

पुस्तिका में पृष्ठों की संख्या : 24
Number of Pages in Booklet : 24

प्रश्न-पत्र पुस्तिका संख्या /
Question Paper Booklet No.

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MSDPs-02

SUBJECT : Physiology

परीक्षा दिनांक - 17/09/2020

समय : 3.00 घण्टे
Time : 3.00 Hours

परीक्षा समय - 2:00 to 5:00 PM अधिकतम अंक : 180
Maximum Marks : 180

प्रश्न-पत्र पुस्तिका एवं उत्तर पत्रक के पेपर सील/पॉलिथीन बैग को खोलने पर परीक्षार्थी यह सुनिश्चित कर लें कि उसके प्रश्न-पत्र पुस्तिका पर वही प्रश्न-पत्र पुस्तिका संख्या अंकित है जो उत्तर पत्रक पर अंकित है। इसमें कोई भिन्नता हो तो वीक्षक से दूसरा प्रश्न-पत्र प्राप्त कर लें। ऐसा न करने पर जिम्मेदारी अभ्यर्थी की होगी।

The candidate should ensure that Question Paper Booklet No. of the Question Paper Booklet and Answer Sheet must be same after opening the Paper Seal / Polythene bag. In case they are different, a candidate must obtain another Question Paper. Candidate himself shall be responsible for ensuring this.

परीक्षार्थियों के लिए निर्देश

1. सभी प्रश्नों के उत्तर दीजिए।
2. सभी प्रश्नों के अंक समान हैं।
3. प्रत्येक प्रश्न का केवल एक ही उत्तर दीजिए।
4. एक से अधिक उत्तर देने की दशा में प्रश्न के उत्तर को गलत माना जाएगा।
5. प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं, जिन्हें क्रमशः 1, 2, 3, 4 अंकित किया गया है। अभ्यर्थी को सही उत्तर निर्दिष्ट करते हुए उनमें से केवल एक गोले अथवा बबल को उत्तर पत्रक पर नीले बॉल प्वाइंट पेन से गहरा करना है।
6. OMR उत्तर पत्रक इस परीक्षा पुस्तिका के अन्दर रखा है। जब आपको परीक्षा पुस्तिका खोलने को कहा जाए, तो उत्तर-पत्र निकाल कर ध्यान से केवल नीले बॉल पॉइंट पेन से विवरण भरें।
7. प्रत्येक गलत उत्तर के लिए प्रश्न अंक का 1/3 भाग काटा जायेगा। गलत उत्तर से तात्पर्य अशुद्ध उत्तर अथवा किसी भी प्रश्न के एक से अधिक उत्तर से है। किसी भी प्रश्न से संबंधित गोले या बबल को खाली छोड़ना गलत उत्तर नहीं माना जायेगा।
8. मोबाइल फोन अथवा इलेक्ट्रॉनिक यंत्र का परीक्षा हॉल में प्रयोग पूर्णतया वर्जित है। यदि किसी अभ्यर्थी के पास ऐसी कोई वर्जित सामग्री मिलती है तो उसके विरुद्ध आयोग द्वारा नियमानुसार कार्यवाही की जायेगी।
9. कृपया अपना रोल नम्बर ओ.एम.आर. पत्रक पर सावधानीपूर्वक सही भरें। गलत अथवा अपूर्ण रोल नम्बर भरने पर 5 अंक कुल प्राप्तांकों में से काटे जा सकते हैं।

चेतावनी: अगर कोई अभ्यर्थी नकल करते पकड़ा जाता है या उसके पास से कोई अनधिकृत सामग्री पाई जाती है, तो उस अभ्यर्थी के विरुद्ध पुलिस में प्राथमिकी दर्ज कराते हुए विविध नियमों-प्रावधानों के तहत कार्यवाही की जाएगी। साथ ही विभाग ऐसे अभ्यर्थी को भविष्य में होने वाली विभाग की समस्त परीक्षाओं से विवर्जित कर सकता है।

INSTRUCTIONS FOR CANDIDATES

1. Answer all questions.
2. All questions carry equal marks.
3. Only one answer is to be given for each question.
4. If more than one answers are marked, it would be treated as wrong answer.
5. Each question has four alternative responses marked serially as 1, 2, 3, 4. You have to darken only one circle or bubble indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.
6. The OMR Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars carefully with blue ball point pen only.
7. 1/3 part of the mark(s) of each question will be deducted for each wrong answer. A wrong answer means an incorrect answer or more than one answers for any question. Leaving all the relevant circles or bubbles of any question blank will not be considered as wrong answer.
8. Mobile Phone or any other electronic gadget in the examination hall is strictly prohibited. A candidate found with any of such objectionable material with him/her will be strictly dealt as per rules.
9. Please correctly fill your Roll Number in O.M.R. Sheet. 5 Marks can be deducted for filling wrong or incomplete Roll Number.

Warning: If a candidate is found copying or if any unauthorized material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would liable to be prosecuted. Department may also debar him/her permanently from all future examinations.

इस परीक्षा पुस्तिका को तब तक न खोलें जब तक कहा न जाए।

Do not open this Test Booklet until you are asked to do so.

10-□



1. Chief efferent projection fibres from Basal Ganglia arise from :
 - (1) Caudate Lobe
 - (2) Globus Pallidus
 - (3) Putamen
 - (4) Subthalamic nucleus

2. All are medial descending pathways EXCEPT :
 - (1) Vestibulospinal tract
 - (2) Rubrospinal tract
 - (3) Reticulospinal tract
 - (4) Tectospinal tract

3. Large synaptic vesicles contain :
 - (1) Acetylcholine
 - (2) Glycine
 - (3) Neuropeptides
 - (4) GABA

4. A 40 year old man with history of syphilis complains of lightning pains and ulcers at pressure points. He is found to have loss of position and vibration sense. The possible diagnosis is :
 - (1) Syringomyelia
 - (2) Tabes Dorsalis
 - (3) Brown Sequard Syndrome
 - (4) Autonomic neuropathy

5. Which of the following is NOT a part of Central Auditory Pathway ?
 - (1) Medial Geniculate Body
 - (2) Inferior Colliculus
 - (3) Lateral Geniculate Body
 - (4) Superior Olives

6. The cells in cerebellum that secrete Glutamate as neuro-transmitter are :
 - (1) Basket cells
 - (2) Stellate cells
 - (3) Granule cells
 - (4) Purkinje cells

7. Tonic labyrinthine reflex is integrated in :
 - (1) Spinal cord
 - (2) Medulla
 - (3) Midbrain
 - (4) Cortex

8. In Brown Sequard Syndrome, lower motor neuron lesion features are seen at :
 - (1) Ipsilateral at the level of lesion
 - (2) Ipsilateral below the level of lesion
 - (3) Contralateral at the level of lesion
 - (4) Contralateral below the level of lesion

9. No matter where a particular sensory pathway is stimulated along its course to the cortex, the conscious sensation produced is referred to the location of the receptor. This principle is called :
- (1) Law of projection
 - (2) Law of specific nerve energy
 - (3) Weber Fechner law
 - (4) Bell Magendie law
10. Excessive hypersensitivity of pain receptors is called :
- (1) Anodynia
 - (2) Primary hyperalgesia
 - (3) Secondary hyperalgesia
 - (4) Causalgia
11. Kinocilium is NOT present in :
- (1) Semicircular canals
 - (2) Cochlea
 - (3) Utricle
 - (4) Sacculle
12. 8-13 Hz and an amplitude of 50-100 μ V EEG waves are :
- (1) Alpha
 - (2) Beta
 - (3) Theta
 - (4) Gamma
13. Sleep spindles appear in which stage of NREM sleep :
- (1) I
 - (2) II
 - (3) III
 - (4) IV
14. The inability to identify objects by feeling them is called :
- (1) Aphasia
 - (2) Astereognosis
 - (3) Dyslexia
 - (4) Dissociative anaesthesia
15. The neuro-transmitter secreted by Granule cells in Olfactory Bulb is :
- (1) Acetyl choline
 - (2) Glycine
 - (3) Glutamate
 - (4) GABA
16. The mechanical advantage of the Ossicle chain is :
- (1) Less than 1
 - (2) Greater than 1
 - (3) Equal to 1
 - (4) Equal to 0

17. Which cells in retina can either by hyperpolarising or depolarizing ?
- (1) Rods and Cones
 - (2) Bipolar cells
 - (3) Amacrine cells .
 - (4) Ganglion cells
18. Most of the refraction that occurs in eye is at :
- (1) Anterior surface of cornea
 - (2) Posterior surface of cornea
 - (3) Anterior surface of lens
 - (4) Posterior surface of lens
19. Which hormone is responsible for "Milk Ejection" reflex ?
- (1) Prolactin
 - (2) Estrogen
 - (3) Oxytocin
 - (4) Secretin
20. Calcitonin is produced by :
- (1) Thyroid
 - (2) Parathyroid
 - (3) Thymus
 - (4) Kidney
21. Thyroid binding globulin increases in :
- (1) Diabetes Mellitus
 - (2) Pregnancy
 - (3) Grave's disease
 - (4) Nephrotic syndrome
22. Ghrelin is responsible for :
- (1) Stimulation of appetite
 - (2) Stimulation of sleep
 - (3) Stimulation of heart
 - (4) Stimulation of respiration
23. Addison's disease is :
- (1) Primary hyperaldosteronism
 - (2) Primary adrenal insufficiency
 - (3) Secondary adrenal insufficiency
 - (4) Secondary hyperaldosteronism
24. Increased glycolysis and decreased gluconeogenesis is occur due to :
- (1) Glucagon
 - (2) Insulin
 - (3) Epinephrine
 - (4) Cortisol
25. Vasopressin is secreted by :
- (1) Supra optic nucleus
 - (2) Pre-optic nucleus
 - (3) Lateral geniculate nucleus
 - (4) Ventroposterior nucleus
26. Growth hormone level is decreased in :
- (1) REM sleep
 - (2) Fasting
 - (3) Exercise
 - (4) Stressful stimuli

27. Sertoli cells secrete all of the following EXCEPT :
- (1) Testosterone
 - (2) Androgen binding protein
 - (3) Inhibin
 - (4) MIS
28. Afferents for swallowing are all EXCEPT :
- (1) Trigeminal
 - (2) Glossopharyngeal
 - (3) Vagus
 - (4) Hypoglossal
29. Which period of Migrating Motor Complex is associated with regular activity ?
- (1) Phase-I
 - (2) Phase-II
 - (3) Phase-III
 - (4) All of these
30. Which of the following decrease Gastrin secretion ?
- (1) Amino acids in lumen
 - (2) Distension of stomach
 - (3) Increased vagal discharge
 - (4) Somatostatin

31. Which of the following causes stimulation of Gastro-intestinal smooth muscle ?
- (1) NO
 - (2) ATP
 - (3) VIP
 - (4) Substance P
32. Substances that cause increased secretion of bile by causing contraction of gall bladder are called :
- (1) Cholagogues
 - (2) Cholagogues
 - (3) Cholelithiasis
 - (4) Hydrocholeretics
33. Which of the following is NOT an action of CCK ?
- (1) Secretion of enzyme with pancreatic juice
 - (2) Increased gastric emptying
 - (3) Contraction of gall bladder
 - (4) Augmentation of action of secretion
34. Iron is predominantly observed in :
- (1) Stomach
 - (2) Duodenum
 - (3) Colon
 - (4) Ileum

35. The current through chloride channels is :
- (1) Inward depolarising
 - (2) Outward depolarising
 - (3) Inward hyperpolarising
 - (4) Outward hyperpolarising
36. The largest buffering capacity of blood is contributed by :
- (1) Plasma proteins
 - (2) Haemoglobin
 - (3) Phosphates
 - (4) Bicarbonates
37. Arneht count denotes :
- (1) Lobes in nucleus of neutrophils
 - (2) Granules in neutrophils
 - (3) Absolute count of neutrophils
 - (4) Relative count of neutrophils
38. Wallerian degeneration is seen in :
- (1) Proximal cut end of a nerve
 - (2) Distal cut end of a nerve
 - (3) Both cut ends of a nerve
 - (4) None of these
39. All of the following occur by stimulation of J receptors EXCEPT :
- (1) Tachycardia
 - (2) Tachypnea
 - (3) Bronchoconstriction
 - (4) Hypotension
40. The earliest response to injury is :
- (1) Neutrophils at the site of injury
 - (2) Vasoconstriction
 - (3) Formation of temporary hemostatic plug
 - (4) Formation of definitive hemostatic plug
41. Surfactant acts by decreasing :
- (1) Pleural pressure
 - (2) Intrathoracic pressure
 - (3) Surface tension
 - (4) Alveolar pressure
42. Which of the following is seen in stagnant hypoxia ?
- (1) Arterial PO_2 is reduced
 - (2) Arterial PO_2 is normal
 - (3) Haemoglobin is reduced
 - (4) Adequate O_2 is delivered to the tissues
43. The ratio of physiological dead space to Anatomical Dead Space in normal adult is :
- (1) 2 : 1
 - (2) 3 : 1
 - (3) 1 : 1
 - (4) 1 : 2



44. Which of the following cannot be measured by spirometry ?
- (1) Vital capacity
 - (2) Tidal volume
 - (3) Expiratory reserve volume
 - (4) Residual Volume
45. Midcollicular lesion of midbrain produces :
- (1) Decorticate rigidity
 - (2) Ischaemic rigidity
 - (3) Decerebrate rigidity
 - (4) Spasticity
46. Control of axial musculature and postural reflexes is done by which part of cerebellum ?
- (1) Vestibulocerebellum
 - (2) Spinocerebellum
 - (3) Neocerebellum
 - (4) Archicerebellum
47. Which of the following is a property of electrical synapse ?
- (1) Mediated by neuro-transmitters
 - (2) Can occur in both directions
 - (3) Vulnerable to synaptic fatigue on repetitive stimulation
 - (4) None of these
48. The autonomic neurons that are cholinergic i.e. release acetylcholine are all EXCEPT :
- (1) All preganglionic neurons
 - (2) All parasympathetic post-ganglionic neurons
 - (3) Sympathetic post-ganglionic neurons that innervate sweat glands
 - (4) Sympathetic post-ganglionic fibres
49. Peripheral resistance is mainly due to :
- (1) Aorta
 - (2) Arterioles
 - (3) Capillaries
 - (4) Venules
50. Baroreceptor stimulation produces
- (1) Decrease in Heart rate and BP
 - (2) Increase in Heart rate and BP
 - (3) Increase in Cardiac output
 - (4) Increase in Cardiac contractility
51. Pulse pressure is :
- (1) Systolic – Diastolic
 - (2) $\frac{1}{2}$ Systolic – Diastolic
 - (3) Systolic – $\frac{1}{2}$ Diastolic
 - (4) Systolic + Diastolic

52. Which of the following is a vasoconstrictor?
- (1) NO
 - (2) Prostacyclin
 - (3) Bradykinin
 - (4) Endothelin
53. "Redundancy" of the genetic code occurs during which step of protein synthesis?
- (1) DNA replication
 - (2) Transcription
 - (3) Translation
 - (4) Post transcriptional modification
54. Cholesterol effects which of the following properties of biological membranes, the most?
- (1) Fluidity
 - (2) Thickness
 - (3) Hydrophobicity
 - (4) Ion permeability
55. Micro RNAs (miRNAs)
- (1) Formed in cytoplasm, repress translation or promote degradation of mRNA before it is translated.
 - (2) Formed in nucleus, processed in cytoplasm by dicer enzyme.
 - (3) Short double stranded (21 – 23 nucleotides) RNA that regulate gene expression.
 - (4) Repress gene transcription.
56. Messenger RNA (mRNA)
- (1) carries genetic code to cytoplasm
 - (2) carries activated amino acids to ribosomes
 - (3) forms ribosomes
 - (4) is double stranded RNA
57. TRUE regarding both phagocytosis and pinocytosis is :
- (1) Occurs spontaneously and non-selectively
 - (2) Does not require ATP
 - (3) Observed in neutrophils only
 - (4) Involves recruitment of actin filaments
58. Following a blood donation, red cell production begins to increase in :
- (1) 30 minutes
 - (2) 24 hours
 - (3) 2 days
 - (4) 2 weeks
59. Adhesion of white blood cells to the endothelium is :
- (1) Due to decrease in selectins
 - (2) Dependent on activation of integrins
 - (3) Due to inhibition of histamine release
 - (4) More on arteries than on veins

60. Which of the following will be seen in a patient with deficiency of factor XIII ?

- (1) Prolongation in Prothrombin Time
- (2) Prolongation in Clotting Time
- (3) Prolongation in Partial Thromboplastin Time
- (4) Easily Breakable Clot

61. Which of the following regarding Helper T-cells is TRUE ?

- (1) They are activated by antigen presentation by infected cell.
- (2) They are activated by antigen presentation by macrophages or dendritic cells.
- (3) Require presence of competent B-cell system.
- (4) Use phagocytosis to destroy bacteria.

62. Which of the following will result in transfusion reaction ? (No history of earlier transfusion)

- (1) O -ve to AB +ve
- (2) A +ve to A +ve
- (3) AB +ve to AB +ve
- (4) A +ve to O +ve

63. Which of the following is a function of IL-2 (Interleukin-2) ?

- (1) Proliferation of cytotoxic T-cells
- (2) Replication of Helper T-cells
- (3) Antigen presentation
- (4) Kills virus-infected cells

64. What is the likely cause of excessive bleeding in severe mal-nourishment ?

- (1) Sequestration of platelets by fatty liver
- (2) Serum bilirubin raises neutralizing thrombin
- (3) Problem in factor XIII due to low protein
- (4) Vitamin K deficiency

65. Excitation-Contraction coupling in skeletal muscle involves all of the following EXCEPT :

- (1) Binding of Ca^{2+} to calmodulin
- (2) Hydrolysis of ATP
- (3) Depolarization of T-Tubule
- (4) Change in dihydropyridine receptor

66. Which of the following increases in tetanic contraction ?

- (1) K^+
- (2) ATP
- (3) Ca^{2+}
- (4) Na^+

67. Myelin in peripheral neurons system is formed by :

- (1) Oligodendrocytes
- (2) Schwann cells
- (3) Astrocytes
- (4) Microglia

68. Which of the following is true regarding action potential of skeletal muscle ?
- (1) Spreads to all parts of the muscle via T-tubules
 - (2) Longer than action potential of cardiac muscle
 - (3) Not essential for contraction
 - (4) Has a prolonged plateau phase
69. Which of the following undergoes a decrease in length in skeletal muscle fibre contraction ?
- (1) I band
 - (2) A band
 - (3) Thick filaments
 - (4) Thin filaments
70. Structurally and functionally Calmodulin is most closely related to :
- (1) Myosin light chain
 - (2) Tropomyosin
 - (3) Troponin C
 - (4) G-actin
71. The resting membrane potential of a myelinated nerve fibre is mainly dependent on :
- (1) Ca^{2+}
 - (2) K^{+}
 - (3) Na^{+}
 - (4) Cl^{-}
72. The plasma concentration of which of the following substances is likely to rise the most if GFR (Glomerular Filtration Rate) decreases by 50%
- (1) Creatinine
 - (2) Glucose
 - (3) Phosphate
 - (4) H^{+}
73. Peri-tubular capillary fluid re-absorption is increased by :
- (1) Increased blood pressure
 - (2) Increased efferent arteriolar resistance
 - (3) Increased renal blood flow
 - (4) Decreased filtration fraction
74. What is the osmolarity of tubular fluid flowing through early distal tubule in the region of macula densa ?
- (1) Hypertonic compared to plasma
 - (2) Isotonic compared to plasma
 - (3) Hypotonic compared to plasma
 - (4) Hypertonic compound to plasma in antidiuresis
75. What is the likely change in a dehydrated person who is deprived of water for 24 hours ?
- (1) Decreased Antidiuretic hormone
 - (2) Increased water permeability of collecting duct
 - (3) Increased Atrial natriuretic peptide
 - (4) Decreased plasma renin activity

76. In a patient with complete lack of antidiure hormone due to Central Diabetes Insipidus, the lowest tubular fluid osmolarity will be found in :

- (1) Proximal tubule
- (2) Early distal tubule
- (3) Medullary collecting duct
- (4) Descending Loop of Henle

77. Which of the following diuretic acts by inhibiting $\text{Na}^+ - 2\text{Cl}^- - \text{K}^+$ co-transporter in the Loop of Henle ?

