D. Cerebellar flexure
E. Cervical flexure

180. Tanycytes are found principally in the area postrema

A. Cerebral aqueduct
B. Lateral ventricles
C. Third ventricles
D. Fourth ventricles

181. Which of the following most accurately describes the herniation of meninges and brain tissue through a defect in occipital bone?

A. Cranium bifidum with meningoencephalocele
B. Cranium bifidum with meningohydroencephalocele
C. Cranium bifidum with meningocele

D. Arnold-chiari syndrome
E. Dandy-Walker syndrome

182. Which of the following is the most common cause of congenital hydrocephalus?

A. Cranium bifidum with meningoencephalocele
B. Cranium bifidum with meningohydroencephalocele
C. Aqueductal stenosis
D. Arnold-chiari syndrome
E. Dandy-Walker syndrome

183. Which of the following is associated with atresia of the foramen of Magendie and foramina of Luschka?

A. Cranium bifidum with meningoencephalocele
B. Cranium bifidum with meningohydroencephalocele
C. Aqueductal stenosis
D. Arnold-chiari syndrome
E. Dandy-Walker syndrome

184. A 2-month-old baby with severe jaundice also has dark-colored urine (deep yellow) and white clay-colored stool. Which of the following disorders might be suspected?

A. Esophageal stenosis
B. Annular pancreas
C. Hypertrophic pyloric stenosis
D. Extra hepatic biliary atresia
E. Duodenal atresia

185. A 28-day-old baby is brought to the physician because of projectile vomiting after feeding. Until this time, the baby has had no problems in feeding. On examination, a small knot is palpated at the right costal margin. Which of the following disorders might be suspected?

A. Esophageal stenosis
B. Annular pancreas
C. Hypertrophic pyloric stenosis
D. Extrahepatic biliary atresia
E. Duodenal atresia

186. Which of the following arteries supplies foregut of the digestive system?

A. Celiac trunk
B. Superior mesenteric artery
C. Inferior mesenteric artery
D. Right umbilical artery
E. Intercostal artery

187. The most common type of anorectal malformation is.

A. Imperforate anus
B. Anal agenesis
C. Anorectal agenesis
D. Rectal atresia
E. Colonic aganglionosis

188. The simple columnar or cuboidal epithelium lining the extrahepatic biliary ducts is derived from

A. Mesoderm
B. Ectoderm
C. Endoderm
D. Neuroectoderm
E. Neural crest cells

189. A 4-day-old baby boy has not defecated since coming home from the hospital even though feeding has been normal without any excessive vomiting. Rectal examination reveals a normal anus, anal canal, and rectum. However, a large fecal mass is found in the colon, and a large release of flatus and feces follows the rectal examination. Which of the conditions would be suspected?

A. Imperforate anus
B. Anal agenesis
C. Anorectal agenesis
D. Rectal atresia
E. Colonic aganglionosis

190. Which of the following structures is derived from the midgut?

A. Appendix
B. Stomach
C. Liver
D. Pancreas
E. Sigmoid colon

191. A 3-month-old baby girl presents with a swollen umbilicus that has failed to heal normally. The umbilicus drains secretions, and there is passage of fecal material through the umbilicus at times. What is the most likely diagnosis?

A. Omphalocele
B. Gastroschisis
C. Anal agenesis
D. Ileal diverticulum
E. Intestinal stenosis

192. The midgut loop normally herniates through the primitive umbilical ring into the extraembryonic coelom during week 6 of development. Failure of the intestinal loops to return to the abdominal cavity by week 11 results in the formation of

A. Omphalocele
B. Gastroschisis
C. Anal agenesis
D. Ileal diverticulum
E. Intestinal stenosis

193. Kupffer cells present in the adult liver are derived from

A. Mesoderm
B. Endoderm
C. Ectoderm
D. Neuroectoderm
E. Neural crest cells

194. The simple columnar and stratified columnar epithelia lining the lower part of the anal canal is derived from

A. Mesoderm
B. Endoderm
C. Ectoderm
D. Neuroectoderm
E. Neural crest cells

195. The following is false about the fetoplacental unit:

A. Umbilical cord length averages 50cm
B. Chorion is the outer membrane whereas the amnion is the inner membrane
C. Human placenta is haemochorial
D. Amnion does not cover the umbilical cord

196. False about development of the cardiovascular system:

A. At 32nd day, an ultrasound can pick the heartbeat
B. Cardinal veins run into the sinus venosus
C. Vitelline veins run into the bulbus cordis
D. In the foramen ovale, blood passes from right to left

197. Regarding the development of the cardiovascular system:

A. Proximal bulbar septum divides the aorta from the pulmonary artery
B. Deoxygenated blood passes via the umbilical vein to the left branch of the portal vein
C. Ligamentum venosum is the obliterated umbilical vein
D. Foramen ovale usually closes 1 month after birth

198. The following is false about development of the neural tube:

A. Cerebral hemispheres originate from the cerebral vesicles
B. Neural crest cells give rise to the adrenal medulla
C. Commonest form of Spina bifida is cervicothoracic
D. Notochord is ectodermal

199. False about the placenta development:

A. Placental septa are simply folds of the basal plate
B. Peripheral syncytium degenerates and is replaced by Rohr's layer
C. The number of lobules in a cotyledon varies from 2 to 5
D. Each placental lobule is derived from a single primary stem villus

200. Choose the false statement concerning the formation of the membranes:

A. Endoderm is a continuing source of supply of amniotic cells
B. Vitelline duct is incorporated into the lower end of the body stalk
C. Amniochorionic membrane contains a loose reticular layer
D. Amniochorionic membrane contains a layer of parietal extraembryonic mesenchyme

201. The following type of insertion of the umbilical cord risks having vasa previa:

A. Marginal
B. Velamentous
C. Central
D. Eccentric

202. False about the liquor amnii:

A. Volume is approximately 1L at 36 weeks
B. In early pregnancy arises by transfer of fluid across the fetal skin
C. The pH is usually >5.6 and <6.5
D. Has bacteriostatic properties

203. The following is false about normal semen analysis results:

A. Volume: 2-5 mL/ejaculate
B. Liquification time: within 30min
C. Sperm motility:>50% progressive motility
D. Sperm morphology:<30% normal forms

204. Low birth weight babies are babies born weighing:

A. <1.5Kg
B. <3.5Kg
C. <4.5Kg
D. <2.5Kg

Questions 205, 206 and 207 refer to the following:

Monozygotic twinning occurs at different periods after fertilization and this influences implantation and formation of foetal membranes.

The following Monozygotic twins develop when division occurs during which period?

205. Conjoined (Siamese) twins:

A. 3-4 days
B. 4-8 days
C. 8-13 days
D. After 13 days

206. Diamniotic, dichorionic:

A. Within 3 days
B. 3-4 days
C. 4-8 days
D. After 13 days

207. Monoamniotic, monochorionic:

A. Within 3 days
B. 3-4 days
C. 4-8 days
D. 8-13 days

208. The following are cyanotic congenital heart diseases (CHDs) with right to left shunts except:

A. Tetralogy of Fallot (TOF)
B. Transposition of the Great Vessels
C. Persistent truncus arteriosus (PTA)
D. Severe Ebstein's anomaly

209. Which of the following is a neural crest derivative?

A. Spleen
B. Melanocytes
C. Oligodendrocytes
D. Keratinocytes

210. Endocardial cushion defects commonly cause ventricular septal defects (VSDs). These defects are commonly found in which of the following condition:

A. Down syndrome
B. Klinefelter syndrome
C. Turner syndrome
D. Patau syndrome

211. The left sinus horn of the sinus venosus mainly forms the following veins of the heart:

A. Great cardiac and middle cardiac
B. Coronary sinus and small cardiac
C. Venae cordis minimi and coronary sinus
D. Oblique vein and coronary sinus

212. True about the ductus venosus:

A. Shunts blood into the aorta
B. Shunts all the blood into the inferior vena cava
C. Obliterates after birth to form the ductus venosum
D. Oxygen saturation in ductus venosus is greater than in oval foramen

213. In premature infants, the ductus arteriosus fails to close on time. Certain drugs can be infused to make it close. Which of the following drugs has a potential to help close the ductus arteriosus?

A. Mifepristone
B. Paracetamol
C. Celecoxib
D. Methyldopa

214. The following combination of vessels develop from umbilical arteries:

A. Superior and inferior mesenteric
B. Inferior mesenteric and internal iliac
C. Coeliac trunk and external iliac
D. Internal iliac and coeliac trunk

215. The origin of the aortic arches is:

A. Aortic sac
B. Truncus arteriosus
C. Sinus venosus

D. Heart tube

216. The following arteries supply the yolk sac:

A. Vitelline arteries
B. Umbilical arteries
C. Aortic arteries
D. Cardinal arteries

217. Which aortic arch gives rise to the ductus arteriosus?

A. Right sixth
B. Left sixth
C. Right fourth
D. Left fourth

218. The right recurrent laryngeal nerve hooks on:

A. Ductus arteriosus
B. Right subclavian artery
C. Brachiocephalic trunk
D. Right common carotid

219. During their formation, vitelline veins form a plexus around which organ?

A. Stomach
B. Duodenum
C. Liver
D. Spleen

220. The left recurrent laryngeal nerve recurs around?

A. Ductus arteriosus
B. Right subclavian artery
C. Brachiocephalic trunk
D. Right common carotid

221. Which pharyngeal pouch(s) form endocrine tissue?

A. First pouch only
B. Third and fourth pouch only
C. Second and fourth pouches only
D. First and third pouch only

222. All of the following are derived from the first pharyngeal arch cartilage EXCEPT?

A. Malleus
B. Incus
C. Mandible
D. Stapes

223. Which of the following structure develop from the second pharyngeal arch?

A. Stapes
B. Incus
C. Malleus
D. Mandible

224. Which of the following is not a derivative of the cartilage of the second pharyngeal arch?

A. Stapes
B. Styloid process
C. Lesser cornua of the hyoid bone
D. Lower part of the hyoid bone

225. Which of the following muscles develop from the first pharyngeal arch mesoderm?

A. Posterior belly of digastric
B. Anterior belly of digastric
C. Stylopharyngeus
D. Stapedius

226. The pharyngeal arch that contributes to the formation of the muscles of mastication is?

A. First arch
B. Second arch
C. Third arch
D. Fourth arch

227. The nerve of the third pharyngeal arch_____?

A. Facial nerve
B. Glossopharyngeal nerve
C. Mandibular division of the trigeminal nerve
D. Vagus

228. All of the following muscles develop from the second pharyngeal arch except?

A. Muscles of facial expression
B. Stylohyoid
C. Anterior belly of digastric
D. Posterior belly of digastric

229. When the cranium fails to form, the condition is known as?

A. Cranioschisis
B. Craniosynostosis
C. Achondroplasia
D. Brachycephaly

230. Which of the following structures are derived from the ventral part of the first pharyngeal arch cartilage?

A. Mandible
B. Malleus
C. Incus
D. Stapes

231. Which of the following structures are derived from the second arch cartilage?

A. Mandible
B. Malleus
C. Incus
D. Stapes

232. Fourth and sixth pharyngeal arch cartilages form the cartilage of the larynx except?

A. Thyroid cartilage
B. Cricoid cartilage
C. Epiglottis cartilage
D. Arytenoid cartilage

233. All of the following are intersegmental in origin except?

A. Bodies of vertebrae
B. Intervertebral disc
C. Muscles of the vertebral column
D. Spinal nerves supplying muscles of vertebral column

234. The mesodermal cells of the sclerotomes_____

A. Around notochord forms centrum of bodies of vertebrae
B. Around neural tube form vertebral arches
C. In body wall form trunk muscles
D. In between centrums of adjacent vertebrae form intervertebral disc

235. _____is fusion of two or more fingers or toes.

A. Brachydactyly
B. Syndactyly
C. Polydactyly
D. Ectrodactyly

236. Secondary ossification centre present at or just before birth (ninth month of IUL) is present

A. At the distal end of femur
B. At the lower end of tibia
C. At the medial end of clavicle
D. At the lower end of radius

237. The blastula forms in which gestation age?

A. 1st week
B. 2nd week
C. 3rd week
D. 4th week

238. The allantois appears in the following week:

A. 2nd week
B. 3rd week
C. 4th week
D. 5th week

239. All the following muscles are supplied by the trigeminal nerve except:

A. Tensor veli palatini
B. Posterior belly of digastric
C. Mylohyoid
D. Tensor tympani

240. With regards to the development of mesenteries, the following is true:

A. Mesentery proper is derived from ventral mesentery
B. Greater omentum comes from the ventral mesentery
C. Ventral mesentery extends only up to the lower duodenum
D. Are found anterior to sternocleidomastoid muscle in midline of the anterior neck
E. Septum transversum forms the falciform ligament

241. The following structure develops purely from the foregut:

A. Lungs
B. Liver
C. Duodenum
D. Pancreas

242. The middle ear is derived from_____

A. Pharyngeal arch I
B. Pharyngeal arch II
C. Pharyngeal arch III
D. Pharyngeal pouch I

243. True with regard to branchial fistulas:

A. Are found posterior to the sternocleidomastoid muscle
B. Are found anterior to sternocleidomastoid muscle in midline of the anterior neck
C. Drains lateral cervical cysts
D. Result from failure of 2nd pharyngeal pouch to grow over 3rd and 4th

244. Which congenital heart defect is characterized by frequent squatting of the infant?

A. Tetralogy of Fallot
B. Tricuspid atresia
C. Persistent truncus arteriosus
D. Transposition of the great arteries

245. _____is derived from the left sinus horn

A. Coronary sinus
B. Small cardiac vein
C. Middle cardiac vein
D. Great cardiac vein.

246. One of the following is not a feature of rubella syndrome:

A. Coarctation of the aorta
B. Patent ductus arteriosus
C. Sensorineural deafness
D. Pulmonary stenosis

247. The following is correctly matched according to its origin:

A. Cricothyroid muscle.....6th pharyngeal arch
B. Stylohyoid muscle.....3rd pharyngeal pouch
C. Thymus.....3rd pharyngeal pouch
D. Superior parathyroids.....4th pharyngeal arch

248. The following is correctly matched according to its origin:

A. Uterus..... Mesonephric duct
B. Labia minora.....Urethral folds
C. Appendix epididymis.....Mullerian duct
D. Scrotum.....genital tubercle

249. Which structure is a landmark for the demarcation between foregut and midgut?

A. Splenic flexure of colon
B. Hepatic flexure of colon
C. Respiratory diverticulum
D. Liver bud

250. In the third trimester of pregnancy, amniotic fluid is mainly produced by which fetal structure?

A. Kidneys
B. Skin
C. Lungs
D. Liver

251. What structures form the medial umbilical ligaments?

A. Umbilical veins
B. Allantois
C. Inferior epigastric arteries
D. Umbilical arteries

252. All the following are causes of polyhydramnios except:

A. Ancephaly
B. Maternal diabetes mellitus
C. Fetal polycystic kidneys
D. Duodenal atresia

253. What is the expected weight of a baby whose placenta weighed 0.3Kg

A. 1.5 Kg
B. 1.8 Kg
C. 2 Kg
D. 500 grams

254. The total amount of fetal blood in a full term placenta is about:

A. 150 mL
B. 500 mL
C. 350 mL
D. 200 mL

255. All the following nerves supply pharyngeal arches except?

A. Vagus nerve
B. Facial nerve
C. Occulomotor nerve
D. Glossopharyngeal nerve

256. Failed development of the communication between anterior Cardinal veins give rise to?

A. Double inferior vena cava
B. Double superior vena cava
C. Abnormal right subclavian artery
D. Double aortic arch

257. During development, the palatine tonsils get its nerve supply from?

A. Vagus nerve
B. Facial nerve
C. Trigeminal nerve
D. Glossopharyngeal nerve

258. All the following nerves supply pharyngeal arches except?

A. Vagus nerve
B. Facial nerve
C. Occulomotor nerve
D. Glossopharyngeal nerve

259. The lesser horns and upper portion of body of hyoid born is derived from which pharyngeal arch?

A. Third pharyngeal arch
B. Second pharyngeal arch
C. Six pharyngeal arch
D. First pharyngeal arch

260. Concerning septation within the common atrium, the following is correct:

A. Foramen ovale shunts blood from left atrium to right atrium
B. Most common type of ASDs is the ostium secundum ASDs
C. Septum secundum develops appear on left side of septum primum
D. Foramen ovale is closed by flap from septum primum

261. Concerning the rotation of the stomach during development, the following is correct:

A. Rotates 90 degrees counterclockwise around it's longitudinal axis
B. Completes 270 degrees rotation counterclockwise around it's anteroposterior axis
C. Rotates 90 degrees clockwise around it's anteroposterior axis
D. Right vagus nerve becomes posterior in it's location

262. The spleen develops within the:

A. Omental bursa
B. Lesser omentum
C. Dorsal mesogastrium
D. Ventral mesogastrium

263. What structure is cranial to the truncus arteriosus:

A. Crista terminalis
B. Aortic sac
C. Sinus venosus
D. Sinus venarum

264. Concerning the cell cycle

A. In the G1 phase the cells are functioning normally
B. M phase cells are at rest
C. G0 phase cells synthesize the DNA
D. A neuron is an example of a cell at G2 phase

265. Which hormone causes the uterus to increase glycogen?

A. Progesterone
B. FSH
C. LH
D. Estrogen

266. Which of the following is not a source of estrogen?

A. Adrenal gland
B. Ovary
C. Pituitary
D. Follicle

267. The outer serosal layer of the uterus is the_____

A. Perimetrium
B. Cervix
C. Endometrium
D. Myometrium

268. What is the first structure to receive the oocyte at ovulation?

A. Fimbriae
B. Ampulla
C. Infundibulum
D. Isthmus

269. How many oocytes are there in the ovaries of an adult?

A. Fewer than 400
B. 10 million
C. 50 million
D. 400,000

270. Which cells are present in a male age five?

A. Spermatocytes
B. Spermatozoa
C. Sertoli cells
D. Spermatids

271. In fertilization,

A. Acrosin for penetration of zona pellucida
B. To prevent polyspermia, the corona radiator does not disperse
C. The sperm head is the only part that enters the oocyte
D. The oocyte is in prophase by

272. Which of the following structures is not present at term

A. Decidua basalis
B. Decidua ccapsularis
C. Chorion
D. Decidua parietalis

273. Serious membranes

A. Develop from the chorionic cavity
B. Are lateral plate mesoderm derivatives
C. Are ectodermal in origin
D. Dura mater is one example

274. Which of the following is not true concerning oocyte transport

A. The fimbriated end of the uterine tube sweeps over the ovary at ovulation
B. The uterine tube undergoes peristalsis
C. The ovulated oocyte has amoebic movement
D. Cilia helps in transport
E. The peg cells of the uterine tube plays a role

275. Concerning spermatogenesis

A. At birth the seminiferous tubules don't have a lumen
B. Sertoli cells are the only cells present at birth
C. Primary spermatocytes have a short prophase I
D. Spermatids divide to form mature spermatozoa
E. Spermatogonia migrate from posterior abdomen to testis at puberty

276. Concerning neurulation

A. The neural plate is formed during the second week
B. The primitive streak is the important inducer
C. The neural crest cells are important in the formation of the adrenal medulla
D. The cranial pore closes at 28 day
E. Folic acid is not important

277. Intermediate mesoderm will give rise to the

A. Neural tube
B. Heart
C. Kidneys and gonads
D. Somites
E. Vertebral column

278. Concerning the cell cycle

A. In G1 phase the cells are resting
B. In M phase, organelles mature
C. In G0 phase DNA is duplicate
D. In G2 karyokinesis occurs

279. Which of the following structures is not part of the external genitalia?

A. Clitoris
B. Labia minora
C. Vestibule

D. Cervix

280. LH exerts which of the following physiological effects?

A. It triggers completion of the second meiotic division by secondary oocytes
B. It triggers ovulation
C. It suppresses release of estrogens
D. It induces primary follicles to become secondary follicle

281. Which of the following statements concerning adrenal parenchymal cells is true?

A. Those of the zona fasciculata produce androgens
B. Those of the adrenal medulla produce epinephrine and norepinephrine
C. Those of the zona glomerulosa produce glucocorticoids
D. Those of the cortex contain numerous secretory granules

282. Characteristics of pinealocytes include which one of the following?

A. They produce melatonin
B. They resemble astrocytes
C. They contain calcified concretions of unknown function
D. They act as postganglionic sympathetic cells

283. Prolactin is synthesized and secreted by which of the following cells?

A. Acidophils in the pars distalis
B. Basophils in the pars tuberalis
C. Somatotrophs in the pars distalis
D. Basophils in the pars intermedia

284. ACTH is produced by which of the following cells?

A. Chromophobes in the pars distalis
B. Neurosecretory cells in the medianeminence
C. Basophils in the pars distalis
D. Neurons of the paraventricular nucleusin the hypothalamus

285. The histological appearance of a thyroid gland being stimulated by TSH would show which of the following?

A. Decreased numbers of follicular cells
B. Increased numbers of para follicular cells
C. Column-shaped follicular cells
D. An abundance of colloid in the lumen of the follicle

286. A 40-year-old woman is diagnosed with Graves disease. Which of the following characteristics would be associated with her condition?

