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Ph.D. ENTRANCE EXAMINATION - 2020

Subject : Physiology
Date : 06.01.2020
Max Marks: 60

Duration: 01:30 Hrs.
Place: Dehradun

Student Name:

Invigilator Name:

Signature:

Signature:

1. The first heart sound is produced by the:
a. Closure of the aortic and pulmonary valves
b. Opening of the aortic and pulmonary valves
c. Closure of the mitral and tricuspid valves
d. Opening of the mitral and tricuspid valves

2. Parasympathetic stimulation of heart causes:
a. SA node decreases firing
b. Increased AV node excitability
c. Decreased ventricular contraction
d. Tachycardia

3. Normally, the rate of the heart beat in a human is determined by :
a. The bundle of His
b. All cardiac muscle
c. The sinoatrial node
d. The cervical ganglion

4. The ventricular repolarization in ECG is best seen in:
a. "P" wave
b. "Q" wave
c. "R" wave
d. "T" wave

5. Cardiac output is not affected by :
a. Heart rate
b. Peripheral resistance
c. Systolic blood pressure
d. Venous return

6. All the heart valves are open during which stage of cardiac cycle :
a. Systolic ejection
b. Isovolumetric relaxation
c. Isovolumetric contraction
d. None of the above

7. Increased functional demand on the heart produces increased size of the myocardium by :
a. Hyperplasia
b. Hypertrophy
c. Fatty infiltration
d. Increased amounts of fibrous connective tissue

8. Hunger centre of brain is:
a. Hypothalamus
b. Stria nigra
c. Frontal lobe
d. Temporal lobe

9. Pain sensation from the lateral extremities is transmitted by :
a. Spino thalmamic tract
b. Dorsal column
c. Corticospinal tract
d. Spinocerebellar tract

10. Cell bodies of the neurons which carry taste sensation from the anterior 2/3rd of the tongue are located in:

a. Trigeminal nerve ganglion
b. Geniculate ganglion
c. Otic ganglion
d. Superior cervical ganglion

11. Respiratory centre is situated in:

a. Medulla oblongata
b. Spinal cord
c. Midbrain
d. Hypothalamus

12. Sensations of pain from teeth and temperature are carried by

a. Corticospinal tract
b. Corticobulbar tract
c. Lateral spinothalamic tract
d. Ventral spinothalamic tract

13. Group B fibers are present in:

a. Intrafusal fibers of the muscle spindle
b. Golgi tendon apparatus
c. Autoonomic preganglionic fibers
d. Spinothalamic tracts

14. Lesions within the basal ganglia produce the following signs except:

a. Hypotonia
b. Tremor
c. Hemiballismus
d. Athetosis

15. In conn's disease, there is an excess of:

a. Adrenaline
b. Aldosterone
c. Cortisol
d. Noradrenaline

16. Which of the following hormones is released from the posterior pituitary?

a. ACTH
b. Antidiuretic hormone
c. Growth hormone
d. Luetinizing hormone

17. Which of the following is associated with a low concentration of ionized calcium in the serum?

a. Hypothyroidism
b. Osteogenesis imperfecta
c. Paget's disease of the bone
d. Tetany

18. Which hormone is released when serum calcium decreases

a. Parathormone
b. Calcitonin
c. Thyroxine
d. Adrenaline

19. Due fear which of the following hormones increases rapidly :

a. Growth hormones
b. Epinephrine
c. Corticosteroid
d. Thyroid hormone

20. A child with stunted growth with a stuffed – belly, and short stature with mental retardation is suffering from the deficiency of which of the following:

a. Thyroxine
b. Growth hormone
c. Rickets
d. Parathyroid

21. Trousseau's sign and chovstek's sings are positive in:

a. Hyperparathyroidism
b. Hypothyroidism
c. Hypoparathyroidism
d. Hyperthyroidism

22. In jaundice, there is an unconjugated hyperbilirubinemia which is most likely due to

a. Hepatitis
b. Cirrhosis
c. Obstruction of bile canaliculi
d. Increased break down of red cells

23. Histamine stiumlate the secretion of:

a. Gastrin by stomach
b. Pancreatic enzymes
c. HCL by stomach
d. Amylase by salivary gland

24. The most important function of hydrochloric acid in the stomach is:

a. Destruction of bacteria
b. Neutralization of chyme
c. Activation of pepsinogen
d. Stimulation of pancreatic secretion

25. Pancreas produce:

a. Pepsinogen
b. Chymotrypsinogen
c. Hydrochloric acid
d. All of the above

26. Intrinsic factor, which helps in absorption of Vit. B_{12} is produced by :

a. Parietal cells of stomach
b. Chief cells of stomach
c. Beta cells of pancreas
d. Goblet cells

27. Maximum secretory glands in stomach are:

a. Fundic glands
b. Pyloric glands
c. Gastric glands
d. Brunner's glands

28. Which of the following coagulation factors is deficient in classical hemophilia?

a. VIII
b. IX
c. X
d. XII

29. Which of the following is one for a patient on coumarin (warfarin) therapy:

a. Partial thromboplastin time (PTT)
b. Prothrombin time (PT)
c. Bleeding time (BT)
d. Capiallary fragility test (CFT)

