

ENTRANCE EXAMINATION FOR ADMISSION, MAY 2012.

M.Sc. (MEDICAL ANATOMY)

COURSE CODE : 501

Register Number :

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*Signature of the Invigilator  
(with date)*

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COURSE CODE : 501

Time : 2 Hours

Max : 400 Marks

*Instructions to Candidates :*

1. Write your Register Number within the box provided on the top of this page and fill in the page 1 of the answer sheet using pen.
2. Do not write your name anywhere in this booklet or answer sheet. Violation of this entails disqualification.
3. Read each of the question carefully and shade the relevant answer (A) or (B) or (C) or (D) in the relevant box of the ANSWER SHEET using HB pencil.
4. Avoid blind guessing. A wrong answer will fetch you -1 mark and the correct answer will fetch 4 marks.
5. Do not write anything in the question paper. Use the white sheets attached at the end for rough works.
6. Do not open the question paper until the start signal is given.
7. Do not attempt to answer after stop signal is given. Any such attempt will disqualify your candidature.
8. On stop signal, keep the question paper and the answer sheet on your table and wait for the invigilator to collect them.
9. Use of Calculators, Tables, etc. are prohibited.

1. The cell membrane:
  - (A) Is approximately 7 nm thickness
  - (B) Allows passage of specific ions through carbohydrate-gated channels
  - (C) Is activated by a secondary messenger system.
  - (D) All of the above
  
2. Covered cytoplasmic inclusions:
  - (A) Contain cytosol
  - (B) Together comprise the cell cytoskeleton
  - (C) Are involved in phagocytosis
  - (D) None of the above
  
3. The cell nucleus:
  - (A) Is the site of RNA synthesis
  - (B) Is surrounded by a single layered membrane
  - (C) Contains nucleoli responsible for the production of the mitotic spindles during cell division.
  - (D) All of the above
  
4. Cells are united by:
 

(A) Desmosomes	(B) Gated junctions
(C) Terminal junctions	(D) All of the above
  
5. Epithelial issue:
  - (A) Give rise to the sebaceous glands of the scalp.
  - (B) Lining the urinary tract contains numerous goblet cells
  - (C) Lining the respiratory tract is keratinized
  - (D) Is surrounded by a single layered membrane
  
6. Exocrine glands:
  - (A) Typically discharge their contents directly into the blood stream.
  - (B) Usually secretes in a holocrine manner
  - (C) Are of mesenchymal origin.
  - (D) Goblet cells are unicellular
  
7. Elastic fibres are:
 

(A) Prominent in hyaline cartilage	(B) Formed from fibroblasts
(C) Prominent in superficial fascia	(D) Prominent in aponeuroses

8. Hyaline cartilage:
- (A) Unites the sphenoid and occipital bones in the child.
  - (B) Forms the knee menisci
  - (C) Is particularly vascular in relation to joints.
  - (D) Prominent in aponeuroses
9. Long bones:
- (A) Usually ossify in mesenchyme
  - (B) Consist entirely of compact bone
  - (C) Are organized in Haversian systems
  - (D) Are covered with the acellular periosteum
10. Cartilaginous ossification:
- (A) Occurs in cartilage which has replaced a membranous model
  - (B) Has its primary centres appearing at about the 18th week of intra-uterine life.
  - (C) Secondary centres typically fuse at puberty
  - (D) Is typical in the bones of the skull vault.
11. In the development of a long bone:
- (A) Osteoblasts come to line the primary alveoli
  - (B) Osteoblasts become the osteocytes
  - (C) The epiphyseal plate separates the metaphysis from the diaphysis
  - (D) Circumferential growth is from the diaphyseal centre.
12. In the vertebral column:
- (A) The individual vertebrae are all separately
  - (B) Cervical vertebrae all have bifid spines
  - (C) Thoracic vertebrae all have articular surfaces for ribs.
  - (D) The articular processes arise near the junction of the vertebral body and its pedicles.
13. In the cervical region:
- (A) The superior articular facets of the axis face anterolaterally
  - (B) The atlas vertebra has no body
  - (C) The 6th cervical spine is the most prominent
  - (D) Dislocation of the dens is prevented by the alar and apical ligaments.
14. The intervertebral discs:
- (A) Are largely composed of hyaline cartilage.
  - (B) The annulus fibrosus is formed of elastic tissue
  - (C) Are found in all regions of the vertebral column.
  - (D) May compress the spinal cord when injured.