- (1) Furosemide
- (2) Thiazide
- (3) Carbonic anhydrase inhibitor
- (4) Osmotic diuretic

78. Which of the following causes an increase in both Glomerular Filtration Rate and Renal blood flow ?

- (1) Increased glomerular filtration coefficient
- (2) Increased plasma colloid osmotic pressure
- (3) Dilation of efferent arterioles
- (4) Dilation of afferent arterioles

79. In Hirschsprung disease, obstruction is most likely to be found in

- (1) Sigmoid colon
- (2) Ileocecal sphincter
- (3) Pylorus
- (4) Lower esophageal sphincter

80. Which of the following is likely to occur after ileal resection ?

- (1) Constipation
- (2) Vitamin B12 deficiency
- (3) Achalasia
- (4) Atrophic gastritis

81. Damage to gastric mucosal barrier and stimulation of gastric acid secretion can both be caused by :

- (1) Gastrin
- (2) Bile salts
- (3) Helicobacter pylori
- (4) Epidermal growth factor

82. In recording of Lead II of ECG, the positive electrode is placed at :

- (1) Left leg
- (2) Left arm
- (3) Right leg
- (4) Right arm

83. In which of the following conditions, a right axis deviation will be seen on ECG

- (1) Systemic hypertension
- (2) Pulmonary hypertension
- (3) Aortic valve stenosis
- (4) Aortic valve regurgitation

84. Which of the following heart murmur is heard only in systole ?
- (1) Mitral stenosis
 - (2) Tricuspid valve stenosis
 - (3) Interventricular septal defect
 - (4) Aortic regurgitation
85. Which of the following is seen in unilateral right heart failure ?
- (1) Increased right atrial pressure
 - (2) Increased left atrial pressure
 - (3) Pulmonary edema
 - (4) Increased pulmonary artery pressure
86. The highest velocity of blood flow is found in
- (1) Capillaries
 - (2) Aorta
 - (3) Arteries
 - (4) Veins
87. The gas that is used to estimate the oxygen diffusing capacity of the lungs is
- (1) Carbon monoxide
 - (2) Carbon dioxide
 - (3) Nitrogen
 - (4) Cyanide gas
88. While breathing in and out of a paper bag, the rate of breathing keeps increasing. This occurs due to
- (1) Increased alveolar PCO_2
 - (2) Increased alveolar PO_2
 - (3) Decreased arterial PCO_2
 - (4) Increased pH
89. In emphysema, a decrease in which of the following is seen :
- (1) Pulmonary artery pressure
 - (2) Diffusion area
 - (3) Cardiac output
 - (4) Alveolar PCO_2
90. Calculate the compliance of the lungs given :
- Change in Volume = 1000 ml
- Intrapleural pressure at beginning of inspiration = -4 cm of H_2O
- Intrapleural pressure at end of inspiration = -12 cm of H_2O
- (1) 50 ml/cm H_2O
 - (2) 100 ml/cm H_2O
 - (3) 150 ml/cm H_2O
 - (4) 125 ml/cm H_2O

91. Which of the following centres limits the duration of inspiration and increases respiratory rate ?

- (1) Dorsal respiratory group
- (2) Ventral respiratory group
- (3) Pneumotaxic centre
- (4) Apneustic centre

92. Calculate Residual Volume given :

Dead space = 150 ml; Functional Residual Capacity = 3 l, Tidal volume = 650 ml; Expiratory Reserve volume = 1.5 l, Respiratory rate = 15 breaths/min; Total lung capacity = 8 l.

- (1) 2500 ml
- (2) 1500 ml
- (3) 1000 ml
- (4) 500 ml

93. What is the main site of estrogen synthesis in the male ?

- (1) Osteoblasts
- (2) Prostate cells
- (3) Liver cells
- (4) Leydig cells

94. The site of fertilization is :

- (1) Ampulla of fallopian tube
- (2) Uterus
- (3) Cervix
- (4) Ovary

95. Secretion of testosterone is under the control of :

- (1) FSH
- (2) LH
- (3) ACTH
- (4) Growth hormone

96. Angiotensin-II acts on which of the following to control aldosterone

- (1) Zona reticularis
- (2) Zona fasciculata
- (3) Zona glomerulosa
- (4) Adrenal medulla

97. The hormone that is both synthesised and stored in the pituitary is :

- (1) ADH
- (2) Growth Hormone (GH)
- (3) Growth Hormone Releasing Hormone (GHRH)
- (4) Somatostatin

