

Questions for MSS :

1. An otherwise healthy 44-year-old man with no prior medical history has had increasing back pain and right hip pain for the past decade. The pain is worse at the end of the day. On physical examination he has bony enlargement of the distal interphalangeal joints. A radiograph of the spine reveals the presence of prominent osteophytes involving the vertebral bodies. There is sclerosis with narrowing of the joint space at the right acetabulum seen on a radiograph of the pelvis. Which of the following diseases is he most likely to have?

- A Gout
- B Rheumatoid arthritis
- C Osteoarthritis
- D Osteomyelitis
- E Lyme disease
- F Pseudogout

2. What is the name applied to the connective tissue layer that surrounds and holds a fascicle together?

- A. Perimysium
- B. Epimysium
- C. Endomysium

3. What is the name applied to the connective tissue layer that covers the surface of a muscle and holds the fascicles together?

- A. Endomysium
- B. Perimysium
- C. Epimysium

4. What is the name applied to the thin connective tissue layer that surrounds and loosely binds neighboring muscle fibers in a fascicle?

- A. Perimysium
- B. Epimysium
- C. Endomysium

5. What is the name of the elongated bundles of contractile proteins that fill the cytoplasm skeletal muscle fibers?

- A. Myofibrils
- B. Myofibers
- C. Myometrium

6. Each myofibril consists of repeating segments of overlapping contractile proteins? What name applied to the most prominent proteins?

- A. Thin filaments
- B. Thick filaments

7. What is the name of the network of flattened tubules that surround the myofibrils?

- A. Sarcoplasmic reticulum
- B. Golgi Apparatus
- C. Mitochondriae

8. What is the name of the tube-like invaginations of the sarcolemma that extend over and around the myofibrils?

- A. Voltage-gated ion channels
- B. Transverse or T tubules
- C. Gap junctions

9. What is the name of the enlarged regions of sarcoplasmic reticulum that surround the transverse tubules?

- A. Muscular envelope
- B. Terminal cisternae
- C. Golgi apparatus Cisternae

10. What ions are concentrated in the terminal cisternae while skeletal muscle fibers are at rest?

- A. Potassium (K^{1+})
- B. Sodium (Na^{1+})
- C. Calcium (Ca^{2+})

11. The segment of a myofibril that is called a sarcomere runs from _____.

- A. one Z line to the next Z line
- B. one H zone to the next H zone
- C. one A band to the next A band
- D. one end of a skeletal muscle to the opposite end

12. A motor unit is made up of _____.

- A. all the muscle fibers within a given muscle
- B. a motor neuron and the muscle fibers it innervates
- C. all the neurons going into an individual section of the body
- D. a fascicle and a nerve

13. The crossbridges involved in muscle contraction are located on the

- A. myosin filaments
- B. actin filaments
- C. tropomyosin
- D. troponin

14. 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. Troponin is not needed to strengthen the contracting muscle cell.

15. Which of the following statements concerning the role of Ca^{2+} in the contraction of skeletal muscle is correct?

- A. The mitochondria act as a store of Ca^{2+} for the contractile process
- B. Ca^{2+} entry across the plasma membrane is important in sustaining the contraction of skeletal muscle
- C. A rise in intracellular Ca^{2+} allows myosin to interact with actin
- D. The tension of a skeletal muscle fibre is partly regulated by G proteins.

16. Muscle fatigue sets in due to the nonavailability of

- A. calcium
- B. ATP
- C. actin binding sites
- D. sodium

17. Which of the following occurs when a muscle contracts?

- A. the distance between z-lines remains the same
- B. the H-zone disappears
- C. the muscle strengthens
- D. the distance between z-lines

18. As I'm hiking through the woods, I come across a bear. Which nervous system will be firing inside my body?

- A. Sympathetic
- B. Parasympathetic
- C. Somatic
- D. Autonomic

19. Muscles always work in _____

- A. pairs
- B. groups of 3
- C. bones
- D. joints

20. What type of muscle are the biceps and triceps that are located in your upper arm?

- A. skeletal
- B. cardiac
- C. smooth
- D. involuntary

21. The skeletal system has several jobs. Select one of the following that describe its jobs.

- A. send messages between the brain and the body
- B. makes red blood cells and stores minerals
- C. creates hormones
- D. carries blood through out the body

22. Which of the following is not a function of bones?

- A. Protection
- B. Blood cell formation
- C. Storage
- D. Absorption

23. The ribs protect your...

- A. heart
- B. lungs
- C. liver
- D. all of the above

24. In the anterior view of the viscerocranium, which one of the following bones is single? a. Nasal. b. Frontal. c. Lacrimal. d. Maxillary. e. Zygomatic. 2. What is the strongest bone among the bones of the face?

- A . Nasal.
- B . Frontal.
- C . Maxillary.
- D. Zygomatic.
- E. Mandibula

25. What is the strongest bone among the bones of the face?

- A. Nasal.
- B. Frontal.
- C. Maxillary.
- D. Zygomatic.
- E. Mandibular

26. In the anterior cranial fossa, the cribriform plate is part of the ____ bone:

- A. Frontal.
- B. Maxillary.
- C. Zygomatic.
- D. Ethmoidal.
- E. Sphenoidal

27. In the walls of the orbit, the ethmoid bone contributes to the formation of the:

- A. Medial orbital wall
- B. Inferior orbital wall
- C. Lateral orbital margin.
- D. Superior orbital margin.
- E. Floor of the orbital cavity.

28. The neck is divided into anterior and posterior triangles using _____ muscle as land mark:

- A. Trapezius.
- B. Sternohyoid.
- C. Scalenus anterior
- D. Sternocleidomastoid.

29. The _____ triangle of the neck lies between the anterior bellies of digastric muscles.

- A. Occipital.
- B. Posterior.
- C. Muscular.
- D. Submental.
- E. Submandibular.

30. The posterior triangle is divided into two triangles by the ____ muscle:

- A. Digastric
- B. Omohyoid.
- C. Trapezius
- D. Mylohyoid.

E. Sternohyoid

31. The branch from the hypoglossal nerve that supplies thyrohyoid muscle is actually derived from _____

- A. C1.
- B. C2.
- C. C3.
- D. C4.
- E. C5.

32. Inferior root of Ansa hypoglossi is derived from:

- A. C1
- B. C2 and C3
- C. C4 and C5
- D. C6 and C7
- E. C8. 47

33. The inferior root of ansa cervicalis spirals around the:

- A. Subclavian artery.
- B. Internal jugular vein.
- C. External jugular vein.
- D. Internal carotid artery.
- E. External carotid artery.

34. Which one of the following branches from the cervical plexus is mixed (motor and sensory)?

- A. Phrenic.
- B. Great auricular.
- C. Supraclavicular.
- D. Lesser occipital.
- E. Transverse cervica

35. Ptosis in Horner's syndrome is due to paralysis of the smooth muscle part of the _____ muscle:

- a. A. Superior rectus.
- B. Superior oblique.
- C. Depressor anguli oris.
- D. Levator palpebrae superioris.

36. Cutaneous innervation of the forehead is provided by the _____ nerve:

- A. Facial.
- B. Infraorbital.

- C. External nasal.
- D. Supratrochlear.
- E. Zygomaticofacial.

37. Loss of sensation of skin over the tip of the nose is due to injury of _____ nerve.

- A. Facial.
- B. Olfactory.
- C. Maxillary.
- D. Mandibular.
- E. Ophthalmic.

38. The preganglionic parasympathetic root of the Pterygopalatine ganglion is the _____ nerve:

- A. Deep petrosal.
- B. Lesser occipital.
- C. Greater petrosal.
- D. Greater occipital.
- E. Superficial petrosal.

39. The "blind spot" in the retina refers to the _____: A. Sclera.

- B. Retina
- C. Optic disc.
- D. Ciliary body.
- E. Macula lutea.

40. The area of the most acute visual resolution is the:

- A. Iris.
- B. Pupil.
- C. Retina.
- D. Foveola.
- E. Optic disc.

41. In pupillary light reflex, the efferent signal is carried by the ____ nerve:

- A. Optic.
- B. Facial.
- C. Abducent
- D. Trochlear
- E. Oculomotor

42. In the eye, the main site that is responsible for refraction of the light is:

- A. Iris.
- B. Lens.
- C. Cornea.

- D. Aqueous humor.
- E . Vitreous humor

43.The lens is adjusted for near vision by its increased convexity due to the contraction of the _____ muscle:

- A. Ciliary.
- B. Superior rectus
- C. Dilator pupillae.
- D. Sphincter pupillae.
- E . Levator Palpebrae Superioris.

44.What is the most common site of fracture in the mandible?

- A. Body.
- B. Angle.
- C. Symphysis menti.
- D. Coronoid process.
- E. Condylod process.

45.The pharynx extends lower down to the level of _____ vertebra:

- A. 3rd cervical.
- B. 4th cervical.
- C.6th cervical
- D. 1st thracic

46. The hypopharynx is located posterior to the:

- A. Larynx.
- B. Soft palate.
- C. Oral cavity
- D. Nasal cavity.
- E. Nasal septum

47.The roof of the nasopharynx is built up by two bones: the basilar part of the occipital bone and the _____ bone:

- A. Palatine
- B. Lacrimal
- C. Maxillary.
- D. Ethmoidal.
- E. Sphenoidal.

48.Muscle fibers inside skeletal muscles are organized into longitudinal bundles. What is the name applied to a bundle of muscle fibers?

- A.Fascicle
- B.Bundle
- C.Group of fibers

49. An 80-year-old woman has had no major medical problems, but she has never been physically active for most of her life. One day she falls out of bed and immediately notes a sharp pain in her left hip. She is subsequently unable to ambulate without severe pain. Radiographs show not only a fracture of the left femoral head, but also a compressed fracture of T10. Which of the following conditions is she most likely to have?

- A Vitamin D deficiency
- B Acute osteomyelitis
- C Osteogenesis imperfecta
- D Osteoporosis
- E Polyostotic fibrous dysplasia
- F Metastatic breast carcinoma

50. A 58-year-old man has the sudden onset of severe pain in his left great toe. There is no history of trauma. On examination there is edema with erythema and pain on movement of the left 1st metatarsophalangeal joint, but there is no overlying skin ulceration. A joint aspirate is performed and on microscopic examination reveals numerous neutrophils and needle-shaped crystals. Over the next 3 weeks, he has two more similar episodes. On physical examination between these attacks, there is minimal loss of joint mobility. Which of the following laboratory test findings is most characteristic for his underlying disease process?

- A Hyperglycemia
- B Positive antinuclear antibody
- C Hyperuricemia
- D Hypercalcemia
- E High rheumatoid factor titer

51. An 11-year-old boy has pain in his left leg that has persisted for 3 weeks. On physical examination his temperature is 37.9°C. A radiograph of the leg reveals a mass in the diaphyseal region of the left femur with overlying cortical erosion and soft tissue extension. A bone biopsy is performed and the lesion on microscopic examination shows numerous small round blue cells. Karyotypic analysis of these cells shows t(11;22). Which of the following neoplasms is he most likely to have?

- A Ewing sarcoma
- B Medulloblastoma
- C Neuroblastoma
- D Chondroblastoma
- E Osteoblastoma

52. A 16-year-old boy has noted pain in his left knee after each hockey practice session for the past month. On examination there is tenderness to palpation of his left knee, with reduced range of motion. A plain film radiograph of the left leg reveals a mass of the proximal tibial metaphysis that erodes bone cortex,

lifting up the periosteum where reactive new bone is apparent. The mass does not extend into the epiphyseal region. A bone biopsy is performed and microscopic examination shows atypical, elongated cells with hyperchromatic nuclei in an osteoid stroma. Which of the following neoplasms is he most likely to have?

- A Ewing sarcoma
- B Osteosarcoma
- C Chondrosarcoma
- D Multiple myeloma
- E Metastatic seminoma

53. _____ is a sudden, involuntary contraction of a muscle, a group of muscles, or a hollow organ, or a similarly sudden contraction of an orifice.

- A. Sprain
- B. Spasm
- C. Strain

54. Which condition can trigger a spasm?

- A. dehydration
- B. muscle overload
- C. the absence of electrolytes.
- D. All of the above.

55. A _____ is an injury to the muscle itself or the related tendon, which involves fibers tearing as a result of being stretched beyond its capacity. Also commonly referred to as a “pulled muscle”.

- A. Sprain
- B. muscle strain
- C. spasm

56. _____ is a word that means inflammation of a tendon.

- A. Saltatory spasm
- B. Tendinitis
- C. Multicore myopathy

57. _____ is a chronic disorder that causes bone to be reabsorbed much faster than normal (up to 50 times faster) and this can result in enlarged and misshapen bones.

- A. Kyphosis
- B. Paget's disease
- C. Ankylosing Spondylitis

58. Gout is caused by elevated levels of _____ in the blood, which then

crystallizes and ends up deposited in the joints, tendons, and surrounding tissues.