15. The vertebral bodies are united by:
- (A) Anterior and posterior longitudinal ligaments.
  - (B) Ligamenta flava.
  - (C) Intertransverse ligaments.
  - (D) Interspinous ligaments.
16. In the vertebral canal the:
- (A) Dural covering of the spinal cord fuses with the periosteum of adjacent vertebrae.
  - (B) Spinal cord cannot be damaged if a needle is inserted between the 1st and 2nd lumbar spines.
  - (C) Spinal cord of an adult ends about the level of the 2nd lumbar vertebra.
  - (D) All of the above
17. The thoracic wall:
- (A) Has a cartilaginous skeleton
  - (B) Is cylindrical in shape.
  - (C) Receives its cutaneous nerves via the brachial plexus.
  - (D) Gives attachment to abdominal wall muscles.
18. A typical rib:
- (A) Articulates with the vertebral bodies in two places.
  - (B) Is attached to an inter-vertebral disc.
  - (C) Bears three facets for articulation with the vertebral column.
  - (D) All of the above.
19. Intercostal arteries:
- (A) Supply only the posterior part of the intercostals space.
  - (B) Lie inferior to the accompanying nerve in the intercostals space.
  - (C) Supply the spinal cord.
  - (D) None of the above.
20. A typical intercostals nerve:
- (A) May supply abdominal wall skin.
  - (B) Lies in the majority of its course in the subcostal groove.
  - (C) Is a ventral ramus of a thoracic spinal nerve.
  - (D) All of the above.
21. The diaphragm:
- (A) Is supplied by both the phrenic and intercostals nerves.
  - (B) Has an opening in the central tendon for the inferior vena cava.
  - (C) Contracts during micturition
  - (D) All of the above.

22. The diaphragm is pierced by the:  
(A) Splanchnic nerves (B) Sympathetic trunks  
(C) The lowerst intercostals nerves (D) None of the above
23. During deep respiration:  
(A) Inspiration is aided by approximation of the upper ribs.  
(B) Expiration is due to the elastic recoil of lung tissue and the costal cartilages.  
(C) There is often fixing of the shoulder girdles.  
(D) All of the above
24. The adult female mammary gland:  
(A) Extends from the side of the sternum to near the midaxillary line.  
(B) Has a subcutaneous and submammary plexus of lymph vessels.  
(C) Develops from modified skin glands.  
(D) All of the above
25. The adult heart:  
(A) Lies on the left dome of the diaphragm  
(B) In health weighs approximately 900g.  
(C) Is totally enclosed by the serous pericardium.  
(D) Develops from modified skin glands.
26. The right atrium:  
(A) Has a thin anterior endocardial for "guarding" the superior vena cava.  
(B) Has an auricle situated superolaterally.  
(C) Is related to the central tendon of the diaphragm at the level of the 8th thoracic vertebra.  
(D) Has a fossa ovalis on the atrioventricular wall.
27. The right ventricle:  
(A) Forms most of the inferior surface of the heart.  
(B) Is normally oval in cross section.  
(C) Usually contains three conical papillary muscles.  
(D) Has an auricle situated superolaterally.
28. The mitral valve:  
(A) Possesses two cusps.  
(B) 'guards' the right atrioventricular orifice.  
(C) Has no papillary muscle attachments.  
(D) All of the above.

29. The coronary arteries:
- (A) Arise from the inferior aspect of the aortic arch.
  - (B) Supply the conducting system of the heart.
  - (C) Inspiration is aided by approximation of the upper ribs
  - (D) None of the above
30. The atrioventricular bundle:
- (A) Forms part of the conducting system of the heart.
  - (B) Lies in the interventricular septum.
  - (C) Bridges between the atrial and ventricular muscles.
  - (D) All of the above.
31. During the development of the heart:
- (A) The oblique sinus of the pericardium arises.
  - (B) Division into right and left sides is completed prior to birth
  - (C) The vena cava come to enter the caudal end of the heart tube.
  - (D) None of the above.
32. The ascending aorta:
- (A) Ascends as far as the right sternoclavicular joint
  - (B) Has no branches.
  - (C) Is related anteriorly to the sternum.
  - (D) All of the above.
33. The arch of the aorta:
- (A) Arches posteriorly over the root of the right lung.
  - (B) Is connected to the right pulmonary artery.
  - (C) Is related anteriorly to the manubrium sternum.
  - (D) Bifurcates anterior to the aortic arch.
34. The pulmonary trunk:
- (A) Bifurcates anterior to the aortic arch.
  - (B) Is related to the left pleura and lung
  - (C) Has the thoracic duct on the left side.
  - (D) Is related anteriorly to the pulmonary trunk.
35. The brachiocephalic vein;
- (A) Enters the right atrium directly.
  - (B) On the right is related to the thoracic duct.
  - (C) Receives small pulmonary tributaries.
  - (D) On the left, gains tributaries from the thyroid gland.

36. The lateral muscles of the anterior abdominal wall are:  
(A) Contained within the rectus sheath  
(B) Attached to the lateral margin of rectus abdominis  
(C) Each gain attachment to the pubic bone.  
(D) All of the above.
37. The inguinal canal:  
(A) Has an anterior wall comprising the external oblique aponeurosis and the internal oblique muscle.  
(B) Has its floor formed by the deep fascia of the thigh  
(C) Has its posterior wall formed medially by peritoneum.  
(D) Is longer in the newborn than the adult.
38. The spermatic cord:  
(A) Has three fascial coverings. (B) Contains three arteries.  
(C) Contains one muscle. (D) All of the above.
39. The testis:  
(A) Has the epididymus applied to its medial side.  
(B) Is drained by lymph vessels passing to the external iliac lymph nodes.  
(C) Is covered in the scrotum by one layer of fascia.  
(D) Descends into the scrotum just before birth.
40. The testis, in its embryological development:  
(A) Is aided in its descent by the processus vaginalis.  
(B) Does not normally complete its descent into the scrotum until three months after birth  
(C) Causes inguinal hernias to be more common in the male.  
(D) None of the above.
41. The lesser omentum:  
(A) Separates the lesser sac (omental bursa) and greater sac of peritoneum.  
(B) Forms part of the boundaries of the epiploic foramen  
(C) Embraces the portal vein.  
(D) All of the above.
42. The mesentery:  
(A) Of the small intestine is attached obliquely along a line extending from the descending part of the duodenum to the left sacro-iliac joint.  
(B) Of the small intestine contains branches of the inferior mesenteric artery.  
(C) Of the sigmoid colon lies over the promontory of the sacrum.  
(D) Of the sigmoid colon contains the inferior mesenteric vein.

43. The pelvic peritoneum:
- (A) Covers both the uterus and uterine tubes.
  - (B) Condenses and forms the broad ligaments of the uterus.
  - (C) Covers the anterior surface of the rectum only in its upper third.
  - (D) All of the above
44. The abdominal oesophagus:
- (A) Enters the abdomen between the right and left crus of the diaphragm
  - (B) Is enveloped by peritoneum.
  - (C) Is closely related to the left lobe of the liver.
  - (D) Is surrounded by an external oesophageal sphincter.
45. In the stomach, the:
- (A) Cardiac orifice is closely related to the aorta.
  - (B) Body extends inferiorly to the angular notch
  - (C) Right border is known as its greater curvature.
  - (D) Blood supply arises from midgut arteries.
46. The appendix:
- (A) Arises from the inferior aspect of the caecum.
  - (B) Is commonly absent
  - (C) Is clothed in peritoneum
  - (D) None of the above
47. The ilium of the hip bone:
- (A) Forms two-fifths of the acetabulum
  - (B) Has a subcutaneous upper border.
  - (C) Gives attachment to the rectus femoris muscle
  - (D) All of the above
48. The sacrum:
- (A) Is formed of four fused sacral vertebrae.
  - (B) Is closely related to the rectum
  - (C) Gives attachment to piriformis on the lateral part of its dorsal surface
  - (D) Gives attachment to the adductor magnus muscle.
49. The sacro-iliac joint:
- (A) Is a fibrous joint in a young person
  - (B) Owes its stability to the neighbouring muscles.
  - (C) Lies anterior to the sciatic nerve
  - (D) Allows only slight rotation and gliding movements to occur

50. The symphysis pubis:
- (A) Has its surfaces covered with fibrocartilage
  - (B) Allows little or no movement
  - (C) Gains most of its stability from accessory ligaments.
  - (D) All of the above
51. The lesser pelvis:
- (A) In the female, has a relatively longer anteroposterior diameter at the pelvic inlet.
  - (B) Has an outlet bounded by the ischiopubic rami and the sacrotuberous ligaments.
  - (C) Has a smaller subpubic angle in the female than in the male.
  - (D) In the female is generally circular in cross section.
52. The levator ani muscle:
- (A) Gains attachment from the fascia covering obturator internus.
  - (B) Is supplied largely by sympathetic and parasympathetic nerves.
  - (C) Forms all of the pelvic floor.
  - (D) None of the above
53. The pelvic floor:
- (A) Is formed by levator ani and coccygeus.
  - (B) Separates the perineum from the ischiorectal fossae.
  - (C) Has the pelvic vessels and nerves on its undersurface
  - (D) None of the above
54. The rectum:
- (A) Has no mesentery
  - (B) Forms the posterior wall of a peritoneal pouch
  - (C) Is related anteriorly to the cervix.
  - (D) All of the above.
55. The rectum:
- (A) Is related posteriorly to the 3rd, 4th and 5th sacral nerves
  - (B) Has a lining of stratified squamous epithelium
  - (C) Has a venous drainage into the superior mesenteric vein
  - (D) Is a straight structure
56. The urinary bladder:
- (A) Has no peritoneal covering
  - (B) Is lined with cubical epithelium
  - (C) Has a lymphatic drainage to the inguinal nodes
  - (D) Is closely related to the pubic bones.

