# OPSC Assistant Professor

## Previous Year Paper

## 2017 PHYSIOLOGY

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**Test Booklet Series**

**A**

**T. B. C. : AP – 13 – 17/18**

# TEST BOOKLET

**ASSISTANT PROFESSOR IN O.M.E.S.** **Sl. No.** **1673**

**(PHYSIOLOGY)**

*Time Allowed : 3 Hours*

*Maximum Marks : 200*

**: INSTRUCTIONS TO CANDIDATES :**

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET OF THE SAME SERIES ISSUED TO YOU.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C** OR **D**, AS THE CASE MAY BE, IN THE APPROPRIATE PLACE IN THE ANSWER SHEET USING BALL POINT PEN (BLUE OR BLACK).
3. You have to enter your **Roll No.** on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.
4. **YOU ARE REQUIRED TO FILL UP & DARKEN ROLL NO., TEST BOOKLET / QUESTION BOOKLET SERIES IN THE ANSWER SHEET AS WELL AS FILL UP TEST BOOKLET / QUESTION BOOKLET SERIES AND SERIAL NO. AND ANSWER SHEET SERIAL NO. IN THE ATTENDANCE SHEET CAREFULLY. WRONGLY FILLED UP ANSWER SHEETS ARE LIABLE FOR REJECTION AT THE RISK OF THE CANDIDATE.**
5. This Test Booklet contains **200** items (questions). Each item (question) comprises four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose **ONLY ONE** response (answer) for each item (question).
6. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided by **using BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.
7. All items (questions) carry equal marks. All items (questions) are compulsory. Your total marks will depend only on the number of correct responses (answers) marked by you in the Answer Sheet. **There will be no negative markings for wrong answers.**
8. Before you proceed to mark (darken) in the Answer Sheet the responses to various items (questions) in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per the instructions sent to you with your **Admission Certificate**.
9. After you have completed filling in all your responses (answers) on the Answer Sheet and after conclusion of the examination, you should hand over to the Invigilator the *Answer Sheet* issued to you. You are allowed to take with you the candidate's copy / second page of the Answer Sheet along with the **Test Booklet**, after completion of the examination, for your reference.
10. Sheets for rough work are appended in the Test Booklet at the end.

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SEAL

1. About the homeostatic mechanism of the body following are true **except** :

(A) Values revolve around the mean

(B) Value of controlled variable is compared to the reference value

(C) Value of controlled variable oscillates near a set point

(D) System is stabilized by the positive feedback mechanism

2. Peroxisomes :

(A) Their structure and chemical composition is similar to that of lysosomes

(B) They destroy products formed from oxygen, especially hydrogen peroxide

(C) They engulf exogenous substances and degrade them

(D) They consume oxygen in large amounts, hence the name peroxisomes

3. Second messengers :

(A) Mediate the intracellular responses to many different hormones and neuro-transmittres

(B) Are hormones secreted by cells in response to stimulation by another hormone

(C) Are substances that interact with first messengers outside cells

(D) Are substances that binds to first messengers in the cell membrane

4. Calculate the plasma osmolality when plasma $Na^+$ 125 in mEq/L ; glucose 108 mg/dl and blood urea nitrogen 140 mg/dl :

(A) 300 mOsm/L

(B) 306 mOsm/L

(C) 312 mOsm/L

(D) 318 mOsm/L

5. Transcellular fluid :

(A) Is relatively large (8% of body weight)

(B) Is that part of ECF that surrounds all cells

(C) It represents : digestive secretions, sweat, CSF etc.

(D) Constitutes lymph

6. The pH of venous plasma as compared to arterial pH is :

(A) Lower

(B) Higher

(C) Equal

(D) Neutral at 7.0

7. In nerve membrane, $Cl^-$ permeate membrane approx. 100 times as easily as $Na^+$, because :

(A) Positive charges lines the membrane pores

(B) Sodium pump is electrogenic at rest

(C) Sodium pump is non-electrogenic at rest

(D) $Cl^-$ in the body are hydrated

8. In excitable cells, factor which does not limit $Na^+$ influx is :

(A) Inactivation of $Na^+$ channels through 'h' gates

(B) Direction of electrical gradient for $Na^+$ is reversed during overshoot

(C) Opening of voltage-gated $K^+$ channels ('n' gates)

(D) Inactivation of $Na^+$ channels through 'm' gates

9. **True** about plasma in blood is :

(A) It contains more of inorganic than organic molecules

(B) It represents 45% of total blood volume

(C) It is a clear, colourless fluid portion of the blood

(D) It contains 91% water and 9% solids

10. The major lipoprotein source of the cholesterol used in cells is :

(A) High Density Lipoprotein (HDL)

(B) Low Density Lipoprotein (LDL)

(C) Very Low Density Lipoprotein (VLDL)

(D) Chylomicrons

11. Exhaustion of protein reserves occurs when plasma protein concentration becomes :

(A) 6 gm/dL

(B) 5 gm/dL

(C) 4 gm/dL

(D) 3 gm/dL

12. $H^+$ is more bound to :

(A) Deoxygenated haemoglobin

(B) Oxygenated hemoglobin

(C) Both (A) and (B) equally

(D) