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BSc. MEDICAL SCIENCES FORMATIVE ASSESSMENT 2: 2016/2017
BAHS 235: MUSCULOSKELETAL SYSTEM

INSTRUCTION: ANSWER ALL QUESTIONS (i.e. A total of 64 questions)
TIME ALLOWED: 90 MINUTES

SECTION A: MCQs
Select the SINGLE BEST RESPONSE to the stem or question from options in questions 1-60.
SHADE YOUR ANSWER ON THE SCANNABLE SHEET PROVIDED.

- Which of these muscles is **not** part of the deep group of intrinsic muscles?
A. Semispinalis
 B. Spinalis
C. Multifidus
D. Rotatores
E. Intertransversarii
- Which of these groups of muscles form the erector spinae?
A. Iliocostalis-Multifidus-Spinalis
B. Iliocostalis-Longissimus-Rotatores
 C. Spinalis-Iliocostalis-Longissimus
D. Spinalis-Longissimus-Multifidus
E. Longissimus-Multifidus-Rotatores
- Which superficial muscle of the back is most important in allowing a shrugging motion?
 A. Trapezius
B. Rhomboid major
C. Rhomboid minor
D. Levator scapulae
E. Latissimus dorsi

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4. Which of the following muscles attaches specifically to the spinous processes of the T2-T5 vertebrae?
- A. Serratus posterior superior
 - B. Rhomboid major
 - C. Rhomboid minor
 - D. Trapezius
 - E. Levator scapulae
5. Which of these nerves innervates latissimus dorsi?
- A. Accessory nerve
 - B. Dorsal scapular nerve
 - C. Long thoracic
 - D. Thoracodorsal
 - E. Posterior rami of T6-T12 spinal nerves
6. Which of the muscles listed below can be used to assess the patency of the accessory nerve?
- A. Latissimus dorsi
 - B. Levator scapulae
 - C. Rhomboid major
 - D. Rhomboid minor
 - E. Trapezius
7. Which of the following is **not** a function of the pelvic floor?
- A. Support of abdominopelvic viscera
 - B. Resistance to increase in intra-pelvic pressure
 - C. Facilitate passage of vessels and nerves
 - D. Urinary continence
 - E. Faecal continence
8. Which of the following correctly describes the attachments of puborectalis?
- A. Originates at the ischial spines and attaches to the coccyx
 - B. Originates from the body of the pubic bone and attaches to the vagina, prostate and perineal body
 - C. Originates from the ischial spines and attaches to the sacrum and coccyx
 - D. Originates from the body of the pubic bone and forms a U-shaped sling around the anal canal
 - E. None of the above

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9. Which of the following muscles is most prone to injury during childbirth?

- A. Iliococcygeus
- B. Puborectalis
- C. Coccygeus
- D. Piriformis
- E. Pubococcygeus

10. Damage to which structure in childbirth is most likely to lead to prolapse of the vagina?

- A. Piriformis
- B. Levator ani
- C. Perineal body
- D. Obturator internus fascia
- E. Perineal membrane

11. Which nerve innervates gluteus maximus?

- A. Pudendal nerve
- B. Superior gluteal nerve
- C. Inferior gluteal nerve
- D. Obturator nerve
- E. Femoral nerve

12. Thick filaments in skeletal muscle are composed of

- A. Actin
- B. Myosin
- C. Troponin
- D. Calmodulin
- E. Tropomyosin

13. Which of the following statements regarding the shortening of a skeletal-muscle fibre is not true? When a skeletal-muscle fibre shortens,

- A. The sarcomeres shorten
- B. The distance between Z lines decreases
- C. The myofilaments shorten
- D. The myofilaments slide past each other
- E. The length of the A bands remains the same.

14. In skeletal muscle, calcium facilitates contraction by binding to

- A. Tropomyosin
- B. Actin
- C. Troponin
- D. Myosin
- E. The thick filament.

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15. Rigor mortis occurs in a dead animal because
- A. ATP, which is necessary for the detachment of cross bridges, is not being formed
 - B. ATP, which is necessary for the formation of cross bridges, is not being formed
 - C. ATP, which is necessary for the formation of cross bridges, continues to be formed for several hours after death
 - D. Deterioration of muscle proteins prevents detachment of cross bridges
 - E. None of the above.
16. "Motor unit" refers to
- A. A single motor neuron plus all the muscle fibres it innervates
 - B. A single muscle fibre plus all of the motor neurons that innervate it
 - C. All of the motor neurons supplying a single muscle
 - D. A pair of antagonistic muscles
 - E. All of the muscles that affect the movement of any given joint.
17. Which muscle is sandwiched by the gemelli?
- A. Obturator externus
 - B. Obturator internus
 - C. Gluteus medius
 - D. Piriformis
 - E. Quadratus femoris
18. Damage to which of these nerve roots would affect the function of the femoral nerve?
- A. T12
 - B. L1
 - C. L3
 - D. L5
 - E. S1
19. Which of the following best describes the function of sartorius at the hip?
- A. Flexion
 - B. Flexion-Medial rotation-Adduction
 - C. Flexion-Abduction-Lateral rotation
 - D. Flexion-Abduction-Medial rotation
 - E. Flexion-Adduction and lateral rotation
20. Which two nerves innervate adductor magnus?
- A. Tibial and femoral
 - B. Femoral and obturator
 - C. Femoral and common fibular
 - D. Tibial and obturator
 - E. Obturator and common fibular

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21. Which of these is the most superior of the muscles of the medial thigh?
- A. Adductor longus
 - B. Adductor Brevis
 - C. Adductor Magnus
 - D. Obturator Externus
 - E. Pectineus
22. Which of these best describes the innervation of the short head of biceps femoris?
- A. Sciatic nerve
 - B. Tibial part of sciatic nerve
 - C. Common fibular part of sciatic nerve
 - D. Femoral nerve
 - E. Saphenous nerve
23. In order to avoid injecting into the sciatic nerve, intramuscular injections in the gluteal region should be made.....
- A. In the lower lateral quadrant
 - B. In the upper lateral quadrant
 - C. Midway between the greater trochanter and ischial tuberosity
 - D. Over the sacrotuberous ligament
 - E. Less than 3cm from the anterior superior iliac spine.
24. Which of these ligaments at the hip joint limits abduction and lateral rotation?
- A. Iliofemoral ligament
 - B. Pubofemofal ligament
 - C. Ischiofemoral ligament
 - D. Ligamentum teres capitis
 - E. Transverse acetabular ligament.
25. After the sciatic nerve has emerged from the pelvis inferior to the muscle, it passes between the greater trochanter of femur and the ischial tuberosity.
- A. Superior gemellus
 - B. Quadratus femoris
 - C. Gluteus minimus
 - D. Obturator internus
 - E. Piriformis
26. Damage to which of the following nerves would result in loss of plantar flexion at the ankle
- A. Tibial
 - B. Superficial fibular
 - C. Deep fibular
 - D. Femoral
 - E. Obturator

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27. An action potential in the motor end plate rapidly spreads to the central portions of a muscle cell by means of the
- A. Z lines
 - B. Sarcoplasmic reticulum
 - C. H zone
 - D. Transverse tubules
 - E. Pores in the plasma membrane.
28. During an isometric contraction of a skeletal muscle,
- A. The I bands shorten and the A bands stay the same length
 - B. The thick and thin filaments slide past each other
 - C. Sarcomere length does not change
 - D. A and B
 - E. None of the above.
29. Which of the following is not true regarding the comparison of type I (slow oxidative) and type II b (fast-glycolytic) skeletal-muscle fibres?
- A. Type I fibres have more abundant mitochondria
 - B. Type I fibres fatigue more readily
 - C. Type I fibres have more abundant myoglobin
 - D. Type I fibres have more abundant capillaries
 - E. Type I motor units contain fewer fibres than type IIb motor units.
30. Which of the following statements about different kinds of skeletal-muscle fibres is true?
- A. Slow-oxidative fibres have a greater abundance of glycogen than do fast-glycolytic fibres
 - B. Fast-glycolytic fibres have a greater abundance of myoglobin than do slow-oxidative fibres
 - C. Fast-glycolytic fibres can generate greater tension than can slow-oxidative fibres
 - D. A and B
 - E. A, B and C.
31. Fast-glycolytic muscle fibres differ from slow-oxidative fibres in that:
- A. The former rely on creatine phosphate as an ATP source for the first few seconds of contraction whereas the latter do not
 - B. The former have a smaller diameter than the latter
 - C. The former can generate greater maximal tension than the latter
 - D. The former generate less lactic acid than do the latter
 - E. All of the above are true.

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32. John is a sprinter who specialises in quick and powerful bursts of speed followed by periods of rest. Jim is a marathon runner who specializes in long, steady runs. Compared to Jim, John is likely to have
- A. Legs with a larger diameter.
 - B. Legs with a smaller diameter
 - C. Hypertrophy of type I muscle fibres
 - D. A and C
 - E. B and C
33. Which of these is the correct function of ALL the hamstrings at the knee?
- A. Extension
 - B. Flexion
 - C. Medial rotation
 - D. Lateral rotation
 - E. Flexion and medial rotation
34. Which muscle attaches to the base of the first metatarsal?
- A. Tibialis anterior
 - B. Extensor hallucis longus
 - C. Extensor digitorum
 - D. Fibularis tertius
 - E. Fibularis brevis
35. Which nerve innervates both muscles of the lateral compartment of leg?
- A. Common fibular
 - B. Superficial fibular
 - C. Deep Fibular
 - D. Tibial
 - E. Sural
36. Which of these muscles flexes at the knee and plantarflexes at the ankle?
- A. Soleus
 - B. Flexor digitorum longus
 - C. Popliteus
 - D. Gastrocnemius
 - E. Tibialis Posterior
37. In which direction does the femur move to 'unlock' the knee?
- A. Anteriorly
 - B. Posteriorly
 - C. Rotate Laterally
 - D. Rotate medially
 - E. Anterolaterally

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38. Which of these statements is NOT correct?

- 30-40
- A. The intersection of the midclavicular line and the Transpyloric plane at the 9th costal cartilage is likely to touch the fundus of the Gall bladder
 - B. The rectus sheath below the arcuate line is structurally arranged as above the arcuate line
 - C. The xiphoid process is considered to be within the epigastric region
 - D. The whole of the duodenum is found within the right hypochondrial region
 - E. Tendinous intersections are found within the Rectus Abdominis muscle

39. All the following are TRUE concerning the Umbilicus Except:

- A. It lies at level of the Intervertebral disc between L3 and L4 vertebrae in the supine position
- B. It indicates the level of T10 dermatome
- C. It marks roughly the bifurcation of the Abdominal aorta just 2 cm below it
- D. The position of the umbilicus in the erect position in an obese person lie very low
- E. Cutaneous veins surrounding the umbilicus do not anastomose

40. The inguinal ligament is formed by

- A. The thick inrolled lower border of the aponeurosis of the Internal oblique muscle
- B. The lower fibers of the External Oblique muscle
- C. It is the folding-over of the inferior margin of the aponeurosis of the External Oblique muscle
- D. The lower fibers of the Transversus Abdominis muscle
- E. The thick inrolled lower border of the aponeurosis of the Transversus Abdominis muscle

41. The superficial inguinal ring is a triangular shaped hiatus found in.....

- A. The muscle fibers of the external Oblique muscle
- B. The muscle fibers of the Internal Oblique muscle
- C. The muscle fibers of the Transversus Abdominis muscle
- D. The aponeurosis of the external Oblique muscle
- E. The aponeurosis of the Transversus Abdominis muscle

42. Abdominal incisions are based on anatomical principles. Which of the following is NOT CORRECT?

- A. They must allow ease of approach to desired structures in the abdomen
- B. Ideally muscle fibres should be split rather than cut
- C. Nerves should be divided when possible
- D. Incisions are placed in the direction of lines of cleavage of the skin (Langer lines)
- E. Surgical incisions on the abdomen can be Transverse, Vertical or Oblique