57. The urinary bladder:
- (A) Has a venous drainage to the inferior mesenteric vein
  - (B) Is largely supported by the pelvic fascia
  - (C) Is lined by both columnar and squamous epithelium
  - (D) None of the above
58. The vagina:
- (A) Usually lies at an axis of  $45^\circ$  with the uterus
  - (B) Is lined with epithelium rich in mucous glands
  - (C) Is covered in its upper posterior part with peritoneum
  - (D) All of the above
59. The prostate:
- (A) Is traversed by two ejaculatory ducts
  - (B) Possesses lateral and median lobes
  - (C) Is separated from the rectum by rectovesical fascia
  - (D) All of the above
60. The ischiorectal fossa:
- (A) Is bounded superiorly by the levator ani muscle
  - (B) Is bounded laterally by the inferior pubic ramus
  - (C) Does not communicate with its fellow of the opposite side
  - (D) Contains the seminal vesicles.
61. The clavicle:
- (A) Has no medullary cavity
  - (B) Is convex anteriorly in the medial two-thirds
  - (C) Laterally gives attachment to trapezius
  - (D) All of the above
62. The scapula has a:
- (A) Palpable inferior angle which overlies the seventh rib
  - (B) Lateral border giving rise to the serratus anterior muscle.
  - (C) Costal surface divided by a projecting spine into supraspinous and infraspinous fossae.
  - (D) All of the above
63. In the humerus the:
- (A) Subscapularis muscle is attached to the greater tuberosity
  - (B) Olecranon fossa gives attachment to the medial head of the triceps muscle
  - (C) Axillary nerve lies medial to the anatomical neck
  - (D) Greater tuberosity is separated from the lesser tuberosity by the intertubercular groove.

64. The sternoclavicular joint:
- (A) Is a synovial joint
  - (B) Is of the ellipsoid variety
  - (C) Owes most of its stability to its capsular ligaments
  - (D) lies anterior to the aortic arch
65. The acromioclavicular joint.
- (A) Is not a synovial joint
  - (B) Typically contains a disc of hyaline cartilage
  - (C) Gains its stability from its capsular ligament
  - (D) None of the above
66. The shoulder joint:
- (A) Is surrounded by a tight capsular ligament
  - (B) Usually communicates superiorly with the subacromial bursa
  - (C) Depends for most of its stability on the capsular and accessory ligaments
  - (D) Is closely related inferiorly to the axillary nerve.
67. The serratus anterior muscle:
- (A) Gains attachment to all of the ribs
  - (B) Is supplied by the thoracodorsal branch of the posterior cord of the brachial plexus.
  - (C) Is an accessory muscle of respiration
  - (D) All of the above
68. Trapezius is attached to the:
- (A) Occipital bone
  - (B) Clavicle
  - (C) Thoracic vertebra
  - (D) All of the above
69. The latissimus dorsi muscle:
- (A) Is attached to the lower six thoracic vertebrae.
  - (B) Has no attachment to the chest wall
  - (C) Is a powerful flexor of the humerus at the shoulder joint
  - (D) None of the above
70. The deltoid muscle.
- (A) Is a unipennate muscle
  - (B) Is distally attached to anterior upper third of the humerus
  - (C) Overlies the subacromial bursa
  - (D) Is supplied by the radial nerve