A. Inadequate levels of iodine in her diet
B. Weight loss
C. Flattened thyroid follicular cells
D. Excessive production of thyroid hormones

287. The duplication of centrosomes during interphase takes place in the_____

A. M phase
B. S phase
C. G1 phase
D. G2 phase

288. The prochordal plate marks the site of the future_____
- A. Umbilical cord
- B. Heart
- C. Mouth
- D. Nose

289. The basal layer of the uterine endometrium
- A. Is sloughed during menstruation
- B. Has no glands
- C. Is supplied by coiled arteries
- D. Is supplied by straight arteries

290. Which structure is derived from the same embryonic primordium as the dorsal root ganglia?
- A. Gonads
- B. Kidney
- C. Adrenal medulla
- D. Pineal glands

291. Which structure is derived from the same embryonic primordium as the kidney?
- A. Gonads
- B. Epidermis
- C. Pineal gland
- D. Liver

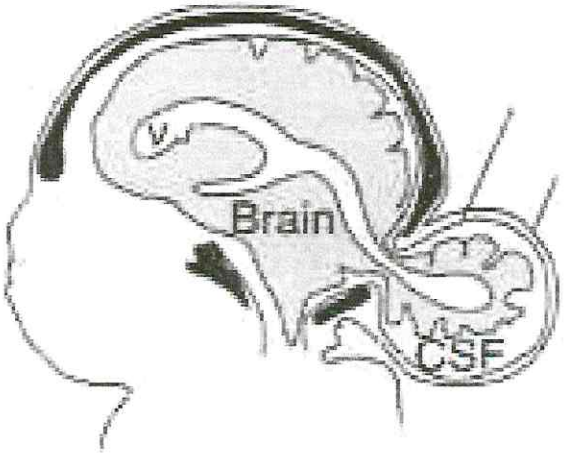
292. The flexor that develops between the metencephalon and the myelencephalon is called the
- A. Cephalic flexure
- B. AwwMesencephalic flexure
- C. Pontine flexure
- D. Cerebellar flexure

293. Pulmonary hypoplasia is commonly associated with which condition?
- A. Hyaline membrane disease
- B. Diaphragmatic hernia
- C. Tracheoesophageal fistula
- D. Congenital bronchial cysts

294. Development of which of the following is the first sign of respiratory system development?
- A. Tracheoesophageal septum
- B. Hypobranchial eminence
- C. Primitive foregut
- D. Respiratory diverticulum

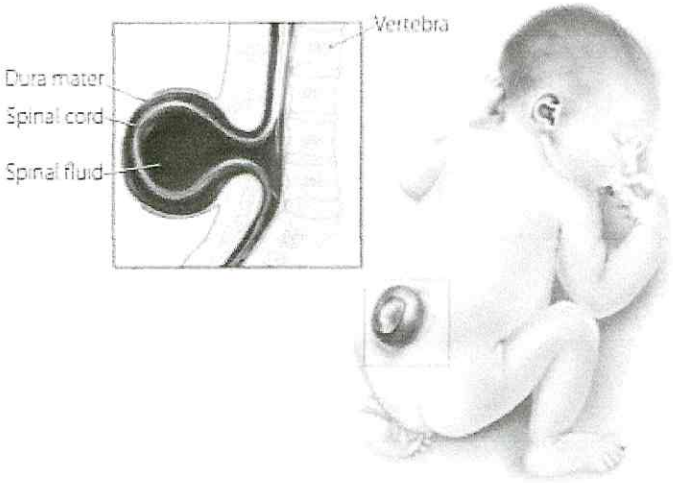
295. In which stage of lung maturation is the blood-air barrier established?
- A. Terminal sac period
- B. Pseudoglandibular period
- C. Alveolar period
- D. Canalicular period

3. What condition is this?

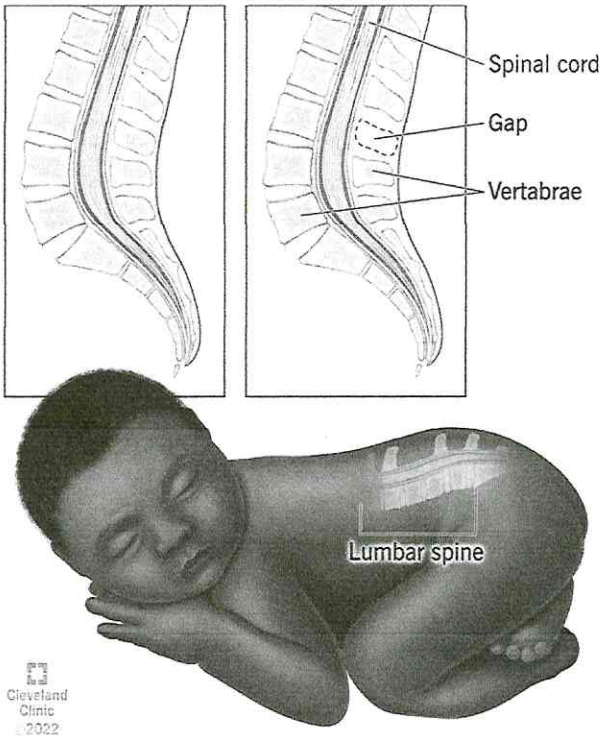


4. What condition is this?

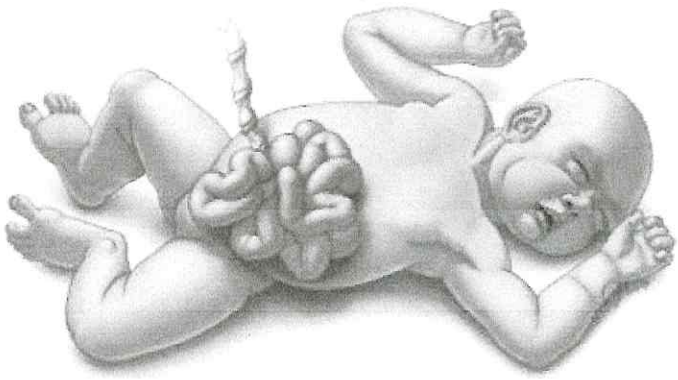
   Take note of the contents of this condition; Dura matter, Spinal cord and spinal fluid



5. What condition is this



6. What condition is this?

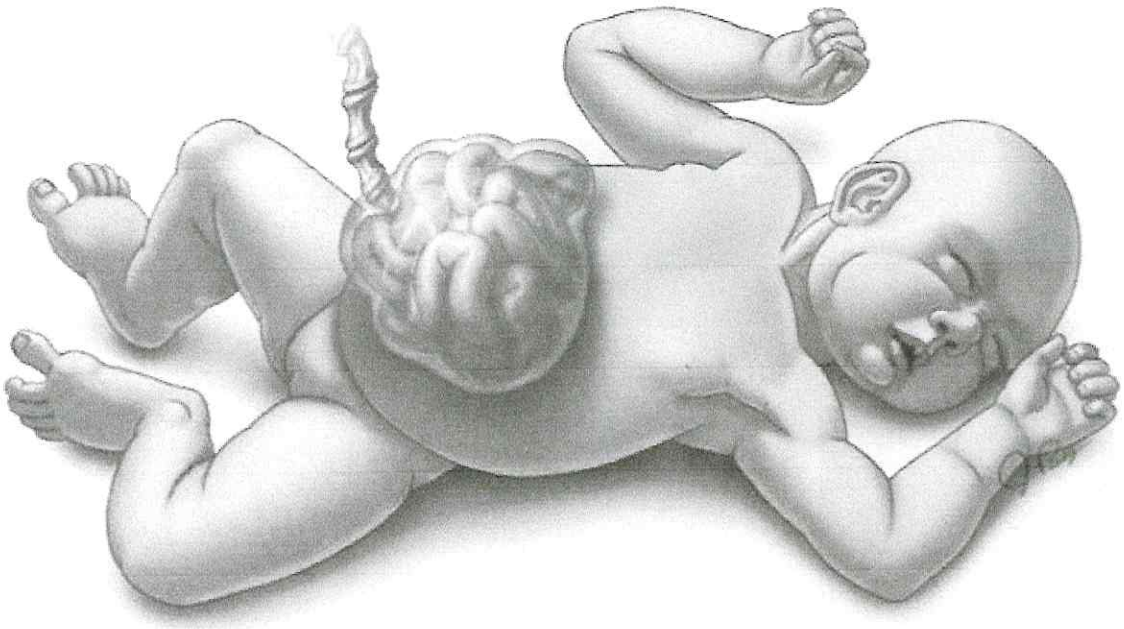


7. What conditions are these

I_____

II_____

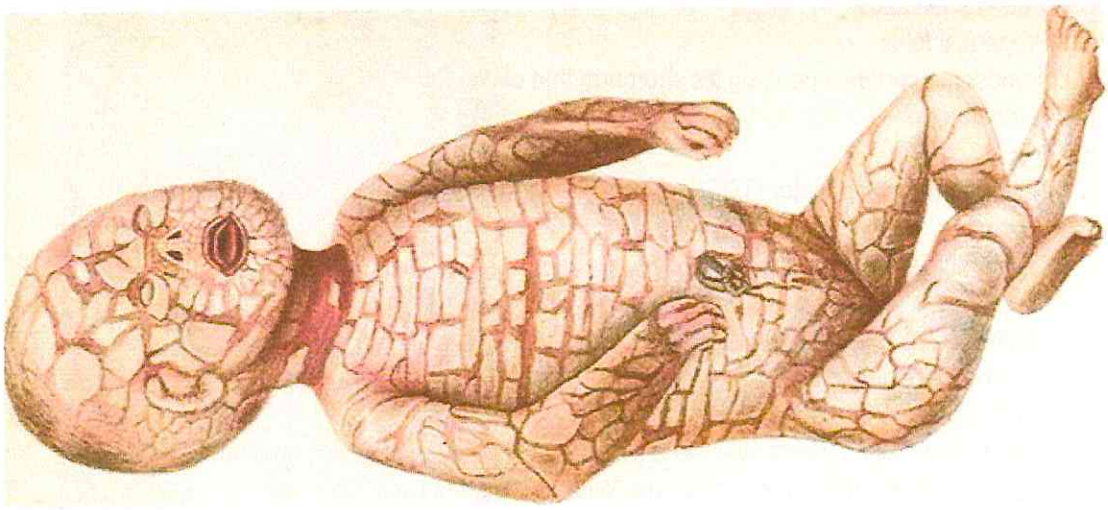
8. What condition is this?



Please take note of the differences on images 6 and 8 because this really confuses students, thank you in anticipation 🙏

DR MUKAPE'S FAVORITE DIAGRAMS IN EMBRYOLOGY

1. What condition is this?



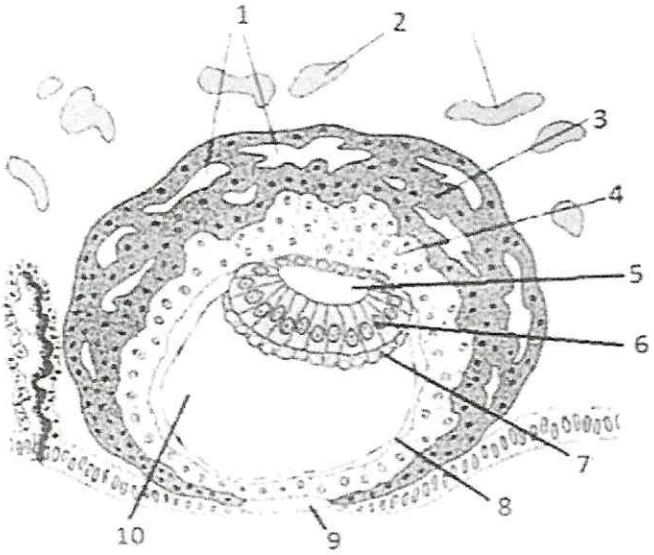
2. What condition is this?

12. What condition is this?

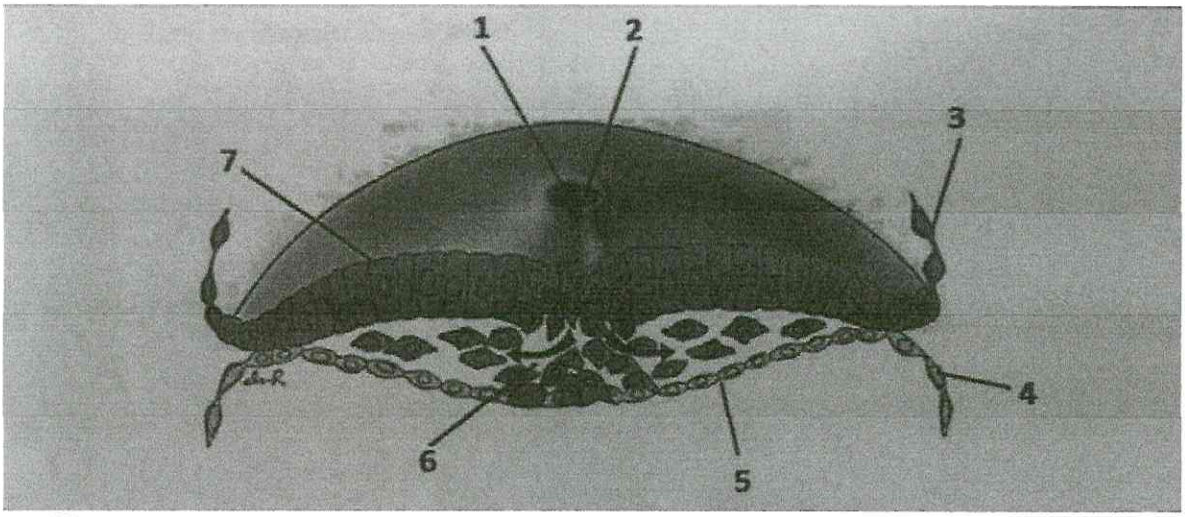
13. What condition is this?

Label the following Diagrams:

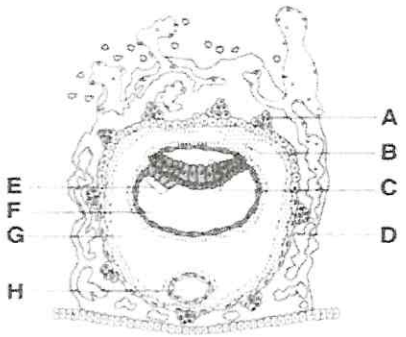
14.



15.



16.



ANSWERS

1.C	26.C	51.B	76.A
2.B	27.A	52.D	77.C
3.B	28.B	53.B	78.B
4.B	29.C	54.B	79.A
5.A	30.A	55.A	80.B
6.B	31.A	56.C	81.D
7.C	32.D	57.B	82.B
8.A	33.D	58.B	83.C
9.B	34.C	59.B	84.B
10.A	35.C	60.A	85.C
11.C	36.C	61.A	86.A
12.A	37.D	62.B	87.A
13.B	38.B	63.B	88.B
14.B	39.B	64.D	89.A
15.D	40.C	65.C	90.D
16.C	41.C	66.C	91.B
17.D	42.D	67.B	92.C
18.C	43.C	68.B	93.B
19.B	44.C	69.C	94.B
20.B	45.D	70.B	95.B
21.A	46.A	71.A	96.D
22.B	47.A	72.C	97.D
23.B	48.C	73.A	98.B
24.B	49.D	74.C	99.B
25.A	50.D	75.D	100.A

101.D	126.B	151.B	176.B
102.D	127.E	152.C	177.A
103.B	128.A	153.D	178.C
104.D	129.D	154.D	179.C
105.B	130.C	155.A	180.C
106.A	131.D	156.C	181.A
107.C	132.D	157.A	182.C
108.D	133.D	158.B	183.E
109.B	134.B	159.A	184.D
110.C	135.A	160.C	185.C
111.B	136.D	161.D	186.A
112.A	137.C	162.D	187.A
113.C	138.E	163.A	188.C
114.E	139.B	164.E	189.E
115.B	140.B	165.C	190.A
116.C	141.B	166.A	191.B
117.D	142.D	167.B	192.A
118.C	143.C	168.C	193.A
119.E	144.D	169.D	194.B
120.B	145.A	170.C	195.D
121.B	146.E	171.C	196.C
122.B	147.C	172.C	197.A
123.B	148.E	173.C	198.C
124.C	149.B	174.C	199.
125.B	150.A	175.D	200.A

201.B	226.A	251.D	276.C
202.B	227.B	252.C	277.C
203.D	228.C	253.B	278.D
204.D	229.A	254.B	279.D
205.D	230.A	255.C	280.B
206.A	231.D	256.B	281.B
207.D	232.C	257.B	282.A
208.A	233.A	258.C	283.A
209.B	234.C	259.B	284.C
210.A	235.B	260.B	285.C
211.D	236.A	261.D	286.D
212.D	237.B	262.C	287.B
213.C	238.B	263.B	288.C
214.B	239.B	264.A	289.C
215.A	240.E	265.A	290.C
216.A	241.A	266.C	291.A
217.B	242.D	267.A	292.C
218.B	243.B	268.A	293.B
219.B	244.A	269.A	294.D
220.A	245.A	270.C	295.A
221.B	246.A	271.A	296.D
222.D	247.C	272.C	297.C
223.A	248.B	273.B	298.B
224.C	249.D	274.C	299.B
225.B	250.A	275.A	300.A

Answers to the Diagrams

1. Ichthyosis.
2. Sacrococcygeal teratoma.
3. Meningohydroencephalocele.
4. Spina bifida
5. Spina bifida occulta.
6. Gastroschisis.
7. i. Ectopia cordis

   ii. Supra umbilical omphalocele
8. Omphalocele
9. Caudal dysplasia
10. Ebstein's anomaly
11. Fetus with an occipital meningocele
12. Kleeblattschädel
13. Cloverleaf skull
14. 1. Trophoblastic lacunae
    2. Enlarged blood vessels
    3. Syncytiotrophoblast
    4. Cytotrophoblast
    5. Amniotic cavity
    6. Epiblast
    7. Hypoblast
    8. Heuser's membrane
    9. Fibrin Coagulum
    10. Primitive yolk

15.1. Primitive node

2. Primitive streak

3. Amnioblasts

4. Yolk sac

5. Hypoblast

6. Invaginating mesoderm cells

7. Epiblast

16. A. Primitive chorionic villi
    B. Connecting stalk
    C. Bilaminar embryonic disk
    D. Chorionic plate
    E. Prochordal plate
    F. Definitive yolk sac
    G. Chorionic cavity
    H. Exocoelomic cyst

WELCOME TO THE HUMAN HISTOLOGY

1. The following is best stained with haematoxylin:
    A. Deoxyribonucleic acid
    B. Hemoglobin
    C. Collagen
    D. Ribosomes

2. All are basic dyes except:
    A. Orange G
    B. Toluidine blue
    C. Haematoxylin
    D. Methylene blue

3. The following dyes constitute the Giemsa stain:
    A. Haematoxylin and eosin
    B. Methylene blue and eosin
    C. Alcian blue and azure B
    D. Acid fuchsin and azure B

4. Glycogen is best stained by:
    A. Mason trichrome stain
    B. Periodic-acid-Schiff stain
    C. Mallory-Azan stain
    D. Osmium tetroxide stain

5. Which staining technique stains the lipids in myelin sheath of nerves black?
    A. Osmic acid
    B. Mason trichrome stain
    C. Periodic-acid-Schiff stain
    D. Mallory-Azan stain

6. Smooth muscle can be best differentiated from collagen by:
    A. Periodic-Acid Schiff (PAS) stain
    B. Trichrome stain
    C. Haemotoxylin and eosin (H&E)
    D. Methylene blue

7. Tissues from the following organs are best stained with silver stain except:
    A. Brain
    B. Liver
    C. Spleen
    D. Thymus

8. In comparison, the following organ has cells with the least number of smooth endoplasmic reticulum:
    A. Spinal cord
    B. Ovaries
    C. Testes
    D. Adrenal glands

9. The following is the ascending order of tissue preparatory steps in histology:
    A. Fixation, dehydration, clearing, and embedding
    B. Dehydration, fixation, clearing and embedding
    C. Fixation, clearing, dehydration and trimming
    D. Dehydration, clearing, fixation and trimming

10. Regarding microscopy:
    A. Both fluorescence and polarizing microscopy uses a dark background
    B. Phase-contrast microscopy is best used on stained tissues
    C. Fluorescence microscopy uses ordinary light on tissues stained by fluorescent stains
    D. Birefringence is a principle of phase-contrast microscopy

11. About resolving power of microscopes:
    A. Cell membranes can be distinguished with a light microscope
    B. Resolving power of light microscope is about 0.2mm
    C. For electron microscopy, can allow magnification of up to 4000000 times
    D. Ribosomes cannot be seen under light microscopy