98. Growth hormone secretion is increased by which of the following :

- (1) Exercise
- (2) Hyperglycemia
- (3) Aging
- (4) Somatostatin



99. Which of the following steroid hormones is NOT synthesised in zona fasciculata ?
- (1) Cortisol
 - (2) Corticosterone
 - (3) Deoxycorticosterone
 - (4) Aldosterone
100. Which of the following pairs is INCORRECT ?
- (1) Glucagon – increased gluconeogenesis
 - (2) Glucagon – increased glycogenolysis in skeletal muscle
 - (3) Glucagon – increased glycogenolysis in liver
 - (4) Cortisol – increased gluconeogenesis
101. Rate of excretion of calcium ions by the kidney is increased by
- (1) Metabolic alkalosis
 - (2) Decrease in parathyroid hormone
 - (3) Increase in phosphate ion in plasma
 - (4) Decrease in calcitonin
102. Greatest increase in insulin secretion is produced by :
- (1) Glucose and somatostatin
 - (2) Amino acids and somatostatin
 - (3) Amino acids and glucose
 - (4) Amino acids
103. Sour taste will be elicited by which of the following ?
- (1) Hydrogen ions
 - (2) Ketones
 - (3) Alkaloids
 - (4) Amino acids
104. The focal length of a convex lens is 1 cm. What is the refractive power of the lens in diopters ?
- (1) + 0.1
 - (2) + 1
 - (3) + 10
 - (4) + 100
105. In an unclothed person, most of the heat loss at room temperature occurs by :
- (1) Radiation
 - (2) Convection
 - (3) Evaporation
 - (4) Conduction to objects
106. If the environmental temperature is 106 °F and relative humidity is less than 10%, heat loss in a normal person will occur by :
- (1) Evaporation
 - (2) Conduction
 - (3) Convection
 - (4) Radiation

107. Which of the following is normally seen during exercise ?
- (1) Decrease sympathetic output
 - (2) Renoconstriction
 - (3) Arteriolar dilation in non-exercising muscles
 - (4) Decrease in epinephrine by adrenals
108. If a person is at the end of a 10 km run, where would there be most vasoconstriction ?
- (1) Coronary
 - (2) Exercising muscle
 - (3) Intestinal
 - (4) Cerebral
109. Which of the following is seen at the onset of exercise ?
- (1) Decrease in coronary blood flow
 - (2) Decrease in cerebral blood flow
 - (3) Increased venous constriction
 - (4) Decrease in mean systemic filling pressure
110. Which of the following muscles are used for expiration by a young 25 year old male in a 10 km race ?
- (1) Scaleni
 - (2) Sternocleidomastoid
 - (3) Diaphragm only
 - (4) Internal intercostals and abdominal recti

111. Which of the following causes stimulation of ventilation during strenuous exercise ?
- (1) Decrease in mean arterial PO_2
 - (2) Decrease in mean venous PO_2
 - (3) Collateral impulses from higher brain centres
 - (4) Increase in mean arterial PCO_2
112. Which of the following is the correct combination of mean arterial PO_2 , PCO_2 and pH in a healthy athlete during strenuous exercise ?
- (1) PO_2 – No change, PCO_2 – No change, pH – No change
 - (2) PO_2 – Increase, PCO_2 – Increase, pH – Increase
 - (3) PO_2 – Decrease, PCO_2 – Decrease, pH – Decrease
 - (4) PO_2 – Increase, PCO_2 – Decrease, pH – Increase
113. Calculate the resting cardiac output given that the cardiac reserve is 300% with a maximum cardiac output of 16 l/min.
- (1) 5.33 l/min
 - (2) 6 l/min
 - (3) 3 l/min
 - (4) 4 l/min

114. The smallest decrease in blood flow occurs in which of the following organs if a person has been exercising for 1 hour ?

- (1) Intestine
- (2) Kidney
- (3) Pancreas
- (4) Brain

115. Which of the following combinations is seen during exercise ?

| | Surface area of Respiratory membrane | Ventilation Perfusion ratio |
|-----|---|--|
| (1) | Increase | Improvement |
| (2) | Increase | No change |
| (3) | No change | Improvement |
| (4) | No change | No change |

116. The blood flow to skeletal muscles under normal physiological conditions is determined by :

- (1) Vasopressin
- (2) Capillary oncotic pressure
- (3) Metabolic needs
- (4) Sympathetic nerves

117. The lens of the eye of a 70 year old has become totally unaccommodating. The condition is

- (1) Amblyopia
- (2) Presbyopia
- (3) Myopia
- (4) Hyperopia

118. The organ of Corti is located in which compartment of Cochlea :

- (1) Scala tympani
- (2) Scala vestibuli
- (3) Scala media
- (4) Saccule

119. Which one of the following is a mechanism activated by cold ?

- (1) Hunger
- (2) Sweating
- (3) Anorexia
- (4) Apathy

120. The insensible water loss under normal conditions is upto :

- (1) 10 ml/h
- (2) 50 ml/h
- (3) 150 ml/h
- (4) 500 ml/h

121. Area of hypothalamus on which cytokines act to cause fever is :

- (1) Ventroposterolateral nucleus
- (2) Supraoptic nucleus
- (3) Preoptic nucleus
- (4) Area postrema

122. In malignant hyperthermia the mutations in gene coding for which of the following is seen

- (1) Nicotinic receptor
- (2) Ryanodine receptor
- (3) Muscarinic receptor
- (4) Tyrosine kinase receptor

123. Which of the following hormones produces a slow but prolonged increase in heat production by the body?

- (1) Epinephrine
- (2) Norepinephrine
- (3) Insulin
- (4) Thyroid hormone

124. Heat exchange between objects at different temperatures when in contact with each other is by :

- (1) Evaporation
- (2) Conduction
- (3) Convection
- (4) Radiation

125. The ability of the body to return the temperature back to normal spontaneously is lost at rectal temperature of about :

