



2025 Anato-Bee Local Competition Practice Test

We would like to thank the 2024 Northern Regional Anato-Bee Winner, Michael Harkins, for generously volunteering his time and writing these practice questions to aid in your studying. All questions were vetted by the Anato-Bee team to ensure comparability to the level of questions you will encounter in the local level of competition.

Please note that this practice examination is sorted by topic, but the actual examination will be randomized in order. Answers to these practice questions can be found on the final page of this document.

Introductory Content

- 1) An embryonic human with a gestational age of 6 weeks would have a fetal age of ____ weeks.
 - a) 2
 - b) 4
 - c) 8
 - d) 10
- 2) When does crossing over occur during meiosis?
 - a) Anaphase II
 - b) Metaphase I
 - c) Metaphase II
 - d) Prophase I
- 3) After fertilization, an embryonic human contains how much nuclear genetic material from the mother?
 - a) An equal amount to the father
 - b) Less than the father
 - c) More than the father

- d) None
- 4) TRUE OR FALSE: A pluripotent cell can become any type of cell in the body and in the placenta.
- a) True
 - b) False
- 5) Which of the following is NOT an ectodermal derivative?
- a) Anterior pituitary gland
 - b) Cornea
 - c) Dermis
 - d) Melanocytes
- 6) What type of connective tissue does the subcutaneous layer of skin consist of?
- a) Adipose
 - b) Dense irregular
 - c) Loose areolar
 - d) Reticular
- 7) What is the largest organ of the body?
- a) Brain
 - b) Femur
 - c) Liver
 - d) Skin
- 8) In which of the following locations is simple columnar tissue NOT found?
- a) Stomach
 - b) Uterus

- c) Vagina
- 9) What type of collagen can be found in the basement membrane?
- a) Collagen I
 - b) Collagen II
 - c) Collagen III
 - d) Collagen IV
- 10) Which one of these patients should not have an MRI?
- a) A 1-month-old patient with large intestinal stenosis
 - b) A 60-year-old patient who had a metal knee replacement 1 year ago
 - c) A 33-year-old patient who had an appendectomy two days ago
 - d) A 27-year-old patient who is currently five weeks pregnant
- 11) The thumb is _____ to the little finger.
- a) Anterior
 - b) Lateral
 - c) Medial
 - d) Proximal

Skeletal System

- 12) The sternum is a _____ bone.
- a) Flat
 - b) Irregular
 - c) Long
 - d) Short

- 13) Osteoid is secreted by what cell(s)?
- a) Fibroblast
 - b) Osteoblast
 - c) Osteoclast
 - d) Both A and B
- 14) What is another name for a central canal in bone tissue?
- a) Haversian canal
 - b) Osteon canal
 - c) Peripheral canal
 - d) Volkmann's canal
- 15) A vertebra is classified as what type of bone?
- a) Flat
 - b) Irregular
 - c) Sesamoid
 - d) Short

Muscular System

- 16) Which mesoderm tissue does NOT contribute to the formation of the limbs?
- a) Paraxial mesoderm
 - b) Lateral plate mesoderm
 - c) Intermediate mesoderm
- 17) Which type(s) of muscle have intercalated discs?
- a) Cardiac muscle

- b) Skeletal muscle
- c) Smooth muscle
- d) Both A and C

18) When a sarcomere contracts, which band does not change in length?

- a) A band
- b) H band
- c) I band
- d) All of the band's lengths change

19) Because the gluteus maximus muscle is located in the posterior compartment of the thigh, it is likely that its main function is thigh _____.

- a) Adduction
- b) Extension
- c) Flexion
- d) Pronation

Nervous System

20) Which meninge(s) is/are NOT derived from neural crest cells?

- a) Arachnoid mater
- b) Dura mater
- c) Pia mater
- d) A and B

21) Which of the following spinal segments does NOT have an equal amount of spinal nerves and vertebrae?

- a) Cervical
- b) Lumbar
- c) Sacral
- d) Thoracic

22) Which layer of the eye is highly vascularized, providing blood to the other layers?