12. Which of the following structures give the nucleus it's structural support framework?
    A. Lamins
    B. Microfilaments
    C. Actin
    D. Keratins

13. Overstimulation of osteoclast activity:
    A. Osteogenesis imperfecta
    B. Osteoporosis
    C. Osteosarcoma
    D. Osteomalacia

14. Which of the following cells contain glial filaments and glycogen granules?
    A. Astrocytes
    B. Oligodendrocytes
    C. Ependymal cells
    D. Tanycytes

15. A 15-year-old boy has severed his radial nerve. Which of the following cells plays a major role in axonal regrowth?
    A. Fibrous astrocytes
    B. Fibroblasts
    C. Protoplasmic astrocytes
    D. Schwann cells

16. All the following statements concerning neurons are correct except:
    A. They are of neuroectodermal origin
    B. They have not lost the capacity to undergo cell division
    C. They contain Nissl substances
    D. They are derived from the neural tube and neural crest

17. Choose the correct statement concerning myelin:
    A. Myelin decreases the velocity of an action potential
    B. Myelinating cells on the PNS myelinate only one internode
    C. Myelinating cells of the CNS only myelinate several internodes of same axon
    D. Myelinating cells of the PNS myelinate several internodes of different axons

18. Tanycytes are a variety of_____ cells found in the wall of the third ventricle
    A. Astrocytes
    B. Ependymal cells
    C. Oligodendrocytes
    D. Microglial cells

19. Which statement is false concerning the golgi apparatus?
    A. Highly developed in secretory cells
    B. Exocytosis of contents in secretory granules exit at *trans face*
    C. Cis face is always from the rough endoplasmic reticulum (RER)

D. Form glycoproteins, glycolipids and lipoproteins

20. Hyperparathyroidism may result in:
    A. Heavy bones
    B. Osteopetrosis
    C. Rickets
    D. Osteoporosis

21. Choose the correct statement about cartilage:
    A. Interstitial growth increases width of cartilage
    B. Type I collagen is most abundant in hyaline cartilage
    C. Elastic cartilage appear glassy under microscope
    D. Cartilage matrix has high water content

22. Regarding cartilage, the following statement is true:
    A. Cartilage matrix has blood vessels
    B. Elastic cartilage has no perichondrium
    C. In it's fresh state, elastic cartilage appears yellow
    D. Hyaline cartilage blends imperceptibly with surrounding dense CT

23. Concerning cartilage, which of the following statements is true?
    A. Hyaline cartilage is converted to bone by calcification
    B. Elastic cartilage undergo calcification
    C. All have the same type of collagen
    D. All grow appositionally from perichondrium

24. In bone tissue, matrix vesicles containing phosphatases are found in which type
    A. Osteoblasts
    B. Osteoclasts
    C. Fibroblasts
    D. Osteocytes

25. Regarding hyaline cartilage, the following is false:
    A. Collagen fibres are more visible passing in-between lacunae
    B. In H and E sections, hyaline and elastic appear same
    C. Hyaline cartilage is weaker than elastic cartilage
    D. Territorial matrix appear darker than inter-territorial matrix

26. The following is correctly matched:
    A. Articular cartilage.....fibrocartilage
    B. Menisci.....fibrocartilage
    C. Epiglottis..... Hyaline cartilage
    D. Xiphoid process..... Elastic cartilage

27. Which is true concerning haversian systems?
    A. Not found in spongy bone
    B. Found in immature bone
    C. Central canals communicate direct with endosteum
    D. Concentric lamellae are usually less than four

28. Which of the following is correct about basal bodies?
    A. Have no relationship with centrioles
    B. Are located at the base of a cell
    C. Have nine peripheral microtubule doublets
    D. Have no central microtubule doublets

29. True regarding blood cells:
    A. Half-life of neutrophils is 14 days
    B. Half-life of monocytes in tissue is 72 hrs
    C. Reticulocytes have no nuclei
    D. Eosinophilic granules contain histamine and heparin

30. One of the following characteristics of muscle fibres is correctly matched:
    A. Smooth muscle.....Calmodulin
    B. Cardiac muscle..... satellite cells
    C. Skeletal muscle.....nuclei at centre of fibres
    D. Skeletal muscle..... Intercalated discs

31. The following is true concerning bone matrix:
    A. Abundant type of collagen is type II
    B. Inorganic material represents about 80% of dry weight
    C. Non-crystallised calcium phosphate is also present
    D. No layer of fluid around calcium hydroxyapatite crystals

32. Lack of_____ is the main reason why other tissues with same type of collagen abundant in bone tissue do not usually undergo calcification?
    A. Osteonectin and phosphatases
    B. Osteocalcin and osteonectin
    C. Osteocalcin and phosphatases
    D. Osteonectin and bicarbonate

33. False regarding decalcified bone:
    A. EDTA is one of the decalcifiers
    B. Shape of original bone is preserved
    C. Becomes flexible like a tendon
    D. Resembles loose connective tissue

34. Choose the correct matching:
    A. Modified sweat glands..... Holocrine glands
    B. Sebaceous glands.....apocrine glands
    C. Pancreatic exocrine glands.....merocrine glands
    D. Goblet cells.....apocrine glands

35. The following type of epithelium is linked with the correct example of a structure where it is found:
    A. Simple cuboidal..... Endothelium
    B. Stratified columnar.....Endometrium
    C. Transitional.....Minor calyses
    D. Simple columnar.....Major duct of a salivary gland

36. Concerning the human mitochondria:
    A. Mitochondrial DNA is passed on from spermatozoa
    B. Multiply by binary fission
    C. Cristae are tubular in serous-secreting cells
    D. Most functional proteins are located on outer membrane

37. True about cell surface specializations:
    A. Microvilli have microtubules
    B. Stereocilia have axonemes
    C. Cilia are only found in eukaryotic cells
    D. In the human, flagella have a 9+0 arrangement of microtubules

38. True about the anatomy of an axoneme:
    A. Has no plasma membrane
    B. Dynein move towards the minus end of microtubules
    C. Nexin links central doublets to peripheral doublets
    D. Central doubles are not surrounded by a sheath

39. In endochondral ossification, degeneration of chondrocytes occurs in which zone?
    A. Zone of hypertrophy
    B. Zone of calcified cartilage
    C. Zone of proliferation
    D. Zone of ossification

40. Concerning osteoclasts:
    A. Clear zone surrounds ruffled border and has abundant microfilaments
    B. Have receptors for parathyroid hormone for bone resorption
    C. Osteoclast stimulating factor (OSF) bind on osteoblasts to promote bone formation
    D. Howship's lacunae are usually located in areas of bone not undergoing resorption

41. Regarding lymphoid organs, the following is incorrect
    A. Spleen has no cortex and medulla
    B. Lymph nodes: only lymphoid organs with afferent/efferent lymphatic vessels
    C. In Peyer's patches, microbes pass via the M-cells across the epithelial layer
    D. Hassall's corpuscles are formed in the medulla of the thyroid gland

42. Choose the correct statement about the thymus:
    A. Its capillaries are fenestrated
    B. Does not function to filter lymph from other organs
    C. Functions in terminal differentiation and selection of B lymphocytes
    D. Hassall's corpuscles are a Hallmark of thymic cortex

43. Regarding lymphocytes in lymphoid organs:
    A. In thymus, immature T-lymphocytes are mainly located in the medulla
    B. Germinative centres of lymphoid nodules contain mainly mature B cells
    C. In lymph nodes, medullary cords contain mainly T lymphocytes
    D. Spleen has more B than T lymphocytes

44. The following is not correct about the histology of the spleen:
    A. Stave cells are sinusoidal endothelial cells
    B. Red pulp consists of blood sinusoids and Billroth's cords
    C. Lymphoid nodules consists of mainly B lymphocytes
    D. Central arteries are in the red pulp

45. The following cells arise from monocytes to enter central nervous system:
    A. Tanycytes
    B. Fibroblasts
    C. Microglial
    D. Astrocytes

46. Which of the following is not bounded by a membrane?
    A. Proteasomes
    B. Cell
    C. Mitochondria
    D. Nucleus

47. Which of the following cells is responsible for anaphylactic shock?
    A. Fibroblasts
    B. Eosinophils
    C. Mast cells
    D. Pericytes

48. Which of the following statements is correct concerning hyaline cartilage?
    A. It is vascular
    B. It contains type IV collagen
    C. It undergoes appositional growth only
    D. It is located at the articular ends of long bones

49. Which of the following statements is characteristic of osteocytes?
    A. They communicate via gap junctions between their processes
    B. They contain large amounts of rough endoplasmic reticulum (RER)
    C. They are immature bone cells
    D. They are housed as isogenous groups in lacunae

50. Which of the following is a distinctive feature of the duodenum?
    A. Presence of Taenia coli
    B. Presence of Brunner's glands
    C. Presence of valves of kerkring
    D. Presence of crypts of Lieberkuhn

51. Which of the following muscular layers of the stomach is innermost?
    A. Oblique
    B. Circular
    C. Transverse
    D. Longitudinal

52. Which of the following statements is true concerning the tongue?
    A. All papillae on the tongue contains taste buds
    B. Is made up of both smooth and skeletal muscles
    C. Taste buds are only found associated with papillae
    D. Circumvallate papillae are located anterior to the foramen caecum

53. Which of the following junction, is most likely to allow communication between adjacent cells?
    A. Zonula occludens
    B. Macula adherens
    C. Gap junction
    D. Tight junctions

54. Which of the following structures is supported structurally by actin filaments?
    A. Stereocilia
    B. Cilia
    C. Flagella
    D. Centrioles

55. Which of the following is an example of a compound tubuloacinar gland?
    A. Brunner's
    B. Pancreas
    C. Sublingual
    D. Mammary

56. Which of the following tubular structures of the kidney contains brush borders?
    A. Proximal convoluted tubule
    B. Descending limb of loop of Henle
    C. Distal convoluted tubule
    D. Collecting ducts

57. Which of the following structures is not part of the renal corpuscles?
    A. Glomerulus
    B. Bowman's capsule
    C. Loop of Henle
    D. Urinary space

58. Which of the following statements concerning the Lymph node is **incorrect?**
    A. It contains both the medulla and the cortex
    B. It contains both efferent and afferent vessels
    C. Germinal centres are located in the medullary cords
    D. Lymphatic nodules are located in the cortex

59. In which of the following parts of the thymus does negative selection take place?
    A. Capsule
    B. Cortex
    C. Medulla
    D. Hassall's corpuscles

60. Which of the cells are neuro-crest in origin?
    A. Parafollicular
    B. Follicular cells
    C. Type I pneumocytes
    D. Type II pneumocytes

61. The hormones that stimulate the ovarian cycle are secreted by the_____ whilst the hormones that stimulate the uterine cycle are secreted by the _____
    A. Ovary/ uterus
    B. Pituitary gland/ ovary
    C. Interstitial cells/ placenta
    D. Ovary/ pituitary gland

62. If parathyroid hormone levels increase, which of these conditions is expected?
    A. Osteoclast activity is increased
    B. Calcium absorption from the small intestine inhibited
    C. Calcium reabsorption from the urine is inhibited
    D. Less active vitamin D is formed

63. Chromaffin cells occur in the_____
    A. Parathyroid gland
    B. Pituitary gland
    C. Adrenal gland
    D. Pineal gland

64. Which of the following structures are absent in the vestibule of the nasal cavity?
    A. Vibrissae
    B. Sweat glands
    C. Sebaceous glands
    D. Olfactory epithelium

65. One of the following is **true** concerning pulmonary surfactant:
    A. It is found in the trachea
    B. It is secreted by the Clara cells in the alveoli
    C. It is not a component of the blood-air barrier
    D. Its produced by the pneumocyte type-I

66. The layer of the epidermis in which cells begin the process of keratinization is the
    A. Stratum corneum
    B. Stratum basale
    C. Stratum lucidum
    D. Stratum granulosum

67. The sweat glands that communicate with skin surfaces only in the axillary, areolar, pubic, and anal regions are
    A. Apocrine glands
    B. Merocrine glands
    C. Sebaceous glands
    D. Epocrine glands

68. Melanin is
    A. An orange-yellow pigment that strengthens the epidermis
    B. A pigment that accumulates inside keratinocytes
    C. A protein fiber found in the dermis
    D. A pigment that gives the characteristic color to haemoglobin

69. Muscle impulses are spread rapidly between cardiac muscle cells by
    A. Sarcomeres
    B. Intercalated discs
    C. Chemical neurotransmitters
    D. AV valves

70. Which of the following is not a type of capillary?
    A. Continuous
    B. Sinusoids
    C. Elastic
    D. Fenestrated

71. The following structures are secondary lymphoid tissues **except?**
    A. Lymph node
    B. Thymus
    C. Spleen
    D. Tonsils

72. The following lymphoid tissues have germinal centres except?
    A. Tonsils
    B. Spleen
    C. Thymus
    D. Lymph node

73. Which of the following lymphoid organs filter lymph?
    A. Thymus
    B. Spleen
    C. Lymph node
    D. Tonsils

74. Vasa vasorum are found in the tunica_____ of a large blood vessel
    A. Intima
    B. Media
    C. Externa
    D. All of these are correct

75. Which of the following is not a characteristic of skeletal muscle?
    A. Striations
    B. Branching
    C. Multinucleated
    D. Voluntary

76. Which one of the following is true concerning muscle fibres?
    A. Their nuclei are centrally located
    B. Myofibrils are arranged parallel to the long axis of the cell
    C. Sarcomere are found scattered in the cytoplasm of the cell
    D. Actin and myosin filaments change length during contraction

77. Which of the following is false concerning the slow muscle fibres?
    A. They predominantly use oxygen
    B. They are also known as white muscle fibres
    C. They do not fatigue easily
    D. Contain more mitochondria compared to the fast fibres

78. Which one of the following organelles is not found in the axon of a neuron?
    A. Mitochondria
    B. Smooth endoplasmic reticulum
    C. Rough endoplasmic reticulum
    D. Microtubules

79. Which one of the following is not a characteristic of a ganglion?
    A. The cell bodies contain a large and light nucleus
    B. Nerve fibers are visible close to or within the ganglion
    C. Cells within the ganglion are multipolar
    D. Neurons within the ganglion are surrounded by satellite cells

80. Which of the following is true concerning myelination
    A. There are no unmyelinated nerves in the peripheral nervous system
    B. The myelinated neurons in the nervous system are associated with lemmocytes
    C. Non-myelinated neurons in the central nervous system are associated with astrocytes
    D. Oligodendrocytes are found in the peripheral nervous system

81. Regarding the histology of the nasal cavity, the following is true:
    A. Skin of nostrils have no sebaceous glands
    B. All the nasal conchae are covered by the respiratory epithelium
    C. Have no sero-mucous glands
    D. Superior nasal conchae are covered by olfactory epithelium

82. Concerning the histology of lips, the following is true?
    A. Internal mucosal surface is highly vascularized than red vermillion border
    B. Have two different histological surfaces
    C. The epithelium of the red vermillion border is non-keratinised
    D. Red vermillion border has no salivary or sweat glands

83. Concerning the papillae of the tongue, the following is true
    A. Fungiform papillae form ridges on the sides of the tongue
    B. Circumvallate papillae are found posterior to the sulcus terminalis
    C. There are no papillae on the posterior 1/3rd of the tongue
    D. Do not contain taste buds

84. Which cells of the respiratory epithelium belong to the neuroendocrine system?
    A. Brush cells
    B. Columnar cells
    C. Kulchitsky cells
    D. Basal cells

85. The olfactory glands of Bowman are located in the:
    A. Olfactory lamina propria
    B. Olfactory tract
    C. Olfactory bulb
    D. Olfactory epithelium

86. In relation with sense of taste, all the following substances can be detected by gustatory cells **except:**
    A. Aspartate
    B. Sodium
    C. Calcium ions
    D. Hydrogen ions

87. The ethmoidal air sinuses are lined by:
    A. Pseudo-stratified columnar epithelium
    B. Keratinised stratified squamous epithelium
    C. Simple cuboidal epithelium
    D. Non-keratinized stratified squamous epithelium

88. The following do not provide support to larynx
    A. Skeletal muscles
    B. Fibrocartilage
    C. Elastic cartilage
    D. Hyaline cartilage

89. Concerning the histology of the stomach, the following cells produce hydrochloric acid:
    A. Chief cells
    B. Mucous neck cells
    C. Parietal cells
    D. Gastrin cells

90. Concerning the histology of the stomach, the following cells produce intrinsic factor:
    A. Parietal cells
    B. Mucous neck cells
    C. Gastrin cells
    D. Chief cells

91. Regarding the histology of the stomach, the following is true:
    A. Addison's anaemia can be due to iron deficiency
    B. Gastrin pits lead to simple tubular glands
    C. Vagal denervation of stomach lead to reduction in gastrin juice production
    D. Vitamin B12 deficiency can be caused by destruction of chief cells

92. Select the correct statement regarding the histology of small intestines:
    A. Enterocytes produce do not produce lysozyme
    B. Microfold cells are found in Peyer's patches of the jejunum
    C. Paneth cells are located at the base of gastric crypts
    D. Have neuroendocrine cells

93. Select the correct statement regarding exocrine bronchiolar cells:
    A. Are not able to act as stem cells
    B. Are ciliated
    C. Are only found in respiratory bronchioles
    D. Produce surfactant lipoproteins

94. Large intestines are lined by
    A. Stratified columnar epithelium
    B. Simple columnar epithelium
    C. Stratified cuboidal epithelium
    D. Non-keratinized stratified squamous epithelium

95. About Brunner's glands, the following is false:
    A. Produce alkaline secretions
    B. Are possible extensions of Peyer's patches
    C. Found in duodenum
    D. Are entirely serous

96. True regarding pneumocytes
    A. Type II line alveoli
    B. Type II are fewer than Type I
    C. Type I produce surfactant
    D. Type II form the air-blood barrier

97. About histology of bronchioles:
    A. Clara cells are only found in terminal bronchioles
    B. Have no mucosal glands
    C. Alveoli are found in respiratory bronchioles
    D. Consists of isolated plates of cartilage

98. Concerning the intervillous space of the placenta, the following is not correct:
    A. Is lined by syncytiotrophoblast
    B. Blood into spaces is delivered by chorionic capillaries
    C. Are between the decidual and chorionic plates
    D. Contain maternal blood

99. Grooves on the surface of the placenta are produced by:
    A. Decidual plate
    B. Chorionic plate
    C. Basal plate
    D. Decidual septa

100. Which of the following are phagocytic cells of the placenta?
   A. Dendritic cells
   B. Neutrophils
   C. Histiocytes
   D. Hofbauer cells

101. The following antibodies are able to cross the placenta to the fetus:
   A. IgM
   B. IgG
   C. IgD
   D. IgA

102. Which one the following is not **TRUE** about functions of epithelial tissue?
   A. Sensation is well illustrated in the olfactory neuroepithelium
   B. Absorption is well illustrated by cilia present in lining of small intestines
   C. Contractility is exhibited by the myoepithelial cells
   D. Secretion is well illustrated in glandular epithelia

103. The following cells belong to the mononuclear phagocytic system EXCEPT:
   A. Dust cells
   B. Osteoclasts
   C. Mast cells
   D. Langerhans cells

104. Which of the following statements is true?
   A. Basophils are also known as pus cells
   B. The nuclear cytoplasmic ratio is higher in monocytes compared to lymphocytes
   C. Lymphocytes are usually seen with an indented C-shaped nucleus
   D. In bacterial infections, Neutrophils tend to decrease in blood

105. Which of the following are the most abundant cells at the site of acute inflammation?
   A. Macrophages
   B. Lymphocytes
   C. Monocytes
   D. Neutrophils

106. Which of the following cells produce antibodies?
   A. B-lymphocytes
   B. T-lymphocytes
   C. Plasma cells
   D. Monocytes

107. Which of the following is **TRUE** about bone cells?

A. Osteoblasts are located at the surfaces of bone tissue arranged like a stratified epithelium
B. Like cartilage, each lacuna maybe occupied by multiple cells
C. Osteocytes occupy lacunae and their processes of adjacent cells make contact with each other via harvesian canals
D. A ruffled border is formed on active osteoclast surface facing bone matrix

108. The normal range for white blood cell (WBC) count is:

A. $12\text{-}15\times10^{12}/L$
B. $4\text{-}5\times10^{12}/L$
C. $150\text{-}400\times10^{12}/L$
D. $4\text{-}11\times10^{9}/L$

109. The average life span for thrombocytes is:

A. 120 days
B. 10 days
C. 20 days
D. 100 days

110. Which of the following is not **TRUE** about erythropoiesis?

A. Howell-jolly bodies are acidophilic nuclear remnants of DNA in erythrocytes
B. An orthochromatophilic erythroblast has less basophilia compared to polychromatophilic erythroblast
C. Haemoglobin concentration increases from proerythroblast to erythrocyte stage
D. A basophilic erythroblast has a larger nuclear volume and less condensed chromatin compared to an orthochromatophilic erythroblast