- A. calcium
- B. uric acid
- C. joint effusion

59. What type of muscle tissue is only found in the heart?

- A. cardiac
- B. smooth
- C. skeletal

60. What is the weakest type of muscle tissue?

- A. cardiac
- B. smooth
- C. skeletal

61. Most skeletal muscles are attached to two bones through _____.

- A. cartilage
- B. fatty tissues
- C. tendons

62. The _____ is the cell membrane of muscle fibers.

- A. prokaryotes
- B. sarcolemma
- C. caveola

63. _____ is a red pigment found in muscles, contains iron and stores

oxygen in a manner similar to hemoglobin in the blood.

- A. Myocardia
- B. Myoglobin
- C. Myopathy

64. Among the depressions of the auricle of the ear, the ----- is the deepest one:

- A . Scapha.
- B . Concha.
- C . Scaphoid fossa
- D. Triangular fossa.
- E. Intertragic notch.

65. A clinical study is performed with subjects who have been diagnosed with a primary bone lesion. The demographic data for these subjects is analyzed. Which of the following bone diseases is most likely to be found to have a

female predominance?

- A. Aneurysmal bone cyst
- B. Osteosarcoma
- C. Chondrosarcoma
- D. Ewing sarcoma
- E. Osteochondroma

66. The sensory innervation of the medial surface of the auricle (back of the ear) is provided by the _____ nerve:

- A. Facial.
- B. Ophthalmic.
- C. Great auricular.
- D. Greater occipital.
- E. Auriculotemporal.

67. The tympanic membrane is at the wall of the middle ear:

- A . Medial.
- B . Lateral.
- C. Inferior.
- D .Anterior.
- E . Posterior.

68. The _____ muscle draws a smile on the face:

- A. Risorius.
- B. Levator anguli oris.
- C. Zygomaticus minor.
- D. Corrugator supercilii.
- E. Levator labii superioris.

69. Eccentric contractions are stronger than isometric and concentric contractions partly because, in eccentric contractions:

- A. More muscle fibres within a muscle are activated.
- B. Within each muscle fibre, more cross-bridges are attached to actin at a given time.
- C. Muscle fibres are conducting muscle action potentials at a higher frequency.
- D. More ATP is used in each cross-bridge cycle.

70. Concentric contractions are weaker than isometric and eccentric contractions partly because, in concentric contractions:

- A. There is a smaller number of cross-bridges bound to actin at any time.
- B. There may a small decrease in the force per cross-bridge.
- C. Some attached cross-bridges may exert a "drag" effect on the actin filament.
- D. All of the above.

71. Which is most likely to extend the entire length of a muscle fibre?

- A. Sarcomere
- B. Myofibril
- C. Myosin filament
- D. M-line

72. Which of the following is true about muscle structure?

- A. Myofibrils make up about 15% of the contents of a muscle fibre.
- B. Even the largest (thickest) muscle fibres would contain only about 100 myofibrils.
- C. Actin filaments are arranged so that 6 actin filaments surround each myosin filament.

73. The force of a tetanic contraction is greater than that of a twitch contraction because:

- A. More acetylcholine is released at the neuromuscular junction per nerve impulse.
- B. More Ca^{2+} is released in a tetanic contraction.
- C. The muscle action potentials travel faster along the transverse tubules.
- D. The muscle action potentials are smaller during a tetanic contraction.

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75. A patient presents with a heliotrope rash, a malar rash and Gottron's papules on the elbows and knees. She cannot comb her hair or climb the stairs due to muscle weakness. Lab results show an increased creatine kinase, positive antinuclear antibody (ANA) and anti-Jo-1 antibody. Biopsy reveals perimysial inflammation with perifascicular atrophy. She is treated with corticosteroids. What disease does the patient have?

- A. Polymyositis
- B. X-linked muscular dystrophy
- C. Dermatomyositis
- D. Rheumatoid arthritis

Answers :

1	C	39	C
2	A	40	D
3	C	41	E
4	C	42	C
5	A	43	A
6	B	44	E
7	A	45	B
8	B	46	A
9	B	47	E
10	C	48	A
11	A	49	D
12	B	50	C
13	A	51	A
14	C	52	B
15	C	53	B
16	B	54	D
17	D	55	B
18	A	56	B
19	A	57	B
20	A	58	B
21	B	59	A
22	D	60	B
23	D	61	C
24	E	62	B
25	E	63	B
26	D	64	B
27	A	65	A
28	D	66	C
29	D	67	B
30	B	68	B
31	A	69	B
32	B	70	D
33	B	71	B
34	A	72	C
35	D	73	B
36	D	74	B
37	E	75	C
38	C	-	-

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