30. The anticoagulant of choice used in the blood bank is:

a. Calcium oxalate
b. Heparin solution
c. Acid citrate dextrose solution
d. Sodium fluoride

31. To preserve blood for transfusion later:

a. Dilute with equal volume of 0.9% saline
b. Add solution of sodium citrate
c. Add solution of calcium chloride
d. Add fibrinogen

32. T- lymphocytes function to :

a. Antibody production
b. Complement activation
c. Lymphokine production and delayed hypersensitivity
d. Immediate hypersensitivity

33. Haemoglobin is the major buffer in blood, bicarbonate ions diffuses out of erythrocyte into plasma in exchange of:

a. Potassium
b. Phosphate
c. Carbonic acid
d. Chloride ion

34. The eosinophil count in the peripheral blood smear is increased in:

a. Allergic conditions
b. Anaemia
c. Polycythemia
d. Typhoid fever

35. During exercise:

a. Cerebral blood flow increases if there is increase in systolic blood pressure
b. Body temperature increases
c. Blood flow to muscle increases after 1½ minute
d. Lymphatic flow from muscle decrease

36. The percentage of body water is greater in

a. Male than in females
b. Children than in adult
c. Obese than in lean individuals
d. old than in young objects

37. Meiotic division of male germ cells commence

a. During intra - uterine life
b. just before birth
c. by around 6 years after birth
d. by around 16 years

38. Primary cause of bleeding disorder in liver damage is due to

a. Decreased level of prothrombin
b. Lack of vitamin K
c. Platelet deficiency
d. Lack of vitamin B

39. T- lymphocytes play a primary role in

a. Production of Antibodies
b. production of lymphokines and delayed hypersensitivity
c. Activation of complement system
d. Immediate Hypersensitivity

40. Gut associated lymphoid tissue (GALT) is primarily located in-

a. Lamina propria
b. Submucosa
c. Muscularis
d. Serosa

41. Which of the following events DO NOT occur in rods in response to light-

a. Structural changes in rhodopsin
b. Activation of transducin
c. Decreased intracellular cGMP
d. Opening of Na+ channels

42. Calcium ions triggers muscle contraction by binding to :

a. Actin
b. Myosin
c. Troponin
d. Tropomyosin

43. The contractile element in a skeletal muscle is present in:

a. Sarcolemma
b. Sarcoplasm
c. Myofibril
d. Endomysium

44. Contractile element in myofibril is:

a. H band
b. Sarcoplasm
c. Sarcomere
d. A line

45. Skeletal muscles:

a. Contracts when calcium is taken up by sacroplasmic reticulum
b. Contracts when actin and myosin filaments shorten
c. Contraction is initiated by calcium binding to troponin
d. Contraction is initiated by calcium binding to tropomyosin

46. The following electrodes are used to detect the muscle activity without pain:

a. Surface electrode
b. Round electrode
c. Hook electrode
d. Needle electrode

47. Rigor mortis results after death is due to

a. Failure of acetylcholine to diffuse
b. Failure of ATP supply
c. Failure of break down of calcium bridges
d. None of the above

48. A decrease in the urine output is called :

a. Dysuria
b. Nocturia
c. Oliguria
d. Plyuria

49. In osmotic diurestis there is:

a. Increase in renal blood flow
b. Increase in glomerular filtration rate
c. Increase in NaCl concentration in urine
d. Decrease in reabsorption of Na Cl

50. Test for estimating kidney function is:

a. Serum creatinine
b. Serum phosphatase
c. Inulin test
d. Insulin test

51. Carbonic anhydrase in the kidney tubular cells is known to be associated with:

a. Urea
b. Chloride
c. Bicarbonate ion
d. Carbohydrate

52. Renin is released from the kidney in all except:

a. Sympathetic stimulation
b. Decrease in the concentration of sodium ions in the proximal tubules
c. Decrease in the concentration of sodium ions in the distal tubules
d. Fall in the BP

53. The kidney secrete all of the following hormones except:

a. Renin
b. Erythropoietin
c. Vasopressin
d. 1,2,5 Dihydroxy cholecalciferol

54. The glomerular filtration rate of the human kidney may be determined by measuring the plasma clearance of:

a. PAH
b. Urea
c. Inulin
d. Glucose

55. Brush border is seen in:

a. Bowman's capsule
b. Proximal convoluted tubule
c. Distal convoluted tubule
d. Loop of Henle

56. During inspiration when the diaphragm contracts, the intrapleural pressure becomes:

a. More negative
b. Less negative
c. Positive
d. Equal to the intra alveolar pressure

57. A decrease in the arterial PO_2 is seen in:

a. Decrease in hemoglobin concentration of arterial blood
b. Paralysis of inspiratory muscles
c. Sluggish blood flow
d. High altitudes

58. The major sign of hypoventilationis:

a. Cyanosis
b. Dysponoea
c. Hypercapnia
d. Hypoxia

59. Most effective method of assessing breathing is by measuring:

a. Tidal volume
b. Respiratory rate
c. Alveolar ventilation
d. FEV 1

60. The volume of gas in the lungs at the end of normal expiration is

a. Expirratory reserve volume
b. Functional residual capacity
c. Residual volume
d. Inspiratory reserve volume

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