111. Choose the incorrect statement about lymphocytes below:

A. B and T-lymphocytes are indistinguishable in routine blood staining
B. Helper T-lymphocytes have cluster of differentiation 4 (CD4)
C. B-lymphocytes differentiate into plasma cells
D. Final differentiation and maturation of T-lymphocytes happens in the thyroid gland

112. All the following are myeloid cells EXCEPT:

A. Erythrocytes
B. Memory T-cells
C. Thrombocytes
D. Polymorphonuclear leukocytes (PMLs)

113. Which of the following statements is not TRUE about the bone marrow?
   A. The newborn has no yellow marrow
   B. Haematopoietic stem cells are toti-potential
   C. The endothelium of the blood capillaries in the bone marrow is discontinuous
   D. Bone marrow stroma is mostly fibroblasts and delicate reticular fibres

114. Defects involving either a qualitative or quantitative reduction in collagen type I fibres can lead to brittle bone disease. The disease is also called:
   A. Osteogenesis imperfecta
   B. Osteitis fibrosa cystica
   C. Osteopetrosis
   D. Osteomalacia

115. Which of the following is not TRUE about hormones that regulate calcium in the body?
   A. Parathyroid hormone (PTH) is released when there is hypocalcemia so that it stimulates bone resorption
   B. PTH is essential for life
   C. Osteoblasts have receptors for PTH
   D. Calcitonin is secreted by the follicular cells of the thyroid gland

116. Which of the following statements is FALSE about woven bone?
   A. Is characterized by irregular arrangement of type I collagen
   B. Is the first bone to appear in fracture repair
   C. Has a lower proportion of osteocytes than lamellar bone
   D. Has higher mineral content compared to lamellar bone

117. Choose the incorrect statement about the periosteum and endosteum:
   A. The periosteum is double-layered
   B. Both are important in provision of nourishment to the bone tissue
   C. Sharpey fibers bind the endosteum to the bone
   D. Provides bone to grow by appositional growth

118. Which of the following stain blue with **H&E** stain?
   A. Cytoplasm
   B. Collagen fibers
   C. Nucleus
   D. Elastic fibers

119. What is Wright's stain used primarily for?
A. Blood
B. Fat
C. Nervous tissue
D. Elastic fibers

120. During preparation of a routine H&E slide, what step occurs after the tissue is preserved?
A. Fixation
B. Embedding in paraffin
C. Staining
D. Dehydration

121. During the preparation of H&E slide, what allows the tissue to be visualized?
A. Fixation
B. Embedding in paraffin
C. Staining
D. Slicing

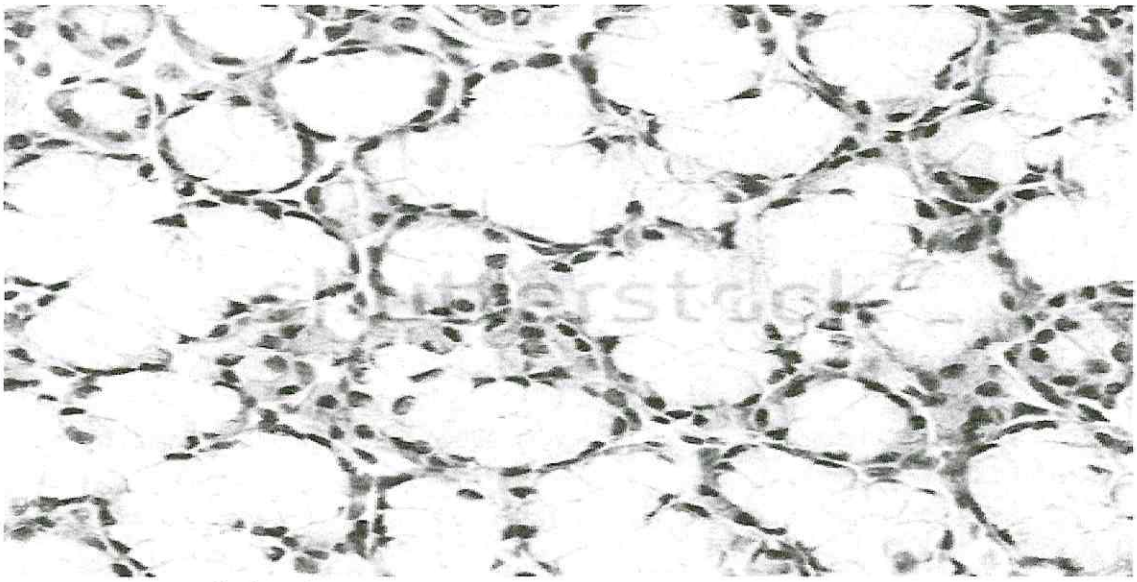
122. Which of the following would be best suited to visualize reticular fibers?
A. Massons's trichrome stain
B. Hematoxylin and eosin stain
C. Sudan stain
D. Silver preparation

123. Concerning the skeletal muscle
A. All muscles cross one or more joints
B. Many actions are automatic
C. The number of muscle fibers is not dependent on the shape
D. The name of the muscle trapezius refers to its function

124. Bursae
A. Are filled with serum
B. May be present where skin moves over a bone
C. Do not communicate with joint cavities
D. Are seen in superficial fascia

125. Brunner's glands are an example of_____
A. Simple acinar
B. Simple branched acinar
C. Compound branched tubular
D. Compound tubulo-acinar

126. What type of a gland is the structure in the picture below.



A. Tubulo-acinar
B. Mucous
C. Serous
D. Sero-mucous

127. Which of the following organelles in liver cells help detoxify alcohol after taking some dry spirits (tujirijiri)
A. Smooth endoplasmic reticulum
B. Golgi apparatus
C. Lysosomes
D. Nucleus

128. Which of the following organelles will be abundant in fibroblasts?
A. Free ribosomes
B. Proteasomes
C. Rough endoplasmic reticulum
D. Golgi apparatus

129. _____are numerous in highly metabolic cells.
A. Ribosomes
B. Smooth endoplasmic reticulum
C. Proteasomes
D. Mitochondria

130. Which of the following is **false** concerning ribosomes
   A. Are basophilic
   B. They are manufactured in the nucleolus
   C. Are called Nissil bodies in neurons
   D. They synthesize lysosomes

131. Which of the following statements is true about cells
   A. All are surrounded by a cell wall
   B. Animal cells are eukaryotic
   C. The nucleus is not membrane bound in human cells
   D. Ribosomes and the nucleus are the two basic parts of our cells

132. Which of the following is true about plasma membrane?
   A. It is made up of a single layer of phospholipids
   B. The phospholipids have nonpolar heads
   C. The phospholipids have polar fatty acid tails
   D. The phospholipid molecules are amphipathic

133. _____degrade unwanted proteins in cells
   A. Proteasomes
   B. Smooth endoplasmic reticulum
   C. Lysosomes
   D. Mitochondria

134. Secretory cells of sweat glands release their products by Exocytosis. They are an example of_____ glands. Which
   A. Holocrine
   B. Merocrine
   C. Apocrine
   D. Mucous

135. Which of the following are inclusion bodies?
   A. Mitochondria
   B. Glycogen
   C. Keratin
   D. Lysosomes

136. Which of the following is an example of hyaline cartilage?
   A. Intervertebral discs
   B. Epiglottis
   C. Epiphyses
   D. Knee menisci

137. Hyaline cartilage _____
   A. Forms glenoid labrum
   B. Does not ossify with age
   C. Relatively vascular
   D. Forms epiphyseal growth plates

138. An example of a synovial joint is
   A. Intervertebral disc
   B. Sternomanubrial joint
   C. Sacroiliac joint
   D. Epiphyses

139. What type of joint is the 1st sternocostal joint
   A. Secondary cartilaginous
   B. Typical synovial
   C. Primary cartilaginous
   D. Fibrous

140. Which of the following movements are permitted at the joints named
   A. Condyloid joint.....biaxial
   B. Hinge joint.....multiaxial
   C. Pivot joint.....multiaxial
   D. Saddle joint.....multiaxial

141. The following joint is a syndesmosis:
   A. Distal tibiofibular
   B. Proximal tibiofibular
   C. Interphalangeal
   D. Humeroulnar

142. The following is an example of an elastic cartilage:
   A. Costal cartilage
   B. Epiglottis
   C. Cricoid cartilage
   D. Arytenoid cartilage

143. The following are wandering cells of connective tissue except:
   A. Mast cells
   B. Basophils
   C. Eosinophils
   D. Neutrophils

144. Mucous connective tissue.
A. Is present in adult
B. Is typical of umbilical cord
C. Found in nostrils
D. Typical of vaginal secretions

145. Tendons are
A. Dense regular connective tissue
B. Rich in elastic fibers
C. Are rich in reticular fibres
D. Has deficiency in collagen

146. Articular cartilage
A. Is covered by perichondrium
B. Is elastic cartilage
C. Easily regenerate following injury
D. Receive nutrition via diffusion from synovial fluid

147. The matrix of hyaline cartilage contains;
A. Nerves
B. Capillaries
C. Chondroitin-4-sulfate
D. Elastic fibers

148. Fibroblasts
A. Phagocytic
B. Produce antibodies
C. Syntheses collagen
D. Are mature cells of connective tissue

149. Collagen fibres are
A. Basophilic
B. Acidophilic
C. Metachromatic
D. Birefringent

150. Reticular fibres are;
A. Readily seen with H&E
B. Argyrophilic
C. PAS positive
D. Contains elastin

151. Aponeurosis are:
A. Found in central nervous system
B. Found in the peripheral nervous system
C. Flattened sheets of dense irregular connective tissue
D. Composed of collagenous bundles

152. Which of the following is not TRUE about tissues of the human body?
A. Nervous tissue has no extracellular matrix
B. Epithelial barriers are not important components of innate immunity
C. Connective tissue has abundant extracellular matrix
D. Junctional complexes are also present in muscle tissue

153. Which of the following is true about an axoneme?
A. Dynein is present/functional in kertagener's syndrome
B. Made up of actin filaments
C. Non-motile cilia has a 9+0 pattern
D. Found in the core of only cilia and not flagella

154. Choose the incorrect statement about epithelial tissue
A. Cells are continuously renew by mitosis
B. Has tight junctions which anchor cells of the epithelium together
C. Cells have structural and functional polarisation
D. Basal laminae may serve as passageway for cell migration

155. Which of the following is not an epithelial cell surface specializations?
A. Stereocilia
B. Cilia
C. Villi
D. Microvilli

156. Which of the following is true about change in epithelium?
A. Dysplasia is a physiological change
B. Change of epithelium in respiratory tract of a heavy smoker to stratified squamous (non-keratinized) is dysplastic
C. Disruption of change of epithelium to non-keratinized stratified squamous in the endocervix is dysplastic
D. Change of epithelium in lower oesophagus in a patient with gastroesophageal reflux disease (GERD) to simple columnar (Barret's oesophagus) is metaplastic

157. Which of the following lines the paranasal air sinuses?
A. Simple squamous
B. Simple columnar
C. Ciliated pseudo-stratified columnar
D. Non-keratinized stratified squamous

158. Which one of the following is correctly matched?
A. Elastic cartilage..... secondary bronchus
B. Goblet cells..... terminal bronchiole
C. Smooth muscle.....Respiratory bronchiole
D. Ciliated epithelial cell.....trachea

159. Which statement regarding lymphocyte circulation is not TRUE:
A. Both T and B cells are found in peripheral blood
B. Lymphocytes exit lymph nodes from the cortex surface
C. T lymphocytes form the periarterial lymphatic sheath (PALS) of the spleen
D. Lymphocytes enter the thymus via blood vessels
E. B lymphocytes are dominant in the lymphoid follicle

160. The following lymphoid organs is paired with the appropriate histological feature:
A. Spleen..... marginal zone
B. Pharyngeal tonsil..... Ciliated pseudo-stratified columnar epithelium
C. Thymus..... HEV
D. Lymph node.....Billroth's cords
E. Peyer's patches.....afferent lymphatic vessels

161. Germinal centres are normally found in the following EXCERPT:
A. Spleen
B. Thymus
C. Lymph node
D. Tonsil
E. Appendix

162. Concerning cilia
A. Have an action core explaining it's motility
B. It is attached to the terminal web
C. The base of a cilium is the centriole
D. Imotile cilia is seen in the ear
E. It is important in the stomach

163. Which of the following concerning the vestibule of the nose is incorrect?
A. It has an elastic cartilage framework
B. It has stratified squamous epithelium
C. It has sweat glands
D. It has cilia on it's epithelium
E. It has sebaceous glands

164. The part of the gastrointestinal tract that contains the mucosa-associated lymphoid tissue (MALT) is the:
A. Muscularis mucosae
B. Submucosa
C. Lamina propria
D. Serosa
E. Muscularis externa

165. Regarding glands:
A. Glands of Littre are sebaceous glands
B. Apocrine sweat glands are functional before birth
C. Urogastrone is from the duodenal glands
D. Intestinal pits are infoldings of the mucosa
E. Brunner's glands are compound tubuloacinar

166. Which of the following is not a feature of monocytes?
A. Are the largest of the white cells
B. Are precursors of histiocytes
C. It is highly phagocytic in circulating blood
D. Are antigen presenting cells
E. Have a nucleus with several nucleoli

167. In the alimentary canal system
A. The center of a classical hepatic lobule is a portal triad
B. In the upper third of the oesophagus the muscular externa consists of skeletal muscles only
C. The vermiform appendix has Peyer's patches
D. Blood flows from the periphery to the center of a portal lobule
E. The gall bladder has submucosal

168. Concerning the oral cavity:
A. Foliate papillae are numerous on the human tongue
B. Odontoblasts degenerate after eruption of the tooth
C. Alveolar bone is spongy bone
D. Vermillion border has sebaceous glands

169. Stereocilia
A. Are acidic moving in waves
B. Are part of the respiratory epithelium
C. Have a core of microtubules
D. Is seen in the uterine tubes
E. Have absorption functions

170. Pilosebaceous unit is made up of the following except:
A. Smooth muscles
B. Hair follicle
C. Sweat glands
D. Saccular gland
E. Arrector pilorum

171. Which statement is **not true** concerning eosinophils?
A. Have a bilobed nucleus often obscured by bright red granules
B. Circulate for about 3-8 hours
C. Have a diurnal variation
D. Increase in numbers in parasitic disease
E. Are phagocytic

172. Concerning hematopoiesis:
A. It first begins in the yolk sac
B. It first begins in the liver
C. It first begins in the bone marrow
D. Bone marrow has reticulocytes that form reticular fibers
E. Megakaryocytes are macrophages

173. The following statements about lymphocytes is **incorrect:**
A. T lymphocytes have three main subsets
B. CD4 cells are cytotoxic cells killing viual infected cells
C. B lymphocytes are derived from bone marrow
D. Natural killer cells kill viral infected cells
E. There comprise of 20-50% of leukocytes in circulation

174. Concerning veins:
A. Valves occur in hepatic portal vein
B. They hold about 50% of blood volume at any one time
C. Veins in the kidneys are fenestrated
D. Post capillary venules are the main sites of diapedesis
E. Movements of blood towards the heart is aided by contraction of muscles

175. Which of the following statements concerning the maculae adherentes is **incorrect?**

A. It is formed by a disc-shaped structure known as a connexon
B. It is important in cell adhesion
C. It is also known as desmosomes
D. It is also called a spot junction
E. It is associated with intermediate filaments

176. Stratified columnar epithelium is found in the following:

A. Oesophagus
B. Gall bladder
C. Epididymis
D. Conjunctiva
E. Ducts

177. The organelle/s that divide by fission is or are the

A. Ribosomes
B. Microbody
C. Mitochondria
D. Golgi apparatus
E. Smooth endoplasmic reticulum

178. Which statement concerning erythrocytes is not true?

A. Their nuclei are not extruded prior to release into circulation
B. Mature erythrocytes do not have any cytoplasmic organelles
C. They have a pale-staining central region
D. Effete cells are removed from the circulation by the spleen and liver
E. Synthesis of haemoglobin is completed before the cells are released into the circulation

179. Regarding reticulocytes:

A. These are connective tissue cells of the bone marrow
B. They are easily distinguished from mature erythrocytes in routinely stained blood smears
C. Their count provides a measure of the rate of red blood cell formation in the bone marrow
D. Form the frame framework in the thymus
E. Their numbers decreases following bleeding

180. The following concerning neutrophils are true except:
A. Constitute 40-75% of circulating leukocytes
B. In peripheral blood films have an appendage on one of the nuclear lobes in 3% of females
C. Have secondary granules which are large lysosomes
D. Are also called pus cells
E. Have a degree of protein synthesis

181. Mucous cells:
A. Are usually cuboidal in shape
B. Have nuclei that are pressed towards the bases of the cells
C. Almost exclusively comprise the secretory portion of the submandibular gland
D. Are basophilic
E. Are seen in breast tissue

182. The following skin appendages are seen in thick skin:
A. Sweat glands
B. Hair follicles
C. Sebaceous glands
D. Apocrine sweat glands
E. Smooth muscle

183. The following cell junction complexes are continuous **EXCEPT:**
A. Zona adherens
B. Zona occludens
C. Intermediate junction
D. Macula adherens
E. Tight junctions

184. Which of the following organelles are non-membrane bound?
A. Vesicle
B. Peroxisomes
C. Proteasomes
D. Lysosomes
E. Nucleus

185. Which of the following is **NOT** true concerning the mitochondria?
A. They replicate independently from the cell
B. They are passed on via the sperm
C. Contain their own genetic material
D. Vary in morphology between cells

186. Which of the following has a membrane which is continuous with that of the nucleus?

A. Smooth endoplasmic reticulum
B. Golgi apparatus
C. Rough endoplasmic reticulum
D. Heterosome
E. Centrosome

187. Which of the following are abundant in fibroblasts?

A. Free ribosomes
B. Proteasomes
C. Rough endoplasmic reticulum
D. Golgi apparatus
E. Proteasomes

188. Which of the following statements is correct?

A. DNA material that is inactive in RNA synthesis is referred to as euchromatin
B. The nucleus is structurally supported by microtubules called nuclear lamina
C. Chromatin is made up of heterochromatin and histone proteins
D. All the nucleoproteins are synthesized in the cytoplasm
E. None of the above

189. _____are numerous in highly metabolic cells

A. Ribosomes
B. Smooth endoplasmic reticulum
C. Proteasomes
D. Rough endoplasmic reticulum
E. Mitochondria

190. Which of the following is true about glands?

A. The glands in the large intestines are simple acinar glands
B. The mammary glands are compound tubular glands
C. Brunner's glands are compound acinar
D. Stomach glands are simple branched tubular
E. The parotid gland is a mixed gland

191. The fluid mosaic model describes the plasma membrane as consisting of

A. Two layers of phospholipids with protein in between them
B. A protein bilayer with embedded phospholipids
C. A phospholipid single layer with embedded proteins
D. A phospholipid bilayer with proteins embedded in it

192. Regarding the cell, which of the following is **not true?**
   A. Neutrophils contain zymogenic granules
   B. Macrophages have numerous lysosomes
   C. Skeletal muscle cells have a prominent nucleolus
   D. Basophils compliment mast cell in terms of function

193. Which of the following is correct about myoepithelial cells ?
   A. Are stimulated by hormones
   B. Are smooth muscle cells
   C. Surround the basal lamina
   D. Are scattered among secretory cells

194. _____line is seen as a line demarcation between lighter flexor and the darker extensor parts of the skin limbs.
   A. Futcher's
   B. Wrinkle
   C. Occupational
   D. Contour

195. Regarding the resting skin tension lines, which statement is correct?
   A. Are inappropriate for surgical incision
   B. Pinching at right will produce more tension lines
   C. Are altered by contraction of muscles deep to them
   D. Are same as kraissl lines

196. Which of the following statements regarding cytoskeleton is **correct?**
   A. The intermediate filaments are the smallest form of cytoskeletons
   B. Microfilaments anchor in position some plasma membrane proteins
   C. A pair of centrosomes make a centriole
   D. Basal bodies in a cilium are made of nine pairs of microtubules

197. Which of the following epithelium lines the cornea of the eye?
   A. Simple squamous epithelium
   B. Pseudo-stratified columnar ciliated epithelium
   C. Stratified squamous non-keratinized epithelium
   D. Stratified columnar epithelium

198. Which of the following epithelium lines the pleural cavity?
   A. Simple squamous epithelium
   B. Pseudo-stratified columnar
   C. Endothelium
   D. Simple columnar epithelium

211. Which of the following structures are **not** a characteristic of the visceral part of the Bowman's capsule?

A. Podocytes
B. Primary processes
C. Pedicels
D. Vascular pole

212. Which of the following cells in the kidneys are involved in the process of red blood cell production?

A. Mesangial cells
B. Juxtaglomerular granule cells
C. Extraglomerular mesangial cells
D. Fibroblasts

213. Which of these is **not** a function of the kidneys?

A. Regulation of acid-base balance
B. Secretion of angiotensin I
C. Activation of Vitamin D
D. Balance of water and electrolytes