- a) Choroid
- b) Retina
- c) Sclera

23) What does the perineurium surround?

- a) A bundle of axons
- b) A bundle of fascicles
- c) A single axon
- d) A single cell body

Cardiovascular System

24) Part of the back wall of the right atrium is derived from the _____.

- a) Bulbus cordis
- b) Endocardial cushions
- c) Sinus venosus
- d) Truncus arteriosus

25) The endocardium is composed of _____ epithelial cells.

- a) Simple columnar
- b) Simple cuboidal

- c) Simple squamous
 - d) Stratified cuboidal
- 26) When one part of the heart is not pumping correctly, the backup of blood can cause edema in the tissue behind that part. If a patient presents with pulmonary edema which part of the heart may be failing?
- a) The left ventricle
 - b) The right ventricle

Respiratory System

- 27) One of the most severe problems for preterm babies is an inability to perform respiration due to underdeveloped lungs. What lung developmental stage would you expect to be the MOST significant for increasing the survival rate of preterm babies?
- a) Alveolar
 - b) Canalicular
 - c) Embryonic
 - d) Pseudoglandular
 - e) Saccular
- 28) What type(s) of cell(s) secretes surfactant elements?
- a) Club cells
 - b) Type I pneumocytes
 - c) Type II pneumocytes
 - d) Both A and C

- 29) Pediatric patients rely significantly more on their diaphragm for respiration than adults do. For a pediatric patient presenting with respiratory distress, would you expect the use of accessory muscles to be a more or less severe sign than in adults?
- a) Less severe
 - b) More severe
- 30) Which layer of the trilaminar disc develops into the lining of the trachea?
- a) Ectoderm
 - b) Endoderm
 - c) Mesoderm
 - d) All of the Above
- 31) Which of the following shows the correct order for the respiratory structures from largest to smallest?
- a) Lobar bronchi - Segmental bronchi - Respiratory bronchioles - Terminal bronchioles
 - b) Lobar bronchi - Segmental bronchi - Terminal bronchioles - Respiratory bronchioles
 - c) Segmental bronchi - Lobar bronchi - Respiratory bronchioles - Terminal bronchioles
 - d) Segmental bronchi - Lobar bronchi - Terminal bronchioles - Respiratory bronchioles

Digestive System

- 32) The appendix is derived from the ____.
- a) Foregut

- b) Hindgut
- c) Midgut
- d) Both B and C

33) What type of connective tissue is the lamina propria?

- a) Adipose
- b) Dense irregular
- c) Loose areolar
- d) Reticular

34) The gallbladder is supplied by branches from what major artery?

- a) Celiac trunk
- b) Inferior mesenteric artery
- c) Superior mesenteric artery
- d) Right renal artery

Urinary and Reproductive Systems

35) Where does fertilization typically occur?

- a) Ampulla
- b) Infundibulum
- c) Isthmus
- d) Uterus

36) Which of the following is NOT a derivative of the Müllerian duct?

- a) Clitoris
- b) Fallopian tubes

- c) Upper vagina
- d) Uterus

37) The cells that secrete the testosterone vital to the persistence and development of the Wolffian duct are _____.

- a) Leydig cells
- b) Sertoli cells

38) The Wolffian duct is also known as the _____.

- a) Mesonephric duct
- b) Metanephric duct
- c) Müllerian duct
- d) Paramesonephric duct

39) Where are follicles located in the ovary?

- a) Cortex
- b) Germinal epithelium
- c) Medulla
- d) Tunica albuginea

ANSWERS:

1. B	16. C	31. B
2. D	17. A	32. C
3. A	18. A	33. C
4. B	19. B	34. A
5. C	20. B	35. A
6. A	21. A	36. A
7. D	22. A	37. A
8. C	23. A	38. A
9. D	24. C	39. A
10. B	25. C	
11. B	26. A	
12. A	27. E	
13. B	28. D	
14. A	29. B	
15. B	30. B	