- (1) 28 °C
- (2) 30 °C
- (3) 32 °C
- (4) 34 °C

126. Which fibres carry impulses from cold receptors ?

- (1) A α
- (2) A β
- (3) A δ & C
- (4) B

127. The gradual loss of hearing due to ageing is called

- (1) Presbycusis
- (2) Presbyopia
- (3) Macular degeneration
- (4) Wallerian degeneration

128. Hot flushes seen in menopause can be prevented by giving

- (1) LH
- (2) Estrogen
- (3) Progesterone
- (4) Testosterone

129. The testicular descent into the inguinal region during fetal development depends on

- (1) LH
- (2) Testosterone
- (3) Mullerian inhibiting substance
- (4) Inhibin

130. The neurofibrillary tangles seen in Alzheimer's disease are made up of :

- (1) β -amyloid
- (2) Tau protein
- (3) Amyloid precursor protein
- (4) Both β -amyloid and Tau protein

131. REM constitutes how much percentage of total sleep time in full term neonates :

- (1) 20%
- (2) 25%
- (3) 50%
- (4) 80%

132. Which of the following statements regarding growth periods in humans is INCORRECT ?

- (1) There are two periods of rapid growth.
- (2) Pubertal growth period is due to the effect of hormones.
- (3) Closure of epiphyses in long bones is due to progesterone.
- (4) The growth in infancy is episodic.

133. Which of the following statements regarding "Catch up growth" is false ?

- (1) Growth rate is greater than normal.
- (2) Growth is rapid till previous growth curve is reached and then slows to normal.
- (3) Growth rate is slower than normal.
- (4) It occurs following starvation in children.

134. In primary visual cortex, in the layer-IV, which cells detect orientation of lines and borders

- (1) Complex cells
- (2) Hyper complex cells
- (3) Border cells
- (4) Simple cells

135. To which of the following group of cells do the olfactory receptor cells belong :

- (1) Multipolar neurons
- (2) Pseudounipolar neurons
- (3) Bipolar neurons
- (4) Fibroblasts

136. Intraocular fluid is secreted by :

- (1) Iris
- (2) Lens
- (3) Cornea
- (4) Ciliary processes

137. The direction from which sound originates is determined by which brainstem structure

- (1) Inferior colliculus
- (2) Superior olivary nucleus
- (3) Cochlear nucleus
- (4) Lateral lemniscus

138. During photoreception, there is an increase in all of the following EXCEPT :

- (1) Sodium influx in anter segment of rods
- (2) Transducin
- (3) cGMP phosphodiesterase
- (4) cAMP

139. Which retinal cells have action potential ?

- (1) Amacrine cells
- (2) Ganglion cells
- (3) Bipolar cells
- (4) Photoreceptors

140. Which muscle contracts in pupillary light reflex ?

- (1) Pupillary dilator muscle
- (2) Pupillary sphincter muscle
- (3) Radial fibres of iris
- (4) Ciliary muscle

141. In a normal menstrual cycle of 28 to 30 days, ovulation would generally occur between :

- (1) Day 6 to 8
- (2) Day 14 to 16
- (3) Day 18 to 20
- (4) Day 22 to 24

142. The source of estrogen and progesterone in the last seven months of pregnancy is

- (1) Placenta
- (2) Ovary
- (3) Corpus Luteum
- (4) Anterior Pituitary

143. The principal steroid secreted by fetal adrenal cortex is :

- (1) Corticosterone
- (2) Dehydroepiandrosterone
- (3) Cortisol
- (4) Pregnenolone

144. The percentage of total body weight that is constituted by intracellular fluid compartment is :

- (1) 20%
- (2) 40%
- (3) 60%
- (4) 5%

145. Connexons are associated with :

- (1) Gap Junctions
- (2) Desmosomes
- (3) Hemidesmosomes
- (4) Tight Junctions

146. $\text{Na}^+ - \text{K}^+$ ATPase plays an important role in :

- (1) Simple diffusion
- (2) Facilitated diffusion
- (3) Primary active transport
- (4) Secondary active transport

147. Normal pH of human plasma is :

- (1) 7.20 – 7.30
- (2) 7.35 – 7.45
- (3) 7.50 – 7.60
- (4) 7.10 – 7.20

148. All of the following are families of molecular motors EXCEPT :

- (1) Kinesin
- (2) Dynein
- (3) Actin
- (4) Myosin

149. Which of the following is an Agranulocyte ?

- (1) Neutrophil
- (2) Monocyte
- (3) Eosinophil
- (4) Basophil

150. Which of the following immunoglobulins is a pentamer ?

- (1) Ig M
- (2) Ig A
- (3) Ig G
- (4) Ig E

151. The resting membrane potential of a neuron is :

- (1) -80 mV
- (2) -60 mV
- (3) -70 mV
- (4) -90 mV

152. The period from the time the firing level is reached until repolarisation is one-third complete is called :

- (1) Hyper polarisation
- (2) Resting period
- (3) Relative refractory period
- (4) Absolute refractory period