214. Which of the following structures are **not** found in the renal corpuscle?

A. Podocytes
B. Capillaries
C. Macula densa
D. Mesangial cells

215. Concerning the structure of the male reproductive system,

A. The urethra passes through the corpus cavernosa
B. The penis has paired corporaspongiosa
C. The glands extends from the corpus spongiosum
D. Erectile tissue of the penis is made up of skeletal muscles

216. Which of the following structures have a lot of stereocilia on their epithelium?

A. Epididymis
B. Ductus deferens
C. Prostatic urethra
D. Ejaculatory duct

217. Which statement **true** concerning seminal vesicles?
A. They produce 30% of the ejaculate
B. The fructose in its secretion coagulate the semen after ejaculation
C. The postaglandins in it's secretion stimulate activity in the female
D. They store spermatozoa

218. What is the name of the capsule that surrounds the testes?
A. Tunica albuginea
B. Tunica adventitia
C. Tunica media
D. Tunica vaginalis

219. Maturation of spermatozoa occurs in the
A. Seminiferous tubules
B. Epididymis
C. Rete testis
D. Vas deferens

220. Which of the following cells of the testes produce the hormone testosterone?
A. Leydieg cells
B. Sertoli cells
C. Myoid cells
D. Mast cells

221. Concerning seminiferous tubules of the testes
A. Converge to become epididymis
B. Lined by simple cuboidal epithelium
C. Basement membrane covered by skeletal muscle fibers
D. They produce spermatozoa

222. Concerning the Vas deferens
A. Enlarged portion is called ampulla
B. Lined by simple columnar epithelium with stereocilia
C. Sperms are stored in the distal portion
D. Enters abdominal cavity via pubic arch

223. What gland in males is homologous to greater vestibular gland in females
A. Prostate
B. Bartholin's gland
C. Cowper's gland
D. Urethral gland

224. Female reproductive system
   A. The epithelial cells of the uterus have microvilli
   B. Uterine tubes epithelial cells are ciliated
   C. The uterine glands are simple tubular
   D. During menstruation, pars functionalis of the endometrium is not lost

225. The following joint is a syndesmosis
   A. Distal tibiofibular
   B. Proximal tibiofibular
   C. Interphalangeal
   D. Humeroulnar

226. With regard to the lining of the ileum, the following are true except _____
   A. It is lined by a simple columnar epithelium
   B. It has multicellular structures, goblet cells
   C. It has simple straight tubular glands, crypts of Lieberkuhn
   D. Paneth cells are present at the base of the intestinal glands

227. Which of the following organs are supported by reticular tissue?
   A. Spleen
   B. Thymus
   C. Brain
   D. Tongue

228. _____is the phase in which the growth of hair is arrested and there is shedding of hair.
   A. Catagen
   B. Telogen
   C. Anagen
   D. Puberty

Answers

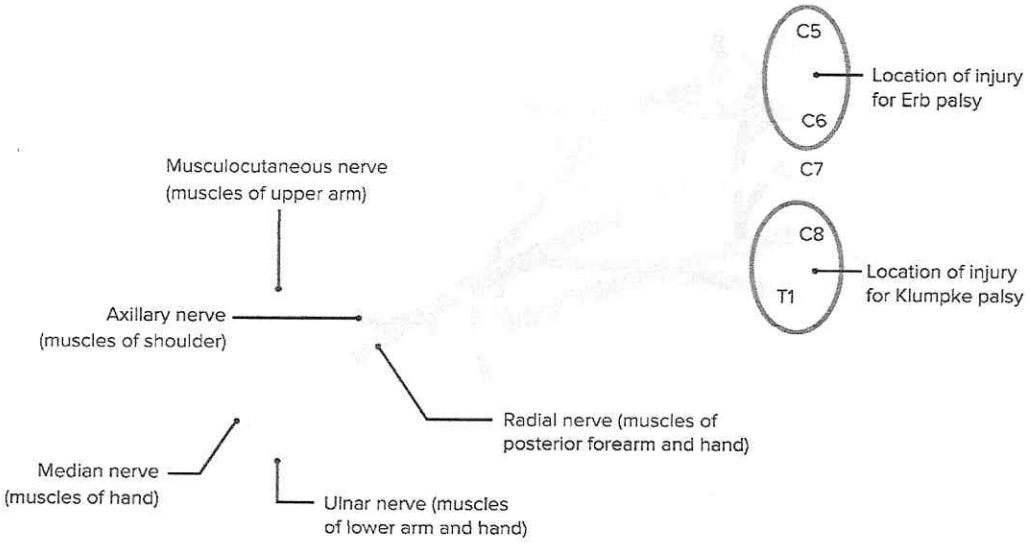
1.A	26.B	51.B	76.B
2.A	27.A	52.D	77.B
3.B	28.D	53.C	78.C
4.B	29.C	54.A	79.A
5.A	30.A	55.C	80.C
6.B	31.C	56.A	81.D
7.A	32.C	57.A	82.D
8.A	33.B	58.C	83.C
9.A	34.C	59.B	84.C
10.A	35.C	60.A	85.A
11.D	36.B	61.B	86.C
12.A	37.C	62.A	87.A
13.B	38.B	63.C	88.B
14.A	39.A	64.D	89.C
15.D	40.A	65.C	90.A
16.B	41.D	66.B	91.C
17.B	42.B	67.A	92.A
18.B	43.B	68.B	93.D
19.C	44.D	69.B	94.B
20.D	45.C	70.C	95.D
21.D	46.A	71.B	96.B
22.C	47.C	72.B	97.B
23.A	48.D	73.C	98.B
24.A	49.A	74.C	99.D
25.A	50.B	75.B	100.

101.B	126.D	151.C	176.D	201.B 226.B
102.B	127.A	152.B	177.C	202.C 227.A
103.C	128.C	153.C	178.A	203.A 228.B
104.B	129.D	154.D	179.C	204.C
105.D	130.D	155.B	180.D	205.C
106.C	131.B	156.D	181.B	206.B
107.D	132.D	157.C	182.A	207.D
108.D	133.C	158.D	183.D	208.A
109.B	134.B	159.B	184.C	209.A
110.A	135.B	160.C	185.B	210.B
111.D	136.C	161.B	186.C	211.D
112.B	137.D	162.D	187.C	212.D
113.B	138.C	163.A	188.D	213.B
114.A	139.C	164.C	189.E	214.C
115.D	140.A	165.C	190.D	215.C
116.D	141.A	166.D	191.D	216.A
117.C	142.B	167.B	192.C	217.C
118.C	143.B	168.C	193.D	218.A
119.A	144.B	169.E	194.A	219.B
120.D	145.A	170.C	195.C	220.A
121.C	146.A	171.B	196.B	221.D
122.D	147.C	172.A	197.C	222.A
123.A	148.C	173.B	198.A	223.C
124.B	149.B	174.D	199.A	224.C
125.C	150.B	175.A	200.C	225.A

GROSS ANATOMY

Highlighted diagrams

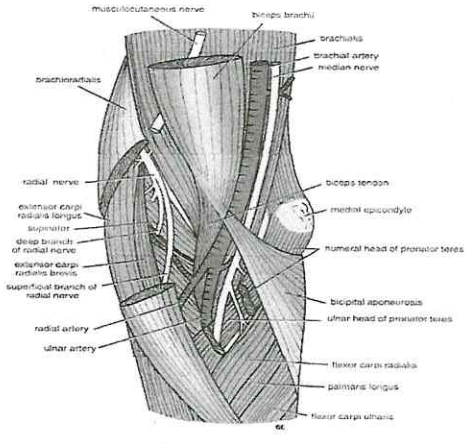
1.Erbs palsy vs klumpke's



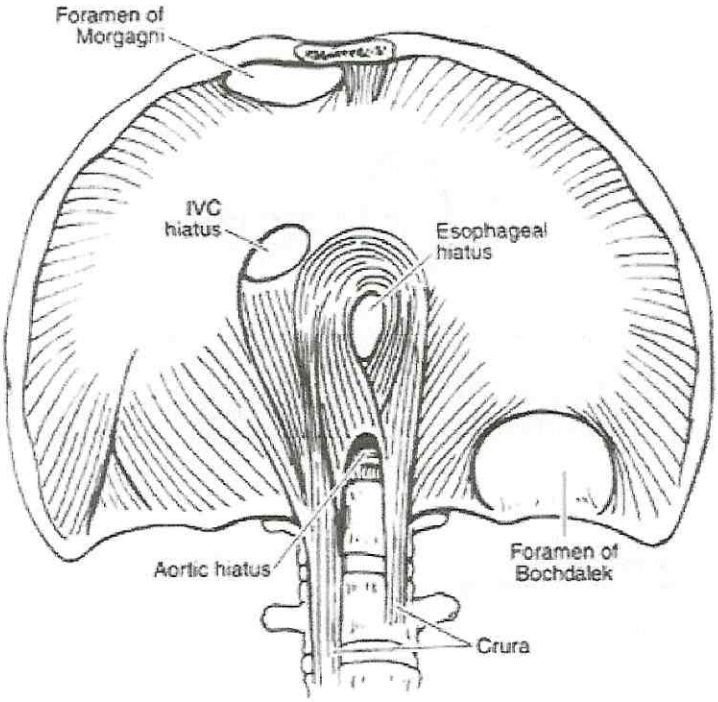
2.Cubital fossa

Contents

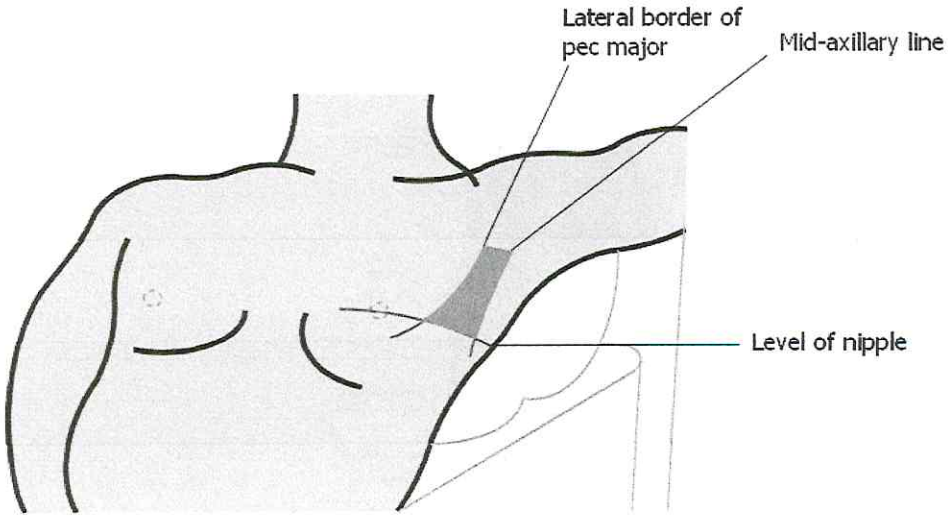
- The cubital fossa contains the following structures, from the medial to the lateral side
- the **median nerve**, the bifurcation of the **brachial artery** into the ulnar and radial arteries, the tendon of the **biceps muscle**, and the **radial nerve** and its deep branch.
- The supratrochlear lymph node lies in the superficial fascia over the upper part of the fossa
- receives afferent lymph vessels from the third, fourth, and fifth fingers; the medial part of the hand; and the medial side of the forearm
- The efferent lymph vessels pass up to the axilla and enter the lateral axillary group of nodes



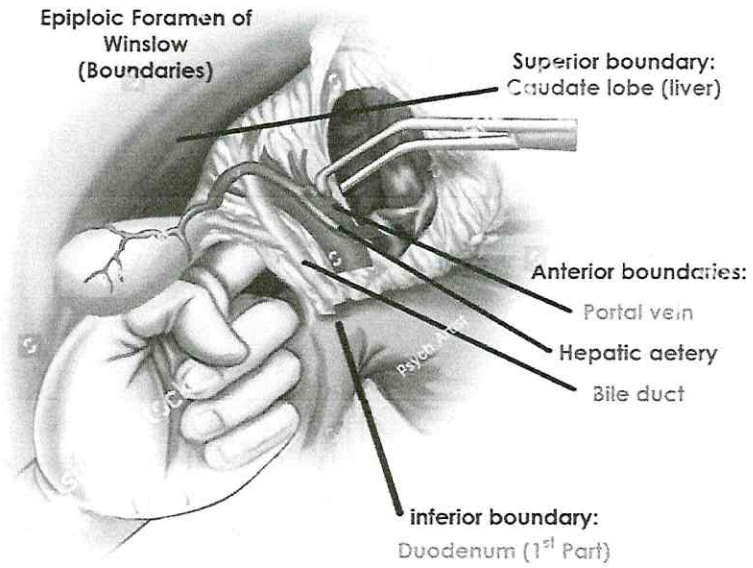
3. Foramen of Morgagni vs Foramen of Bochdalek



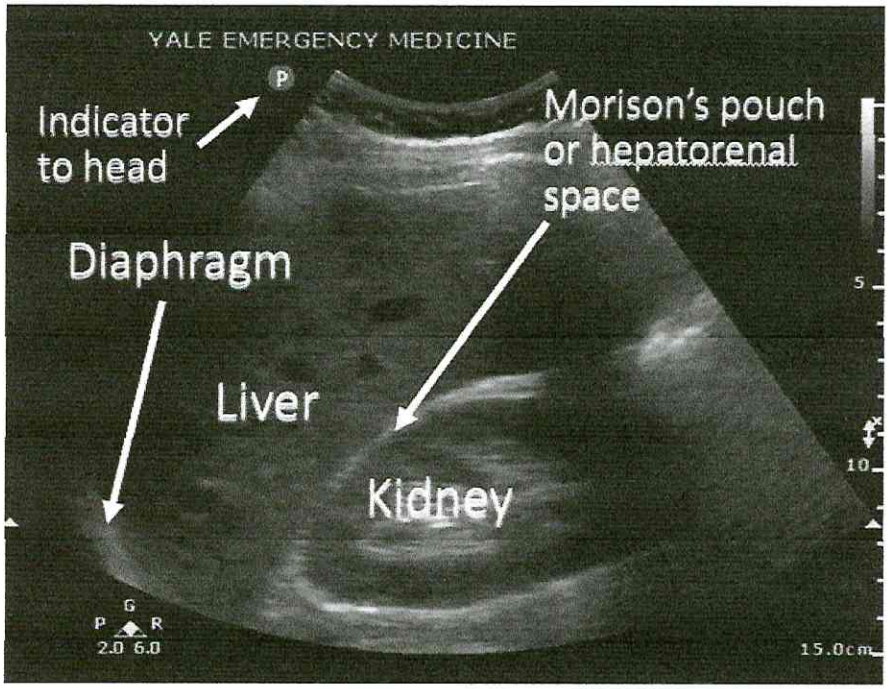
4. The safe Triangle boundaries



5. Epiploic foramen of Winslow Boundaries



6. Morrison's pouch



1. Baby of Sarah Mwanza was born after doing maneuvers for shoulder dystocia, a condition where the baby's head is out but the shoulders are stuck in the pelvis during spontaneous vaginal delivery. The diagnosis came after a failed attempt to deliver the baby's head by pulling it but it was noted that it's anterior shoulder is stuck behind the pubic symphysis. This baby is likely to suffer which of the following injury?
    A. Klumpke's pulse
    B. Carpal tunnel syndrome
    C. Erb's paralysis
    D. Wrist drop
2. Which nerve roots are involved in the likely condition for baby of Sarah Mwanza in Question 1 above?
    A. C7, C8
    B. C8, T1
    C. C4, C5
    D. C5, C6
3. 35-year-old Mutale Mulenga works as a casual worker at National Milling Corporation Limited in Lusaka where he lifts heavy loads of 50kg bags of maize meal. He has now suffered a direct inguinal hernia which needs to be repaired. During his operation, the most important content of the of the spermatic cord which should not be cut is:
    A. Testicular artery
    B. Ductus deferens
    C. Ilioinguinal nerve
    D. Genital branch of genitofemoral nerve
4. During a fight a man is stabbed in the lateral chest beneath the right arm. The wound does not enter the chest cavity, physical examination reveals that the vertebral (medial) border of the patients scapula projects posteriorly and is closer to the midline on the injured side. On return visit the patient complains that he cannot reach as far forward (such as to reach for a door knob) as he could before the injury. The nerve injured which caused these symptoms is the:
    A. Axillary
    B. Long thoracic
    C. Musculocutaneous
    D. Radial
    E. Suprascapular
5. The nerve which passes through the quadrangular space of the posterior shoulder innervates which muscle?
    A. Deltoid
    B. Infraspinatus
    C. Subscapularis
    D. Supraspinatus
    E. Teres major

6. A man suffers a penetrating wound through the anterior axillary fold, the resulting damage to one of the main terminal branches of the brachial plexus. Among the effects is a significant weakening of flexion of the elbow. One or more other effects to be expected is(are):
    A. Loss of cutaneous sensation on the tips of several fingers
    B. Only loss of cutaneous sensation on the anterolateral surface of the forearm
    C. Only weakening of flexion at the shoulder
    D. Weakening of flexion at the shoulder and loss of cutaneous sensation on the anterolateral surface of the arm
    E. Weakening of flexion at the shoulder and loss of cutaneous sensation on the anterolateral surface of the forearm
7. A person sustains a left brachial plexus injury in an auto accident. After initial recovery the following is observed: 1. The diaphragm functions normally, 2. There is no winging of the scapula, 3. Abduction cannot be initiated, but if the arm is helped through the first 45 degrees of abduction, the patient can fully abduct the arm. From this amount of information and your knowledge of the formation of the brachial plexus where would you expect the injury to be:
    A. Axillary nerve
    B. Posterior cord
    C. Roots of plexus
    D. Superior trunk
    E. Suprascapular nerve
8. The cords of the brachial plexus are;
    A. Above the clavicle, medial to the scalenus medius
    B. Above the clavicle, anterior to the scalenus anterior
    C. Below the clavicle closely related to the axillary artery
    D. Below the clavicle, closely related to the subclavian vein
    E. Four in number
9. A man riding a motorcycle hit a wet spot in the road, lost control, and was thrown from his bike. He landed on the right side of his head and the tip of his shoulder, bending his head sharply to the left and stretching the right side of his neck. Subsequent neurological examination revealed that the roots of the 5th and 6th cervical nerves had been torn away from the spinal cord.
   Following the above injury, which of the movements of the arm at the shoulder would you expect to be totally lost?
    A. Adduction
    B. Abduction
    C. Flexion
    D. Extension
    E. Medial rotation

10. Following the above injury where would most likely be diminished cutaneous sensation over what part of the upper limb?
    A. The back of the shoulder
    B. The pectoral region
    C. The top of the shoulder and the lateral side of the arm
    D. The medial side of the forearm
    E. The tip of the little finger
11. During an industrial accident, a sheet metal worker lacerates the anterior surface of his wrist at the junction of his wrist and hand. Examination reveals no loss of hand function, but the skin on the thumb side of his palm is numb. Branches of which nerve must have been severed?
    A. Lateral cutaneous nerve of the forearm
    B. Medial cutaneous nerve of the forearm
    C. Median
    D. Radial
    E. Ulnar
12. In the axilla the pectoralis minor is a landmark, and is closely related to all of the following structures except:
    A. Cephalic vein
    B. Cords of the brachial plexus
    C. Lateral thoracic artery
    D. Medial pectoral nerve
    E. Second part of the axillary artery
13. The axillary nerve arises directly from which part of the brachial plexus?
    A. Inferior trunk
    B. Lateral cord
    C. Medial cord
    D. Middle trunk
    E. Posterior cord
14. In a fracture of the surgical neck of the humerus, which artery may be injured?
    A. Subscapular
    B. Posterior humeral circumflex
    C. Radial recurrent
    D. Deep brachial
    E. Circumflex scapula
15. While riding a bike, a patient fell against a tree and fractured the shaft of the humerus at midlength. What nerve may be injured because of it's close proximity to the injury?
    A. Ulnar
    B. Radial
    C. Axillary
    D. Medial antebrachial cutaneous
    E. Median

16. As an inexperienced phlebotomist (blood drawer) attempts to insert the needle to draw blood from the median cubital vein, the patient suddenly screams and complains of pain and burning in the middle and thumb side of his palm. The nerve accidentally impaled on the needle was the
    A. Lateral cutaneous nerve of the forearm
    B. Medial cutaneous nerve of the forearm
    C. Median
    D. Ulnar
    E. Posterior cutaneous nerve of the forearm
17. The general name for an alternate pathway of blood flow in or around an organ, around a joint, or past an obstruction is called:
    A. An arteriovenous anastomosis
    B. A periarterial network
    C. A perivascular plexus
    D. A venous plexus
    E. Collateral circulation
18. When people are severely burned they have great difficulty with fluid loss because the portion of the skin which is the fluid barrier is destroyed. Which layer of the skin is responsible for preventing fluid loss?
    A. Dermis
    B. Epidermis
    C. Investing fascia
    D. Panniculus adiposus
    E. Subcutaneous tissue
19. Supination of the hand and forearm would be diminished by loss of radial nerve function. But one very powerful supinator would remain intact and unaffected, namely:
    A. Brachialis
    B. Brachioradialis
    C. Biceps brachii
    D. Flexor Carpi radialis
    E. Supinator
20. The anterior interosseous is a branch of which nerve?
    A. Axillary
    B. Median
    C. Musculocutaneous
    D. Radial
    E. Ulnar
21. What muscle is innervated by branches of both the median and ulnar nerves?
    A. Flexor Carpi ulnaris
    B. Flexor digitotum superficialis
    C. Flexor digitotum profundus
    D. Flexor pollicis Longus
    E. Pronator quadratus