71. In the development of the lower limb:
- (A) The axial artery arises from the superior vesical artery
  - (B) Lateral rotation of the limb occurs between the hip and knee regions
  - (C) Synovial joints are present between some of the bones of the pelvic girdle
  - (D) The posterior division of the anterior primary rami of L2, 3 and 4 give rise to the obturator nerve.
72. The ileum:
- (A) Gives attachment to the gluteus maximus muscles between the middle and posterior gluteal lines.
  - (B) Is bordered posteriorly by the lesser sciatic notch
  - (C) Gives attachment to sartorius
  - (D) All of the above
73. The obturator foramen:
- (A) Is bounded posteriorly by the iliac part of the acetabulum
  - (B) Transmits the inferior gluteal nerve
  - (C) Transmits the superior gluteal artery
  - (D) Transmits the obturator artery and nerve
74. The greater trochanter of the femur
- (A) Gives attachment to the quadratus femoris muscle.
  - (B) Gives attachment to the gluteus minimus muscle along its anterior border
  - (C) Gives attachment to the gluteus maximus along its posterior border.
  - (D) All of the above
75. The lesser of the femur:
- (A) Gives attachment to the pectineus muscle
  - (B) Gives attachment to iliacus
  - (C) Gives attachment to vastus intermedius
  - (D) None of the above
76. The body of the femur:
- (A) Forms an angle of about  $125^\circ$  with the neck
  - (B) Gives attachment to the gluteus maximus muscle along the linea aspera
  - (C) Has no muscles attached to its anterior surface
  - (D) Gives attachment to the pectineus muscle.
77. The lower end of the femur:
- (A) Gives attachment to the adductor magnus
  - (B) Gives attachment to the plantaris muscle in a pit below the lateral epicondyle
  - (C) Gives attachment to the patellar ligament
  - (D) All of the above

78. The capsula of the hip joint:
- (A) Is attachment along the intertrochanteric crest
  - (B) Is attached along the intertrochanteric line
  - (C) Is thickened inferiorly as the iliofemoral ligament
  - (D) Limits flexion at the hip joint
79. In movements at the hip joint:
- (A) Abduction is produced mainly by the gluteus medius and minimus muscles.
  - (B) Medial rotation is produced by gluteus medius and minimus
  - (C) Extension is limited by tension in the three capsular thickenings
  - (D) All of the above
80. The hip joint is directly related:
- (A) Anteriorly to the psoas bursa
  - (B) Superiorly to the gluteus medius muscle
  - (C) Posteriorly to the sciatic nerve
  - (D) To the femoral nerve
81. On the superior aspect of the skull the;
- (A) Sutures are all fibrous joints
  - (B) Bregma lies between the sagittal and lambdoid sutures.
  - (C) Anterior fontanelle is usually closed at birth.
  - (D) All of the above
82. On the anterior aspect of the skull the:
- (A) Inferior orbital margin is formed by the maxillary and zygomatic bones
  - (B) Infraorbital foramen is situated at approximately the junction of the middle and lateral thirds of the inferior orbital margin
  - (C) Medial orbital margin is formed by the frontal, lacrimal and maxillary bones.
  - (D) Nasal aperture is produced by the frontal, nasal, maxillary and temporal bones.
83. On the lateral aspect of the skull the;
- (A) Infratemporal fossa communicates with the pterygopalatine fossa through the pterygotympanic fissure.
  - (B) Zygomatic arch is formed by the zygomatic and sphenoid bones.
  - (C) Mastoid process is partly formed by the occipital bone.
  - (D) Pterion is sited approximately 3.45 cm behind and 1.5 cm above the frontozygomatic suture.

84. On the inferior aspect of the skull the:
- (A) Hard palate is formed by the maxillary, vomer and palatine bones.
  - (B) Incisive foramen transmits the greater and lesser palatine nerves.
  - (C) Incisive foramen transmits the greater palatine artery.
  - (D) Pterygoid hamulus gives attachment to the tensor veli palatine muscle.
85. On the inferior aspect of the skull the:
- (A) Spine of the sphenoid gives attachment to the sphenomandibular ligament
  - (B) Foramen spinosum transmits the middle meningeal artery
  - (C) Petrotympanic fissure transmits the chorda tympani nerve
  - (D) All of the above
86. On the inferior aspect of the skull the:
- (A) Foramen lacerum is pierced by the internal carotid artery
  - (B) Tip of the styloid process gives attachment to the stylomandibular ligament
  - (C) Medial of the two grooves on the medial aspect of the mastoid process houses the occipital artery
  - (D) The stylomastoid foramen transmits the vestibulocochlear nerve
87. The mandible:
- (A) Gives attachment to the lateral pterygoid muscle along the coronoid process.
  - (B) Gives attachment to the medial pterygoid muscle along the coronoid process
  - (C) Develops in the cartilage of the first pharyngeal arch (Meckel's cartilage).
  - (D) Has the lingual nerve crossing the root of the 3rd molar tooth.
88. The maxilla:
- (A) Has a large opening on its medial surface.
  - (B) Contributes to the floor of the orbit
  - (C) Develops in cartilage from a centre above the canine tooth
  - (D) All of the above
89. The sphenoid bone transmits the:
- (A) Mandibular branch of the trigeminal nerve
  - (B) Middle meningeal artery
  - (C) Internal carotid artery
  - (D) All of the above