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43. Which of these best describes the relationship between lateral epicondyle, medial epicondyle and olecranon process in a flexed elbow?
- A. They lie in a straight line
 - B. All three can be joined by a semi-circular line
 - C. All three can be joined by an arc
 - D. The line joining them is S-shaped
 - E. They lie at the angles of an equilateral triangle
44. Which of these is not a palpable feature of upper limb bones?
- A. Medial epicondyle
 - B. Lunate
 - C. Styloid process of the radius
 - D. Coracoid process
 - E. Tubercle of the scaphoid
45. When the arm is in the anatomical position, which of these vertebral levels corresponds with the superior angle of the scapula?
- A. C7
 - B. T2
 - C. T3
 - D. T4
 - E. T7
46. Which of these bones of the upper limb is not subcutaneous?
- A. Clavicle
 - B. Medial epicondyle
 - C. Lateral epicondyle
 - D. Greater tuberosity of humerus
 - E. Olecranon process
47. Into what does the neuron release its neurotransmitter at the neuromuscular junction?
- A. Motor end plate
 - B. Cytoplasm of the muscle cell
 - C. Cisternae
 - D. Synaptic cleft
48. Which of these statements is correct regarding muscle contraction?
- A. All motor units act together
 - B. Muscle contraction continues for long periods after nervous stimulation ceases
 - C. The crossbridges bind to the actin and shorten the sarcomeres
 - D. Dystrophin is not needed to strengthen the contracting muscle cell

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49. When a nervous impulse travels from a neuron to a muscle cell, what happens next?
- A. The impulse travels over the sarcolemma in all directions
 - B. Calcium is released from the sarcoplasmic reticulum
 - C. Linkages form between the actin and myosin
 - D. Acetylcholine is decomposed by acetylcholinesterase
50. One of the following statements about muscular responses is not true. Choose that one.
- A. A muscle fiber contracts in an all-or-none fashion
 - B. There is a slight latent period that occurs between when the stimulus arrives at the muscle and when the muscle contracts
 - C. Muscles will add motor units to a contraction, increasing the overall force of contraction.
 - D. When a person is fully at rest, none of her muscles are contracting
51. Why can cardiac muscle fibers contract for longer periods than skeletal muscle fibres?
- A. Cardiac muscle is self-excitatory
 - B. Extracellular calcium partially controls the strength (and length) of contraction
 - C. Cisternae of T-tubules is more developed in cardiac muscle
 - D. Cardiac muscle is uninucleate rather than multinucleate
52. Which of the following does not belong with the others?
- A. Multinucleated
 - B. Skeletal
 - C. Striated
 - D. Involuntary
53. Which description of muscle contraction means that all of the fibres within a muscle are fully contracted?
- A. All-or-none law
 - B. Summation
 - C. Tetanic
 - D. Muscle twitching
54. The application of multiple stimuli to a muscle is defined as the process called
- A. Tetany
 - B. Summation
 - C. Fatigue
 - D. Treppe

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55. The term _____ refers to the constant state of contraction of a certain number of fibres within a muscle.
- A. Atrophy
 - B. Hypertrophy
 - C. Summation
 - D. Tone
56. Where does swelling appear with an extensor digitorum brevis contusion?
- A. Anterolateral to medial malleolus
 - B. Anteromedial to lateral malleolus
 - C. Posterolateral to medial malleolus
 - D. Posteromedial to medial malleolus
57. Which muscle is specifically responsible for medially rotating, adducting and extending the upper limb?
- A. Rhomboid minor
 - B. Trapezius
 - C. Levator scapulae
 - D. Latissimus dorsi
58. What nerve innervates the levator ani muscles?
- A. Pudendal nerve
 - B. Anterior rami S4-S5
 - C. Pelvic splanchnic nerves
 - D. Inferior hypogastric plexus
59. Which is the most medial muscle of the hamstrings?
- A. Semitendinosus
 - B. Semimembranosus
 - C. Biceps femoris (short head)
 - D. Biceps femoris (long head)
60. Which of the four muscles in this compartment cause eversion of the foot?
- A. Tibialis anterior
 - B. Extensor hallucis longus
 - C. Extensor digitorum longus
 - D. Fibularis tertius