22. Compression of the median nerve in the carpal tunnel affects which hand muscle?
    A. Dorsal interossei
    B. Flexor pollicis brevis
    C. Flexor pollicis Longus
    D. Opponens digiti minimi
    E. Palmar interossei
23. The pulse of the radial artery at the wrist is felt immediately lateral to which tendon?
    A. Abductor pollicis Longus
    B. Extensor pollicis Longus
    C. Flexor Carpi radialis
    D. Flexor digitotum profundus
    E. Palmaris Longus
24. The second costal cartilage can be located by palpating the:
    A. Costal margin
    B. Sternal angle
    C. Sternal notch
    D. Sternoclavicular joint
    E. Xiphoid process
25. The sternocostal surface of the heart is formed primarily by the anterior wall of which heart chamber?
    A. Left atrium
    B. Left ventricle
    C. Right atrium
    D. Right ventricle
    E. None of the above
26. A patient involved in an automobile accident presents with a sharp object puncture of the middle of the sternum at about the level of the 4th or 5th costal cartilage. If the object also penetrated pericardium and heart wall, which heart chamber would most likely be damaged?
    A. Left atrium
    B. Left ventricle
    C. Right atrium
    D. Right ventricle
    E. All of the above
27. You are caring for a 68-year-old male who has copious amounts of fluid in the left pleural cavity due to acute pleurisy. When you examine him as he sits up in bed (trunk upright), where would the fluid tend to accumulate?
    A. Costodiaphragmatic rec
    B. Costomediastinal recess
    C. Cupola
    D. Hillar reflection
    E. Middle mediastinum

28. A 23 year old male injured in an industrial explosion was found to have multiple small metal fragments in his thoracic cavity. Since the pericardium was torn inferiorly, the surgeon began to explore for fragments in the pericardial sac. Slipping her hand under the heart apex, she slide her fingers upward and to the right within the sac until they were stopped by the cul-de-sac formed by the pericardial reflection near the base of the heart. Her fingertips were then in the:
    A. Coronary sinus
    B. Coronary sulcus
    C. Costomediastinal recess
    D. Oblique sinus
    E. Transverse sinus
29. A hand slipped behind the heart at its apex can be extended upwards until stopped by a line of pericardial reflection that forms the:
    A. Cardiac notch
    B. Costomediastinal recess
    C. Hillar reflection
    D. Oblique pericardial sinus
    E. Transverse pericardial sinus
30. The first rib articulates with the sternum in close proximity to the:
    A. Nipple
    B. Root of the lung
    C. Sternal angle
    D. Sternoclavicular joint
    E. Xiphoid process
31. The portion of the parietal pleura that extends above the first rib is called the:
    A. Costodiaphragmatic recess
    B. Costomediastinal recess
    C. Costocervical
    D. Cupola
    E. Endothoracic fascia
32. You are attending an operation to remove a thymic tumor from the superior mediastinum. The surgeon asks, "what important nerve lying on and partly curving posteriorly around the arch of the aorta should we be careful of as we remove this mass?" You quickly answer, "The—
    A. Left phrenic
    B. Left sympathetic trunk
    C. Left vagus
    D. Right phrenic
    E. Right sympathetic trunk

33. A needle inserted into the 9th intercostal space along the midaxillary line would enter which space?
    A. Cardiac notch
    B. Costodiaphragmatic recess
    C. Costomediastinal recess
    D. Cupola
    E. Oblique pericardial sinus
34. The pleural cavity near the cardiac notch is known as the:
    A. Costodiaphragmatic recess
    B. Costomediastinal recess
    C. Cupola
    D. Hilum
    E. Pulmonary ligament
35. The tubercle of the 7th rib articulates with which structure?
    A. Body of vertebra T6
    B. Body of vertebra T7
    C. Body of vertebra T8
    D. Transverse process of vertebra T6
    E. Transverse process of vertebra T7
36. The ductus arteriosus sometimes remains open after birth requiring surgical closure. When placing a clamp on the ductus, care must be taken to avoid injury to what important structure immediately dorsal to it?
    A. Accessory hemiazygos vein
    B. Left internal thoracic artery
    C. Left phrenic nerve
    D. Left recurrent laryngeal nerve
    E. Thoracic duct
37. Blockage of which of the following arteries would lead to ischemia of the apex of the heart?
    A. Anterior interventricular (descending)
    B. Left circumflex
    C. Posterior interventricular (descending)
    D. Right marginal
    E. Right coronary
38. A stethoscope placed over the left second intercostal space just lateral to the sternum would be best positioned to detect sounds associated with which heart valve?
    A. Aortic
    B. Pulmonary
    C. Mitral
    D. Tricuspid
    E. Inferior vena cava valve

39. Which valves would be open during ventricular systole?
    A. Aortic and pulmonary
    B. Aortic and tricuspid
    C. Mitral and aortic
    D. Tricuspid and mitral
    E. Tricuspid and pulmonary
40. During fetal life and sometimes persisting into the adult there is an opening between the right and left atrial; this opening is called the:
    A. Atrioventricular canal
    B. Ventricular septal foramen
    C. Foramen ovale
    D. Sinus venosus
    E. Truncus arteriosus
41. The heart sound associated with the mitral valve is best heard:
    A. In the jugular notch
    B. In the second left intercostal space
    C. In the second right intercostal space
    D. In the fifth left intercostal space
    E. To the right of the xiphoid process
42. Which heart valve has leaflets described as "anterior, left and right"?
    A. Aortic
    B. Pulmonary
    C. Left atrioventricular
    D. Right atrioventricular
    E. Mitral
43. Which structure does NOT lie in the coronary sulcus?
    A. Circumflex artery
    B. Coronary sinus
    C. Right coronary artery
    D. Right marginal artery
    E. Left coronary artery
44. Which structure contains postganglionic sympathetic fibers?
    A. Greater splanchnic nerve
    B. Recurrent laryngeal nerve
    C. Sympathetic trunk
    D. Ulnar nerve
    E. Vagus
45. Which posterior mediastinal structure is most closely applied to the posterior surface of the pericardial sac?
    A. Aorta
    B. Azygos vein
    C. Esophagus
    D. Thoracic duct

46. In obstruction of the superior or inferior vena cava, venous blood is returned to the heart by an alternate route via the azygos vein, which becomes dilated in the process. Which of the following structures might it compress as a result?
    A. Trachea
    B. Root of the right lung
    C. Phrenic nerve
    D. Thoracic duct
    E. Descending aorta
47. You are called to perform thoracentesis (remove fluid from the pleural cavity). If you are to avoid injuring lung or neurovascular elements, where would you insert the aspiration needle?
    A. The top of intercostal space 8 in the midclavicular line
    B. The bottom of intercostalspace 8 in the midclavicular line
    C. The top of intercostal space 9 in the midaxillary line
    D. The bottom of intercostal space 9 in the midaxillary line
    E. The top of intercostal space 11 in the scapular line
48. Which feature is found only in the left lung?
    A. Cardiac notch
    B. Horizontal fissure
    C. Oblique fissure
    D. Superior lobar bronchus
    E. Three lobes
49. The oblique fissure of the right lung separates which structures?
    A. Lower lobe from lingula
    B. Lower lobe from upper lobe only
    C. Lower lobe from both upper and middle lobes
    D. Lower lobe from middle lobe only
    E. Upper from middle lobe
50. A 4-year-old girl is brought in with coughing, and you are told by her mother that she had been playing with some beads and had apparently aspirated one (gotten it into her airway). Where would you expect it to most likely be?
    A. Apicoposterior segmental bronchus
    B. Left main bronchus
    C. Lingular segment of left lung
    D. Right main bronchus
    E. Terminal bronchiole of right lung, lower lobe
51. Which statement is true about the right lung?
    A. It is slightly smaller than the left lung
    B. It has a lingular segmental bronchus
    C. It occupies the rightmost portion of the mediastinum
    D. It's upper lobar bronchus lies behind and above the right pulmonary artery
    E. It has the right phrenic nerve passing posterior to the lung root

52. Which vessel courses across the mediastinum in an almost horizontal fashion?
    A. Left subclavian artery
    B. Left subclavian vein
    C. Left brachiocephalic vein
    D. Left internal jugular vein
    E. Left common carotid artery
53. Sympathetic fibers in the greater splanchnic nerve arise from neuron cell bodies found in the:
    A. Brainstem
    B. Celiac ganglion
    C. Chain ganglion
    D. Spinal cord
    E. Superior mesenteric ganglion
54. Which nerve fiber would have it's cell body in the lateral horn of the spinal cord at segmental level T1?
    A. Afferent fiber from cutaneous blood vessels of the nose
    B. Afferent fiber from skin around the nipple
    C. Efferent fibers to sweat glands in the lumbar region
    D. Efferent fibers to skin of the forehead
    E. Parasympathetic fibers to the heart
55. Gray rami communicantes contain postganglionic sympathetic fibers that innervate which of the following structures in the thoracic region?
    A. Aorta
    B. Heart
    C. Lung
    D. Sweat glands
    E. Trachea
56. During a procedure to harvest lymph nodes in the posterior mediastinum, the thoracic duct is accidentally cut. The resulting accumulation of lymph in the pleural cavity is referred to as:
    A. Pleurisy
    B. Chylothorax
    C. Pyothorax
    D. Hemothorax
    E. Lymphedema
57. Gaseous exchange occurs in all the following except:
    A. Alveolus
    B. Tertiary bronchi
    C. Respiratory bronchiole
    D. Alveolar ducts
    E. Alveolar sacs

58. Which of the are **correctly** matched?
    A. Elastic cartilage..... Secondary bronchus
    B. Goblet cell.....terminal bronchiole
    C. Smooth muscle.....respiratory bronchiole
    D. Dust cell.....tertiary bronchus
    E. Ciliated epithelial cell.....trachea

59. The terminal ends of the ilioinguinal nerves in the female are referred to as:
    A. Anterior cutaneous branches
    B. Anterior labial
    C. Cremasterics
    D. Iliohypogastrics
    E. Pampiniform plexus

60. The usual location for an appendectomy incision is the:
    A. Umbilical
    B. Right lateral
    C. Right lower quadrant
    D. Right upper quadrant
    E. Right hypochondrium

61. The inferior border of the rectus sheath posteriorly is called the:
    A. Falx inguinalis
    B. Inguinal ligament
    C. Internal inguinal ring
    D. Arcuate line
    E. Linea alba

62. A medical student was asked by her preceptor to palpate the margin of the superficial inguinal ring of a healthy male patient. After passing her finger down the edge of the medial crus of the superficial inguinal ring, she felt a bony protuberance deep to the lateral edge of the spermatic cord, which she correctly identified as the:
    A. Pecten pubis
    B. Pubic symphysis
    C. Pubic tubercle
    D. Iliopunic eminence
    E. Iliopectineal line

63. Which structure passes through the deep inguinal ring?
    A. Iliohypogastric nerve
    B. Ilioinguinal nerve
    C. Inferior epigastric artery
    D. Medial umbilical ligament
    E. Round ligament of the uterus

64. A loop of bowel protrudes through the abdominal wall to form a direct inguinal hernia; viewed from the abdominal side, the hernial sac would be found in which region?
    A. Deep inguinal ring
    B. Lateral inguinal fossa
    C. Medial inguinal fossa
    D. Superficial inguinal ring
    E. Supravesical fossa
65. The superficial inguinal ring is an opening in which structure?
    A. External abdominal oblique aponeurosis
    B. Falx inguinalis
    C. Internal abdominal oblique muscle
    D. Scarpa's fascia
    E. Transversalis fascia
66. Which structure passes through the deep inguinal ring?
    A. Iliohypogastric nerve
    B. Ilioinguinal nerve
    C. Inferior epigastric artery
    D. Medial umbilical ligament
    E. Round ligament of the uterus
67. During exploratory abdominal surgery on a 55-year-old male complaining of right lower quadrant pain, the surgeon initially sees no appendix but knows that he can quickly locate it by
    A. Looking at the confluence of the teniae coli
    B. Palpating the ileocecal valve and looking just above it
    C. Palpating lmyph nodes
    D. Removing the right layer of the mesentery of the jejunoileum
    E. Palpating and inspecting the pelvic brim
68. Meckel's diverticulum:
    A. Is an abdominal persistence of the urachus
    B. Is a site of ectopic pancreatic tissue
    C. Is caused by a failure of the midgut loop to return to the abdominal cavity
    D. Is an abnormal connection of the midgut to the duodenum
    E. Is associated with polyhydramnios
69. In the foot, the term adduction implies movement of toes towards the_____
    A. First toe
    B. Second toe
    C. Third toe
    D. Fifth toe
    E. Fourth

70. The term opposition means moving the_____
    A. Fourth and fifth fingers towards the middle finger
    B. Little finger towards the index finger
    C. Medial and lateral fingers away from the middle finger
    D. Thumb towards the other fingers
    E. Long finger towards the little finger

71. Concerning the inguinal canal, the following is true:
    A. External oblique and internal oblique muscles form it's roof
    B. Midpoint of inguinal ligament is same as mid-inguinal point
    C. Contains round ligament in males
    D. Floor is formed by the lacunar ligament on it's medical end

72. All the following are true regarding Meckel's diverticulum except:
    A. Merckel's diverticulum may mimic appendicitis
    B. Is a remnant of the proximal part of the yolk stalk
    C. It is found on the anti-mesenteric side of jejunum
    D. It is about two-feet from the ileocecal valve

73. All the following are branches of the internal thoracic artery except:
    A. Superior epigastric artery
    B. Musculophrenic artery
    C. Superior phrenic artery
    D. Pericardiacophrenic artery

74. The caudate lobe of the liver is found between:
    A. Gallbladder and falciform ligament
    B. Inferior vena cava and ligamentum venosum
    C. Gallbladder and ligamentum venosum
    D. Inferior vena cava and ligamentum teres hepatis

75. Regarding termination of the posterior intercostal veins, the following is true:
    A. Left 5^{th}-8^{th} intercostal veins drain into the accessory hemiazygos
    B. Right 9^{th}-11^{th} intercostal and subcostal veins drain into the hemiazygos vein
    C. 1^{st} right posterior intercostal vein drains into the azygos vein
    D. Right 2^{nd}-4^{th} intercostal veins form the right superior intercostal vein which drains into the right brachiocephalic vein

76. Which of the following is the largest and clinically important recess of pleura?
    A. Costo-mediastinal recess
    B. Costo-clavicular recess
    C. Costo-cervical recess
    D. Costo-diaphragmatic recess

77. Regarding dermatomes of the upper limb, one of the following is true:
    A. T1 supplies upper antero-medial forearm
    B. C8 supplies little finger
    C. C5 supplies middle finger
    D. C7 supplies thumb

78. The appendicular artery which supplies the vermiform appendix is a branch of:
    A. Ileocolic artery
    B. Right colic artery
    C. Left colic artery
    D. Middle colic artery

79. The following structure forms the lateral border of the Calot's triangle?
    A. Cystic duct
    B. Common hepatic duct
    C. Cystic artery
    D. Common hepatic artery

80. The following artery is correctly matched according to its origin:
    A. Inferior phrenic artery.....Coeliac trunk
    B. Gastroduodenal artery.....Hepatic artery proper
    C. Superior supra-renal artery.....Inferior phrenic artery
    D. Left gastro-epiploic artery.....Gastroduodenal artery

81. Which border of the spleen is characterized by a notch?
    A. Superior border
    B. Intermediate border
    C. Inferior border
    D. Lateral border

82. Carcinoma of head of pancreas will most likely block which of the following duct?
    A. Common hepatic duct
    B. Cystic duct
    C. Common bile duct
    D. Hepatopancreatic ampulla of vater

83. The following is true concerning the hepatic portal vein?
    A. In the adult is about 15cm long
    B. Its formation is at L2 level
    C. Forms in front of the neck of pancreas
    D. Terminates at the left end of porta hepatis

84. Which vessel(s) are found anterior to the 3rd part of the duodenum?
    A. Left renal vein
    B. Coeliac trunk
    C. Superior mesenteric vessels
    D. Inferior mesenteric vessels

85. With considering of the epiploic foramen of Winslow; the portal triad is located in which border?
    A. Inferior border
    B. Anterior border
    C. Superior border
    D. Posterior border

86. In the cubital fossa, which structure is immediately medial to the tendon for the biceps brachii?
    A. Ulnar nerve
    B. Median nerve
    C. Radial nerve
    D. Brachial artery

87. True regarding the gross anatomy of the trachea:
    A. In the adult is about 20-25 cm long
    B. Begins at C5 vertebra level
    C. It's Carina is at the level of the manubriosternal joint
    D. Has about 16-20 complete cartilage rings

88. One of the following structures is found in the middle mediastinum:
    A. Lower end of thymus
    B. Oesophagus
    C. Phrenic nerves
    D. Vagii nerves

89. True regarding the source of arteries that supply the anterior abdominal wall:
    A. Superficial circumflex iliac artery is from external iliac artery
    B. Deep circumflex iliac artery is from femoral artery
    C. Inferior epigastric artery is from internal iliac artery
    D. Superficial epigastric artery is from femoral artery

90. All the following are classic features of the large intestines except:
    A. Appendices epiploicae
    B. Haustrations
    C. Taenia coli
    D. Valvulae conniventes

91. The most important content of the spermatic cord which should not be cut during the inguinal hernia repair is:
    A. Genital branch of genitofemoral nerve
    B. Testicular artery
    C. Vas deferens
    D. Ilioinguinal nerve

92. The aorta bifurcates at which vertebral level?
    A. L4
    B. L3
    C. S1
    D. L5

93. The falx inguinalis or conjoint tendon is formed by fusion of lowest aponeurotic fibers of:
    A. External oblique and rectus abdominis muscles
    B. External oblique and internal oblique muscles
    C. Transversus abdominis and internal oblique muscles
    D. Rectus abdominis and internal oblique muscles

94. Which part of the aorta forms a knuckle on postero-anterior views of chest radiographs?
    A. Ascending aorta
    B. Descending thoracic aorta
    C. Descending abdominal aorta
    D. Arch of aorta

95. Which nerve is related immediately posterior to the root of the lung?
    A. Phrenic nerve
    B. Vagus nerve
    C. Sympathetic chain
    D. Subcostal nerve

96. The left gonadal vein drains into.
    A. Inferior mesenteric vein
    B. Hepatic portal vein
    C. Left renal vein
    D. Inferior vena cava

97. Which ligament contains splenic vessels?
    A. Phrenico-colic ligament
    B. Lienorenal ligament
    C. Ligament of Treitz
    D. Gastrosplenic ligament

98. Gallstones which penetrate the gallbladder may enter into the……..,,…
    A. Transverse colon
    B. Duodenum
    C. Jejunum
    D. Ileum

99. All the following are true ribs except?
    A. Rib 2
    B. Rib 5
    C. Rib 7
    D. Rib 9

100. The following artery is correctly matched according to its origin:
    A. Internal pudendal artery…… External iliac artery
    B. Short gastric arteries……Left gastro-epiploic artery
    C. Bronchial artery……..……..aorta
    D. Lateral sacral artery……..aorta

101. The kidneys are located at which vertebral level?
    A. T9-T12
    B. T8-T10
    C. T12-L3
    D. L3-L5

102. All the following structures are related to the thoracic duct at its entrance into the thorax except:
    A. Azygos vein
    B. Vertebral column
    C. Aorta
    D. Oesophagus

103. Regarding the course of the thoracic duct, the following is true:
    A. Begins at upper end of cisterna chyli at L2 level
    B. Crosses from right side to left side of body at T3
    C. Arches laterally at level of transverse process of C7
    D. Opens into angle of junction of left subclavian and left internal jugular arteries

104. Spina bifida is caused by lack of fusion of_____ in the formation of vertebrae
    A. Inferior facets
    B. Superior facets
    C. Laminae
    D. Pedicles

105. The following veins is found in the posterior inter-ventricular groove of the heart:
   A. Great cardiac vein
   B. Middle cardiac vein
   C. Coronary sinus
   D. Small cardiac vein

106. While in operating theatre, your senior doctor who is about to insert an intercostal drainage (ICD) to drain pus from a patient with left emphyema thoracis asks you to define the boundaries of the safe triangle where the tube should be inserted. Which of the following is true concerning these boundaries?
   A. Posterior..... Lateral border of the latissimus dorsi muscle
   B. Inferior.....6th intercostal space
   C. Anterior..... Medial border of the pectoralis major muscle
   D. None of the above