153. The type of nerve fibre most susceptible to hypoxia is :

- (1) A
- (2) B
- (3) C
- (4) All are equally susceptible

154. The area between two adjacent 'Z' lines is called :
- (1) Sarcomere
 - (2) Centromere
 - (3) Sarcoplasm
 - (4) Cytoplasm
155. At resting length of a muscle :
- (1) Active tension is maximum
 - (2) Passive tension is maximum
 - (3) Active tension is minimum
 - (4) Passive tension is minimum
156. Which of the following is FALSE for white muscle fibre ?
- (1) They are specialised for fine, skilled movements
 - (2) Have short twitch duration
 - (3) Oxidative capacity is high
 - (4) Ca^{2+} pumping capacity of sarcoplasmic reticulum is high
157. Extrinsic pathway of clotting is triggered by :
- (1) Calcium
 - (2) Tissue Thromboplastin
 - (3) HMW Kininogen
 - (4) Factor XII

158. Vitamin K dependent clotting factor is :
- (1) Factor XII
 - (2) Factor IV
 - (3) Prothrombin
 - (4) Factor V
159. Haemoglobin appears first in :
- (1) Early normoblast
 - (2) Intermediate normoblast
 - (3) Late normoblast
 - (4) Pro-normoblast
160. Which of the following is NOT seen in cardiac muscle ?
- (1) All or None phenomenon
 - (2) Length – tension relationship
 - (3) Tetanus
 - (4) Pacemaker potential
161. Site of Action of ADH is :
- (1) Proximal Convoluted tubule
 - (2) Distal Convoluted tubule
 - (3) Collecting duct
 - (4) Ascending limb of Loop of Henle
162. Normal value of GFR (Glomerular Filtration Rate) in an adult is :
- (1) 125 ml/min
 - (2) 125 ml/hour
 - (3) 125 l/min
 - (4) 125 l/hour

163. Which of the following is NOT re-absorbed along with Na^+ in proximal convoluted tubule ?

- (1) Glucose
- (2) Amino Acids
- (3) Bicarbonate
- (4) Urea

164. Renal threshold of glucose in venous blood is :

- (1) 180 g/dl
- (2) 180 mg/dl
- (3) 180 g/l
- (4) 180 mg/l

165. The sensor for tubuloglomerular feedback is :

- (1) Macula Densa
- (2) Proximal Convoluted tubule
- (3) Distal Convoluted tubule
- (4) Collecting Duct

166. Na^+ , K^+ and Cl^- are transported out of which portion of Loop of Henle :

- (1) Thick segment of ascending limb
- (2) Descending limb
- (3) Both ascending and descending limb
- (4) Not transported through Loop of Henle

167. Limiting pH of urine is :

- (1) 3.5
- (2) 4.5
- (3) 5.5
- (4) 6.5

168. Ethanol acts as a diuretic by :

- (1) Producing osmotic diuresis
- (2) Inhibiting action of vasopressin on collecting duct
- (3) Inhibiting vasopressin secretion
- (4) Supplying acid load

169. The normal direction of mean QRS vector is :

- (1) -30° to $+110^\circ$
- (2) -30° to -110°
- (3) $+30^\circ$ to $+110^\circ$
- (4) $+30^\circ$ to -110°

170. "A wave" of jugular pulse is due to :

- (1) Ventricular systole
- (2) Bulging of tricuspid valve during ventricular systole
- (3) Atrial systole
- (4) Bulging of mitral valve during ventricular systole

171. Time taken for conduction of electrical activity from SA node to AV node is denoted by :

- (1) PR interval
- (2) ST segment
- (3) QT interval
- (4) Cannot be determined by ECG

172. Cardiac output can be determined by all of the following EXCEPT :

- (1) Fick's principle
- (2) Ventilation/Perfusion ratio
- (3) Echocardiography
- (4) Thermodilution

173. Preload in heart is determined by :

- (1) End systolic volume
- (2) Volume of blood in aorta
- (3) Ventricular end diastolic volume
- (4) Ejection fraction

174. Sounds of Korotkoff are due to :

- (1) AV valve closure
- (2) Arterial turbulence
- (3) Arterial expansion
- (4) Aortic valve closure

175. Which of the following is a compensatory mechanism in Hypovolaemic shock ?

- (1) Increased renal blood flow
- (2) Decrease in cortisol
- (3) Decrease in vasopressin
- (4) Decrease in cutaneous blood flow

176. Vagal stimulation causes :

- (1) Increase in R-R interval
- (2) Increase in heart rate
- (3) Increase in cardiac output
- (4) Increase in force of contraction

177. Nitrogen washout method is used to measure :

- (1) Functional Residual Capacity
- (2) Vital Capacity
- (3) Peak Expiratory Flow Rate
- (4) Tidal Volume

178. Which of the following is activated in lungs ?

- (1) Surfactant
- (2) Histamine
- (3) Prostaglandin
- (4) Angiotensin I

179. Decrease in O_2 affinity of haemoglobin when pH of blood falls is called :

- (1) Haldane Effect
- (2) Wolff Chiakoff Effect
- (3) Bohr Effect
- (4) Bezold Jarisch Reflex

180. O_2 - Haemoglobin curve shifts to right in :

- (1) Decrease in temperature
- (2) Increase in pH
- (3) Rise in temperature
- (4) Both Decrease in temperature and Increase in pH

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