107. A 50-year old John Muyunda comes to your clinic with left vericoceles. Which of the following does not explain why varicoceles are more common on the left than right side?
   A. Left testicular vein have a longer course than right testicular vein
   B. Left testicular vein drains at a right angle than it's right counterpart
   C. Left testicular vein has shorter valves compared to the right one
   D. Left testicular vein is crossed by colon and can be compressed

108. Regarding the relation of the 1st rib, the following is true:
   A. Subclavian artery passes posteriorly to the scalene tubercle
   B. Middle trunk of the brachial plexus passes posteriorly to the scalene tubercle
   C. Scalenus medius attaches on the scalene tubercle
   D. Sympathetic chain is a closer relation to its head than the superior intercostal artery

109. Concerning the structures that pass via thoracic inlet, all the following pass except:
   A. Lungs
   B. Brachiocephalic veins
   C. Aorta
   D. Thoracic duct

110. Anteroposterior diameter of the thorax increases by:
   A. Pump-handle movements of ribs
   B. Bucket-handle movements of ribs
   C. Contraction of diaphragm
   D. Relaxation of diaphragm

111. Concerning the nerve supply to the lungs, the following is false:
A. Parasympathetic supply is provided by the vagii nerves
B. Sympathetics are motor to the bronchial muscles
C. Parasympathetics are secretomotor to the muscle glands
D. Sensory fibres are responsible for the cough reflex

112. The following is true with regard to the differences of left and right lungs:
A. Lingula is found on the right lung
B. Right lung had two lobes
C. Left lung has two fissures
D. Aspirated foreign body will likely be in right lung

113. Choose the correct statement with regard to the pericardium:
A. Ascending aorta is posterior to transverse pericardial sinus
B. Venae cavae are anterior to transverse pericardial sinus
C. Cul-de-sac for oblique pericardial sinus is posterior to left atrium
D. Serous pericardium forms the boundaries for mediastinum

114. The base of the heart is mainly formed by:
A. Right atrium
B. Left ventricle
C. Left atrium
D. Right ventricle

115. Regarding the conducting system of the heart, the following is true:
A. Moderator band contains fibers of the right bundle branch
B. AV node is the only muscular connection between ventricles
C. SA node generates electrical impulses rate of 40-60 beats/minute
D. Most of the conducting system is supplied by the left coronary artery

116. All the following are branches of the descending thoracic aorta except:
A. Nine (9) posterior intercostal arteries
B. Left bronchial artery
C. Right bronchial artery
D. Superior phrenic arteries

117. Concerning the basilic vein, which of the following is correct?
A. It continues as the axillary vein
B. Pierces deep fascia in the lower forearm
C. It passes behind the medial epicondyle of humerus
D. It is joined by the median cubital vein in the cubital fossa

118. In humans, the standard anatomical textbooks describe the incidence of the pyramidalis muscle to be:

A. 80-90%
B. 70-80%
C. 30-40%
D. 10-20%

119. True regarding the inguinal or Poupart's ligament:

A. Formed by the lower border of the internal oblique aponeurosis
B. Extends from the anterior superior iliac spine to the pubic crest
C. Has an extension called lacunar ligament on it's lateral end
D. Ligament of cooper extends from the lacunar ligament

120. Choose the correct statement regarding the rectus sheath:

A. Above the costal margin, consists of both anterior and posterior walls
B. Below the arcuate line, fascia transversalis covers the rectus abdominis muscles
C. The ipsilateral aponeuroses of muscles enclose both recti abdominis muscles
D. Is not the primary structure providing strength to the anterior abdominal wall

121. Concerning the inguinal canal, the following is false:

A. Is about 4cm in length
B. Deep inguinal ring is about 1.2cm above mid-inguinal point
C. Conjoint tendon forms medial two-thirds of posterior wall
D. Stem of inferior epigastric vessels is lateral to the deep inguinal ring

122. From within outwards; the coverings of the spermatic cord are:

A. Cremasteric fascia, Internal spermatic fascia, external spermatic fascia
B. Internal spermatic fascia, external spermatic fascia, cremasteric fascia
C. Internal spermatic fascia, cremasteric fascia, external spermatic fascia
D. External spermatic fascia, cremasteric fascia, internal spermatic fascia

123. Morrison's pouch is found between which organs?

A. Urinary bladder and uterus
B. Liver and right kidney
C. Spleen and left kidney
D. Diaphragm and spleen

124. Which organ makes an impression on the left lobe of the liver?

A. Gallbladder
B. Duodenum
C. Adrenal gland
D. Stomach

125. The following is true with regard to the major salivary glands:
   A. Submandibular duct is also called Stenson's duct
   B. Bell's palsy is a possible complication of parotidectomy
   C. Submandibular duct is called duct of Bartholin
   D. Parotid duct drains into the vestibule near the 2nd lower molar tooth

126. According to Couinaud's functional liver anatomy, the liver has how many segments?
   A. 6
   B. 8
   C. 10
   D. 12

127. The Calot's triangle contains the lymph node of Lund. Which organ when inflamed is more likely to cause lymphadenopathy of this node?
   A. Gallbladder
   B. Liver
   C. Pancreas
   D. Duodenum

128. Concerning pancreatic ducts; the following is true:
   A. Tail of pancreas is drained by the duct of Wirsung
   B. Duct of Wirsung opens at the minor duodenal papilla
   C. Duct of Santorini joins the common bile duct
   D. Both ducts open in the 3rd part of the duodenum

129. The following artery is correctly matched to its origin:
   A. Left colic artery..... Superior mesenteric artery
   B. Superior Pancreaticoduodenal artery.....Gastroduodenal artery
   C. Inferior Pancreaticoduodenal artery..... Inferior mesenteric artery
   D. Right gastric artery.....Coeliac trunk

130. Which of the following structure is found in the left hypochondriac region?
   A. Liver
   B. Gallbladder
   C. Spleen
   D. Sigmoid colon

131. The common bile duct (CBD) is formed by:
   A. Cystic duct and right hepatic duct
   B. Left and right hepatic ducts
   C. Common hepatic duct and cystic duct
   D. Ampulla of Vater and main pancreatic duct

132. Which veins form the hepatic portal vein?
A. Inferior mesenteric and splenic vein
B. Splenic vein and superior mesenteric vein
C. Renal vein and inferior mesenteric vein
D. Hepatic vein and superior Pancreaticoduodenal veins

133. Fracture of the following ribs may lead to splenic rupture:
A. 6, 7, 8
B. 7, 8, 9
C. 9, 10, 11
D. 10, 11, 12

134. Which structure passes between the body and the uncinate process of pancreas?
A. Coeliac trunk
B. Superior mesenteric artery
C. Inferior mesenteric artery
D. Hepatic portal vein

135. Regarding ureters, the following is true:
A. Are about 35 cm long
B. Only the upper 2/3rd is retroperitoneal
C. Have about five major anatomical constrictions
D. Pass below uterine arteries close to uterine isthmus

136. All the following structures are correctly matched in terms of the borders they form at the epiploic foramen of Winslow except:
A. Superior.....Caudate process of liver
B. Inferior.....Duodenum
C. Posterior.....Aorta
D. None of the above

137. Silvester Lubinda is a 20-year-old who was involved in a road traffic accident 2 days ago. He is unable to comb his hair using his right hand. Which nerve is likely to be involved?
A. Thoracodorsal nerve
B. Radial nerve
C. Long thoracic nerve
D. Median nerve

138. The left gonadal vein drains into:
   A. Inferior vena cava
   B. Hepatic portal vein
   C. Left renal vein
   D. Inferior mesenteric vein

139. The inferior vena cava forms at what vertebral level?
   A. L2
   B. L3
   C. L5
   D. S1

140. Which of the following nerve roots are correctly matched to their nerve?
   A. Long thoracic nerve.....C4, C5, C6
   B. Supraclavicular nerve.....C3, C4
   C. Phrenic nerve.....C5, C6, C7
   D. Thoracodorsal nerve.....C6, C7, C8

141. Joy Banda is a 10-year-old girl who 4 hours ago had fallen from a tree on her outstretched left hand. She has come to your clinic with a complaint of painful and swollen left shoulder. X-ray reveals fracture of the surgical neck of the humerus. Which nerve is likely to be damaged?
   A. Radial nerve
   B. Axillary nerve
   C. Ulnar nerve
   D. Median nerve

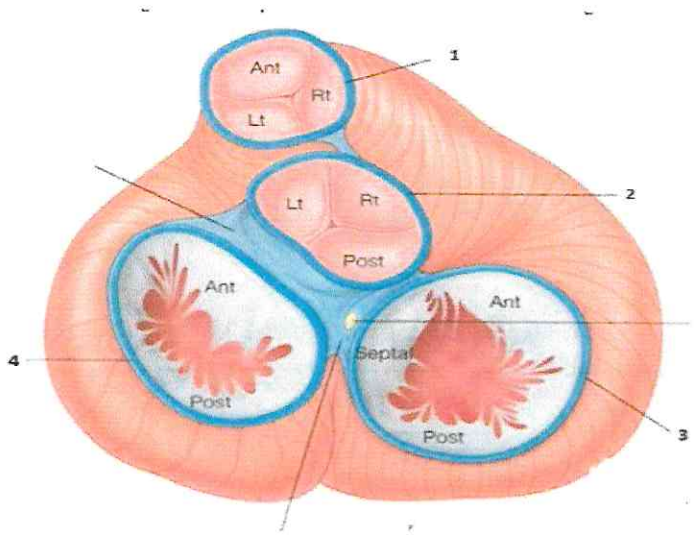
142. Which muscle attaches on the radial tuberosity?
   A. Brachialis
   B. Coracobrachialis
   C. Flexor digitorum profundus
   D. Biceps brachii

143. The following is true concerning the anatomical snuff box except:
   A. Floor is formed by the scaphoid and trapezium
   B. Anteriorly is bounded by the extensor pollicis Longus
   C. Posteriorly is bounded by the extensor pollicis brevis
   D. Is crossed by the radial artery, radial nerve and basilic vein

144. The boundaries of the mediastinum include the following, except_____

A. Sternal angle
B. Diaphragm
C. Thoracic vertebrae
D. First pair of ribs

145. Which of the following valves will produce the 'lub' sound when closing?



A. 1 and 2
B. 2 and 3
C. 1 and 4
D. 3 and 4

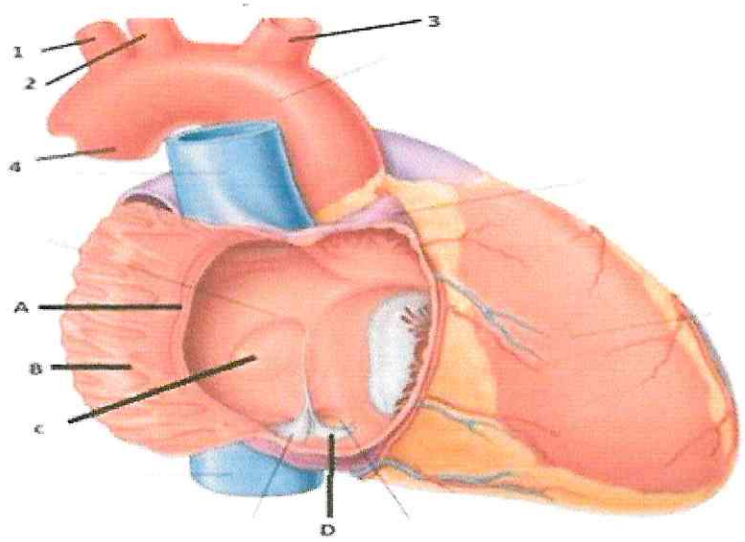
146. The following statements about blood vessels are true, except_____

A. Superficial veins communicate with deep veins via anastomotic veins
B. The radial vein is a deep vein
C. Collateral circulation gives an alternative route of blood supply to an area
D. The cephalic and brachial veins can be connected by a perforating vein

147. Which of the following structures has been appropriately matched?

A. Great Saphenous vein.....deep vein
B. Left common carotid artery trunk..... originate from brachiocephalic trunk
C. Pulmonary artery.....comes from right ventricle
D. Right subclavian vein.....drains in the right Brachiocephalic vein

148. Which of the following structures is the Crista terminalis?



149. In the diagram above (Question 25), which of the following structures supplies blood to the right upper limb?

A. 1
B. 2
C. 3
D. 4

150. The sternal angle of Louis is an important anatomical landmark on the sternum that can be used to count ribs. What is it's vertebral level?

A. C3/C4
B. C5/C6
C. T2/T3
D. T4/T5

151. Which one of the following statements is correct about the nervi erigentes?

A. Consists of somatic fibres from sacral spinal nerves S2, S3, S4
B. Consists of postganglionic fibers from sacral spinal nerves S2, S3, S4
C. Responsible for motor supply of the detrusor muscle
D. Supplies the external urethral sphincter

152. Which part of the lower end of the humerus articulates with the ulna?

A. Capitulum
B. Trochlea
C. Lateral epicondyle
D. Medial epicondyle

153. Which vertebral level is safe to perform a lumbar puncture in a neonate?
A. L3/L4
B. L1/L2
C. L4/L5
D. L5/S1

154. The following are components of the brain stem:
A. Medulla oblongata, diencephalon, midbrain
B. Telencephalon, midbrain, pons, cerebellum
C. Medulla oblongata, cerebellum, pons
D. Medulla oblongata, pons, midbrain

155. Which of the following bones is the first to ossify in utero:
A. Talus
B. Femur
C. Clavicle
D. Hyoid

156. Eversion and inversion of the foot takes place at which joint?
A. Ankle joint
B. Calcaneocuboid joint
C. Subtalar joint
D. Femorotinial joint

157. Which of the following nerves is likely to be injured in surgical fracture of the humerus?
A. Radial nerve
B. Axillary nerve
C. Median nerve
D. Musculocutaneous nerve

158. Which of the following joints is most commonly dislocated?
A. Hip joint
B. Glenohumeral joint
C. Temporomandibular joint
D. Radiocarpal joint

159. The dermatomes at the umbilicus is_____
A. T8
B. T9
C. T10
D. T11

160. Which of the following is not part of the pelvic inlet?
A. Promontory of the sacrum
B. Arcuate line of the ileum
C. Pecten pubis
D. Iliac crests

161. Which of the following cranial nerves originate from the midbrain?
A. Olfactory
B. Oculomotor
C. Abducent
D. Facial

162. Which parasympathetic ganglion is responsible for the supply of the lacrimal gland?
A. Stellate
B. Ciliary
C. Otic
D. Sphenopalatine

163. Which of the following cranial nerve is purely sensory?
A. Vestibulocochlear
B. Glossopharyngeal
C. Trigeminal
D. Trochlear

164. At what level is the Inferior angle of the scapula?
A. C6
B. T7
C. T10
D. L1L1

165. Pronation and supination of the forearm takes place at which joint?
A. Humeroulnar joint
B. Humeroradial joint
C. Proximal radioulnar joint
D. Radiocarpal joint

166. Which nerve runs in close proximity to the medial epicondyle of the humerus
A. Radial nerve
B. Median nerve
C. Musculocutaneous nerve
D. Ulnar nerve

167. Which part of the lower end of the humerus commonly fractures in children?
A. Supracondylar
B. Medial epicondyle
C. Lateral epicondyle
D. Trochlea

168. The pisiform bone is a sesamoid bone in a tendon of which of the following muscle?
A. Extensor Carpi Ulnaris
B. Flexor pollicis Longus
C. Flexor Carpi ulnaris
D. Extensor digiti minimi

169. Which of the following carpal bones is commonly fractured?
A. Hamate
B. Capitate
C. Trapezoid
D. Scaphoid

170. Which of the following pelvic bone prominences is important in determination of the fetal station during labour?
A. Ischial tuberosities
B. Pubic crest
C. Iliac crest
D. Ischial spines

171. At which point is the femur commonly fractured in old age?
A. Neck
B. Trochanteric
C. Subtrochanteric
D. Diaphyseal

172. The following cranial nerves have parasympathetic outfloor:
A. Olfactory, accessory
B. Facial, glossopharyngeal
C. Abducent, trochlear
D. Vestibulocochlear, optic

173. Which parasympathetic ganglion is responsible for accommodation of the pupil?
A. Stellate
B. Ciliary
C. Otic
D. Submandibular

174. Which of the following is true about splanchnic nerves?
A. Responsible for supplying the pappillary muscles
B. Fibres pass via prevertebral ganglia minus synapsing
C. The greater splanchnic nerves are from T10-T12
D. Have motor innervation to skeletal muscles

175. Which of the following statements is not true of the typical female pelvis?
A. Has longer/prominent ischial spines
B. Pubic angle is obtuse
C. The inter-tuberosity distance is able to admit at least 4 knuckles
D. The pelvic inlet is heart-shaped

176. Which of the following statement is correct.
A. In eccentric action of a muscle the force of contaction is equal to the load
B. The term teres refers to fast acting muscle
C. The anatomical insertion is the most mobile part of attachment
D. Tone in completely relaxed muscle is due to passive elastic tension

177. Bwalya woke up in the morning and as usual, went to exercise. He jumped and swung on the football goal post and tried to lift his body upwards but failed. Which nerve is mostly likely to be injured or malfunctioning?
A. Long thoracic
B. Thoracodorsal
C. Dorsal scapula
D. Intercostobrachial

178. Which of the following is correct?
A. The internal thoracic artery is between the external and internal intercostal muscle
B. The external intercostal muscle is thickest anteriorly
C. Intercostal vessels lay superior to the intercostal nerve
D. The internal intercostal membrane is continuous with it's muscle anteriorly

179. In the posterior triangle of the neck,
A. The scalenus medius is superior to the levator scapulae
B. The trunks of the brachial plexus are in between the scalenus anterior and medius muscles
C. The semi-spinalis capitis is inferior to the splenius capitis
D. The accessory nerve emerges below the midpoint of the posterior border of the sternocleidomastoid muscle

180. Mr Munalula comes to the hospital with "swelling" on the left upper lateral part of his back. On examination, you find that it is a 'winged' left scapula. Which of the following nerves is likely to have been affected?

A. Dorsal scapula
B. Accessory
C. Thoracodorsal
D. Long thoracic

181. Which one of the following is not a content of the mediastinum?

A. Descending aorta
B. Azygos vein
C. Trachea
D. Thoracic duct

182. Which of the following cartilages have a laryngeal prominence called Adam's apple?

A. Epiglottis
B. Arytenoid
C. Cricoid
D. Thyroid

183. Which of the following nerves is a major innervation of the larynx and damage to it can lead to hoarseness of voice?

A. Glossopharyngeal
B. Recurrent laryngeal
C. External laryngeal
D. Accessory nerve

184. How many bronchopulmonary segments are there in total for each lung?

A. 20
B. 8
C. 12
D. 10

185. Which respiratory muscle is the chief inspiratory muscle?

A. Diaphragm
B. External intercostal
C. Internal intercostal
D. Sternocleidomastoid

186. If an individual develops an abscess on the dorsum of the hand, which group of lymph nodes is likely to be inflated?
   A. Supra-clavicular
   B. Superficial cervical
   C. Axillary
   D. Tracheobronchial

187. Which of the following is the only lymphoid organ that filters blood?
   A. Spleen
   B. Thymus
   C. Lymph node
   D. Tonsils

188. Which of the following has an opening in the Inferior nasal meatus?
   A. Maxillary air sinus
   B. Middle ethmoidal air sinus
   C. Nasolacrimal duct
   D. Sphenoidal air sinus

189. What does the term inversion mean?
   A. Dorsi-flexion of the foot
   B. Turning of the foot to make the sole face medially
   C. Plantar-flexion of the foot
   D. Turning of foot to make it's sole face laterally

190. To which of the following muscles of the back is the thoracodorsal nerve immediately deep?
   A. Latissimus dorsi
   B. Trapezius
   C. Rhomboid major
   D. Rhomboid minor

191. Loss of patella reflex and cutaneous sensation on the anteromedial side of leg indicate damage to spinal nerve:
   A. L4
   B. L5
   C. S2
   D. S3

192. Which of the following muscles is not a medial rotator of the leg?
   A. Semitendinosus
   B. Semimembranosus
   C. Biceps femoris
   D. Gracilis

193. Mulenga sustained an injury in the popliteal fossa injuring the tibial nerve. This might result in:
   A. Loss of eversion
   B. Loss of sensation between
   C. Inability to stand on one's toes
   D. Foot drop

194. Which of the following is correct about the fibular artery:
   A. Supplies the muscles of the anterior compartment of the leg
   B. Passes anterior to the interosseous membrane
   C. Usually becomes the dorsalis pedis
   D. Courses through the deep posterior compartment of the leg

195. A tight plaster cast that exerted pressure on the head and neck of the fibula might result in loss of:
   A. Eversion
   B. Plantar-flexion
   C. Inversion
   D. Flexion of the hallux

196. Where would you feel for the pulse of the dorsalis pedis artery?
   A. Directly superficial to the intermediate cuneiform
   B. Directly lateral to the tendon of the extensor digitorum Longus
   C. Directly in between the talus and the navicular bones
   D. Directly medial to the extensor halluces Longus

197. The blood supply to the posterior compartment muscles of the thigh is by:
   A. Femoral artery
   B. Popliteal artery
   C. Profunda femoris artery
   D. Obtrurator artery

198. The spinal cord segment that supplies cutaneous innervation to the bilateral side of the foot is:
   A. L4
   B. L5
   C. S1
   D. S2

199. The muscle that contracts to unlock the extended knee joint is the
   A. Popliteus
   B. Plantaris
   C. Medial head of gastrocnemius
   D. Lateral head of gastrocnemius

200. Which of the following correctly describes the pectoralis major muscle?
   A. It is made up of two parts, the clavicular and the sternocostal parts
   B. It is superficially covered by the clavipectoral fascia
   C. It divides the axillary artery into the first, second and third parts
   D. It is innervated by the lateral and medial pectoral nerves

201. A 37-year old sickle cell anaemic pregnant patient has a clot in the left leg. The clot dislodges from its position. Most likely it will land itself in the following organ:
   A. Lungs
   B. Brain
   C. Small intestines
   D. Kidneys

202. All of the following statements concerning spinal nerves are correct except
   A. Ventral roots contain motor output
   B. All spinal nerves have gray communicating rami
   C. All spinal nerves have white communicating rami
   D. The first cervical nerves frequently have no dorsal roots

203. The following is true concerning the gross anatomy of the heart:
   A. Oblique vein of Marshall is in direct continuation with the coronary sinus
   B. Middle cardiac vein drains the anterior interventricular aspect of the heart
   C. Circumflex coronary artery is a branch of the right coronary artery
   D. Anterior cardiac veins drains into coronary sinus

204. True regarding communicating rami:
   A. Gray communicating rami contain preganglionic fibres
   B. White communicating rami contain unmyelinated fibres
   C. White communicating rami contain myelinated postganglionic fibers
   D. Communicating rami do not contain parasympathetic fibres

205. Which of the following concerning the lateral horn of the spinal cord is true ?
   A. It gives rise to a spinocerebellar tract
   B. It is present at all spinal cord levels
   C. It gives rise to preganglionic sympathetic fibres
   D. It is most prominent at sacral levels

206. Pain arising from the thoracic diaphragm is usually referred to the:
   A. Lateral chest wall
   B. Epigastric region
   C. Tip of shoulder joint
   D. Umbilicus

207. A patient with peptic ulcer disease (PUD) usually presents with pain arising from which region of the abdomen?
   A. Epigastric
   B. Right lumbar
   C. Umbilical
   D. Hypogastrium

208. The following is true about the splanchnic nerves:
   A. Innervates directly the supra-renal glands minus synapsing in ganglia
   B. Fibres synapse in paravertebral ganglia
   C. Do not provide autonomic innervation to the head and neck
   D. Nervi erigentes are sympathetic splanchnic nerves from S2-S4

209. Concerning the humerus:
A. Tendon of short head of biceps brachii passes via the intertubercular groove
B. Ulnar nerve passes anterior to its medial epicondyle
C. Saturday night palsy occurs due to compression of the radial nerve
D. Has two secondary centres of ossification

210. Which muscle is pierced by the musculocutaneous nerve?
A. Biceps brachii
B. Coracobrachialis
C. Brachialis
D. Pronator teres

211. Concerning the relations of the boundaries of the anatomical snuff box:
A. Medial: extensor pollicis brevis
B. Lateral: extensor pollicis Longus
C. Proximal: styloid process of ulnar
D. Floor: scaphoid bone

212. Concerning contents of the cubital fossa:
A. It's medial border is formed by the medial border of brachioradialis
B. Median nerve leaves the fossa by passes between two heads of supinator muscle
C. Brachial artery is immediately medial to the tendon of the biceps brachii
D. Radial nerve is not a content

213. Which of the following does not open into the right atrium
A. Anterior cardiac vein
B. Small cardiac vein
C. Coronary sinus
D. Venae cordis minimi

214. Which of the following structures is only present in the right atrium of the heart?
A. Trabeculae carneae
B. Musculi pectinate
C. Papillary muscle
D. Chordae tendineae

215. Which of the following statements concerning nerves is true?
A. All spinal nerves form dermatomes
B. All spinal nerves form plexuses
C. All spinal nerves contribute to the formation of sympathetic chain
D. All plexuses are derived from the anterior rami of spinal nerves

216. Which of the following vein is a directly tributary of the superior vena cava?
A. Hemi azygos vein
B. Right superior intercostal vein
C. Right bronchial vein
D. Azygos vein

Answers

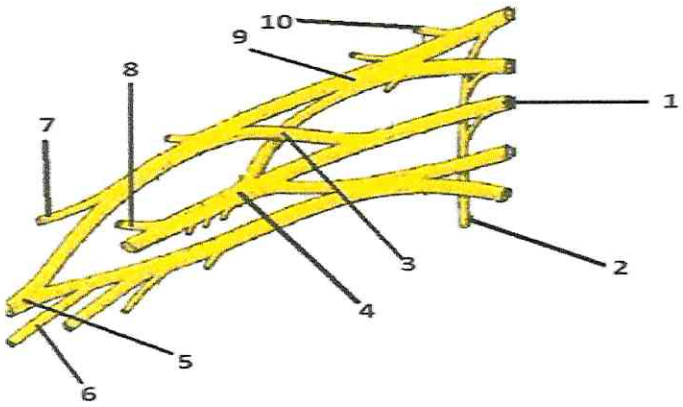
1. C	26. D	51. D	76. D
2. D	27. A	52. C	77. B
3. C	28. D	53. D	78. A
4. C	29. B	54. D	79. A
5. A	30. D	55. D	80. C
6. E	31. D	56. B	81. A
7. E	32. C	57. B	82. C
8. C	33. B	58. E	83. D
9. B	34. B	59. B	84. C
10. C	35. E	60. C	85. B
11. C	36. D	61. D	86. D
12. A	37. A	62. C	87. D
13. E	38. B	63. E	88. C
14. B	39. A	64. C	89. D
15. B	40. C	65. A	90. D
16. C	41. D	66. E	91. D
17. E	42. B	67. A	92. A
18. B	43. D	68. B	93. C
19. C	44. D	69. B	94. D
20. B	45. C	70. D	95. B
21. C	46. B	71. D	96. C
22. B	47. D	72. C	97. B
23. C	48. A	73. C	98. B
24. B	49. C	74. B	99. D
25. D	50. D	75. A	100. C

101. C	126. B	151. A	176. C	201.A
102. B	127. A	152. B	177. B	202.C
103. D	128. A	153. C	178. C	203.A
104. C	129. B	154. D	179. B	204.D
105. B	130. C	155. C	180. D	205.C
106. A	131. C	156. C	181. A	206.B
107. C	132. B	157. B	182. D	207.A
108. A	133.C	158. B	183. B	208.A
109. C	134. B	159. C	184. D	209.C
110. A	135. B	160. D	185. A	210.B
111. B	136. C	161. B	186. C	211.D
112. D	137. A	162. D	187. A	212.C
113. C	138. C	163. A	188. C	213.B
114. C	139. C	164. B	189. B	214.B
115. A	140. A	165. C	190. A	215.D
116. A	141. B	166. D	191. A	216.D
117. A	142. D	167. A	192. C	
118. A	143. D	168. C	193. C	
119. C	144. A	169. D	194. D	
120. C	145. D	170. D	195. A	
121. D	146. B	171. A	196. C	
122. C	147. C	172. B	197. C	
123. B	148. A	173. B	198. C	
124. D	149. C	174. A	199. A	
125. B	150. D	175. D	200. D	

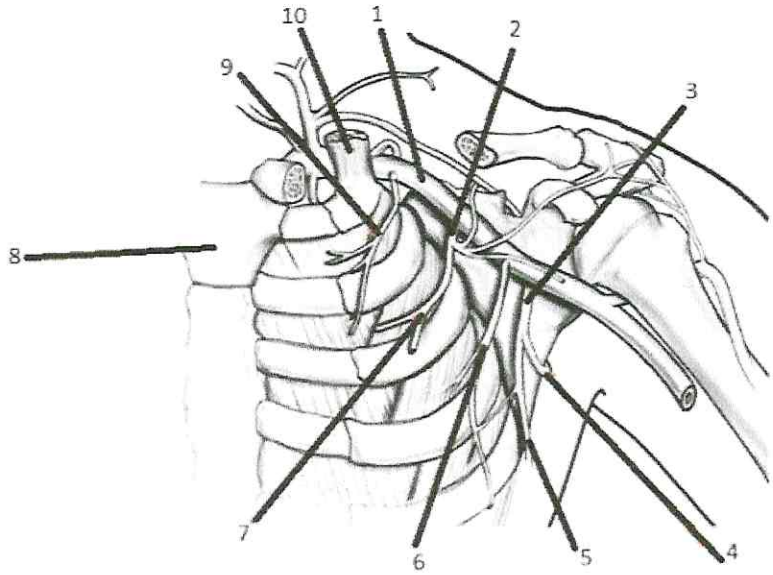
HIGH YIELD DIAGRAMS IN GROSS ANATOMY

Label the following diagrams

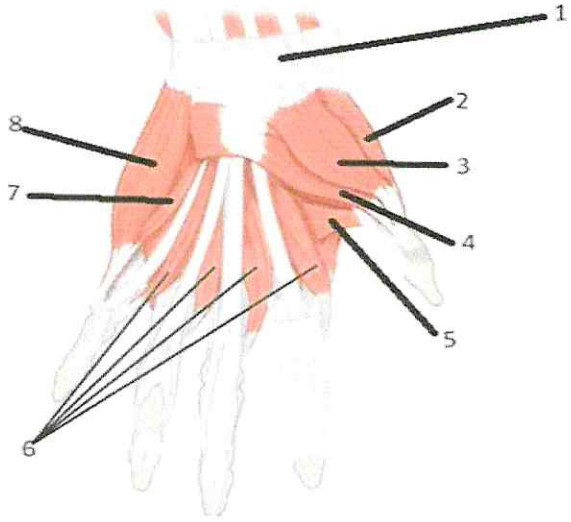
1. Brachial plexus



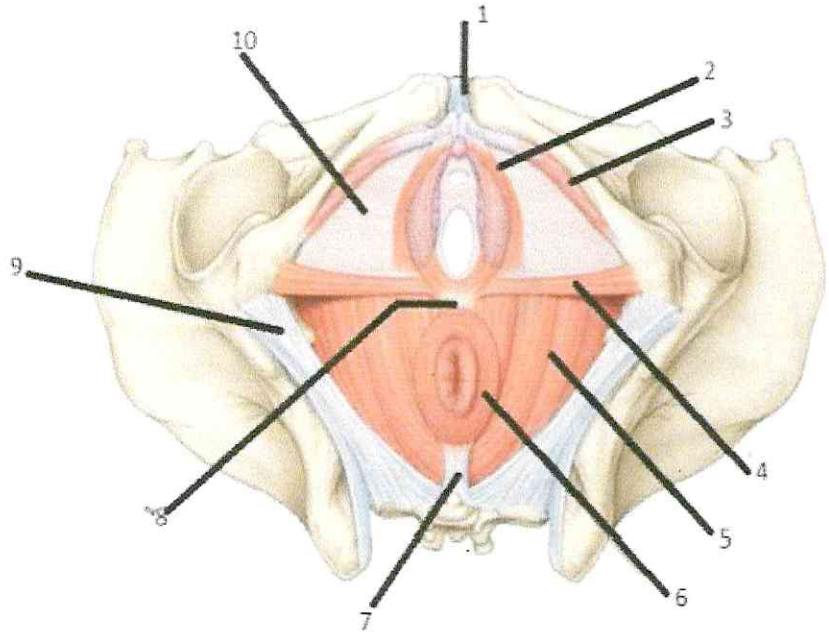
2. Pectoral region



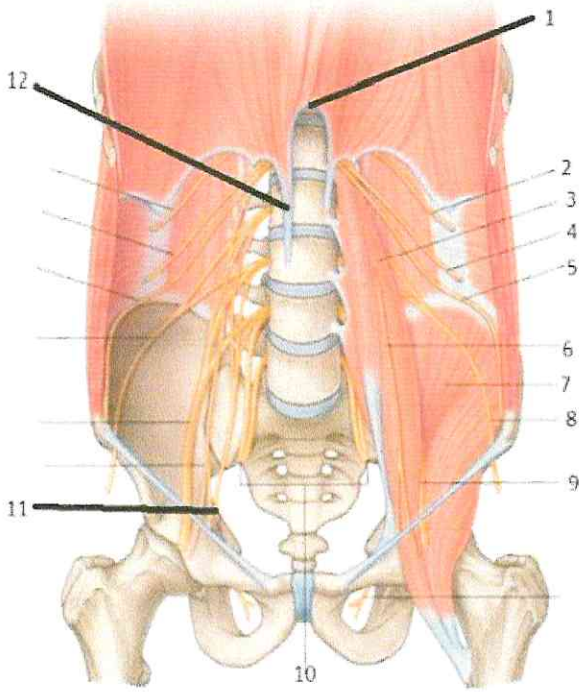
3. The hand



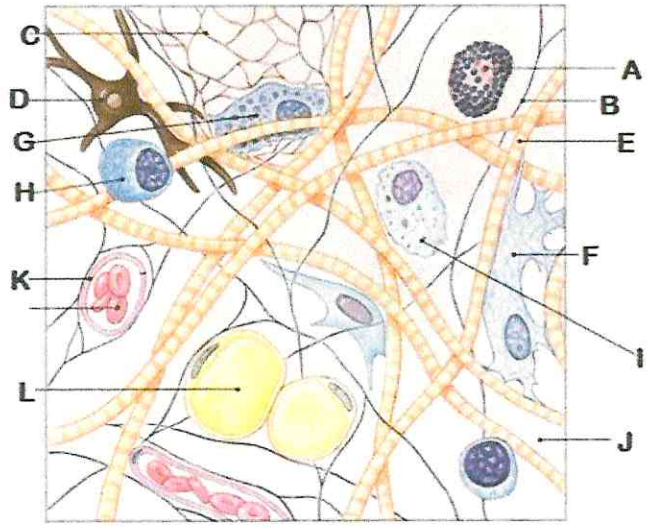
4.



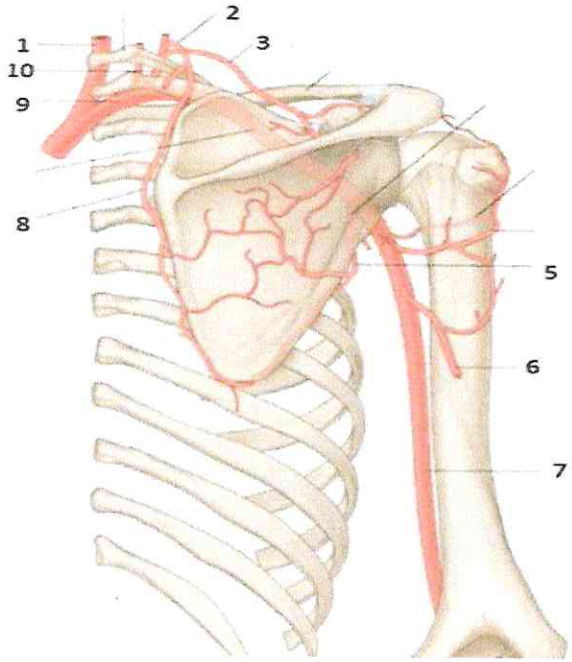
5. Posterior Abdominal wall



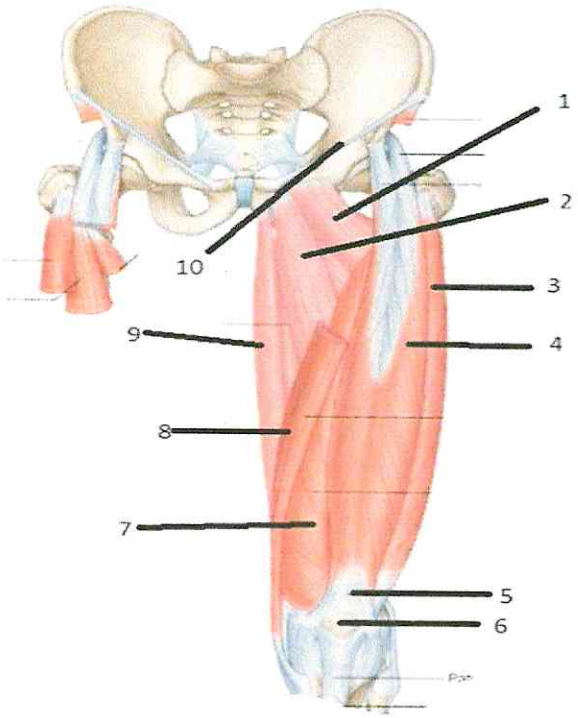
6. Label from A to L



7. Scapula anastomosis



8. Lower limb



5.POSTERIOR ABDOMINAL WALL	**6.TISSUE**	**7.AXILLARY ARTERY**	**8.LOWER LIMB**
1.Medium arcuate ligament	A.Mast cell	1.Right common carotid artery	1.Pectineus
2.Subcostal nerve	B.Elastic fibres	2.Transverse cervical artery	2.Adductor longus
3.Psoas major	C.Reticular fibres	3.Suprascapular artery	3.Vastus lateralis
4.Iliohypogastric nerve	D.Melanocytes	4.Axillary artery	4.Rectus femoris
5.Ilioinguinal nerve	E.Collagen fibres	5.Circumflex scapular artery	5.Quadriceps femoris tendon
6.Genitofemoral nerve	F.Fibroblasts	6.Profunda brachii artery	6.Patella
7.Iliacus muscle	G.Fixed macrophages	7.Brachial artery	7.Vastus medialis
8.Lateral cutaneous nerve of thigh	H.Plasma cell	8.Deep branch of transverse cervical artery	8.Sartorius
9.Femoral nerve	I.Free macrophage	9.Right subclavian artery	9.Gracilis
10.Auricular surface of the sacrum	J.Ground substance	10.Thyrocervical trunk	10.Inguinal ligament
11.Obturator nerve	K.Capillaries		
12.Right crus	L.Adipocytes		
9.BILLIARY TREE	**BILLIARY TREE**	**10.FIBROUS SKELETON HEART**	**11.THE HEART**
1.Commom bile duct	13.Hatmann's pouch	1.Aortic valve	A.Anterior cardiac veins
2.Duct of wirsung	14.Fundus of gallbladder	2.Right coronary artery	B.Coronary sinus
3.Ampulla of vater	15.Body of the gall bladder	3.Tricuspid valve	C.Great cardiac vein
4.Duodenum		4.Coronary sinus	D.Oblique vein of left atrium
5.Main pancreatic duct		5.Right fibrous trigone	E.Middle cardiac vein
6.Duct of Santorini(APD)		6.Mitral valve	F.Small cardiac vein
7.Common hepatic duct		7.Left fibrous trigone	
8.Left hepatic duct		8.Left coronary artery	
9.Right hepatic duct		9.Pulmonary valve	
10.Summit of major duodenal papilla			
11.Summit of minor duodenal papilla			
12.Cystic duct			

12.ANTERIOR ABDOMINAL WALL	**14.INFERIOR MESENTERIC**	**16.KIDNEY**	**18.SPINAL NERVE**
1.Anterior cutaneous branches T7 to T12	1.Arcade arteries	J.Renal papilla	1.White matter
2.Anterior cutaneous branch of the 11th intercostal nerve	2.Middle colic artery	K.Renal cortex	2.Dorsal median sulcus
3.Inguinal ligament	3.Superior mesenteric artery	L.Pyramid in renal medulla	3.Dorsal horn
4.Spermatic cord	4.Inferior mesenteric artery	**19.MALE REPRODUCTIVE ORGANS**	4.Dorsal root
5.Ilionguinal nerve	5.Left colic artery	1.Bladder	5.Dorsal root ganglion
6.Anterior cutaneous branch of the iliohypogastric	6.Marginal artery	2.Seminal vesicle	6.Spinal nerve
7.External oblique muscle and aponeurosis	7.Arterial rectae	3.Rectum	7.Ventral root
8.Rectus abdominis muscle	8.Sigmoid arteries	4.Prostate gland	8.Ventral horn
9.Linea alba	9.Superior rectal artery	5.Anus	9.Ventral median fissure
13.BONE TISSUE	10.Right colic artery	6.Vas deferens	10.Central canal
A.Lacunae	11.Ileocolic artery	7.Epididymis	11.Gray matter
B.Central canal	**16.KIDNEY**	8.Testis	
C.Canalliculi and Extracellular matrix	A.Renal column	9.Scrotum	
D.Lamella	B.Major calyx	10.Glans penis	
II.Compact bone	C.Renal artery	11.Penis	
	D.Renal vein	12.Urethra	
	E.Renal pelvis	13.Pubic bone	
	F.Ureter		
	G.Minor calyx		
	H.Renal capsule		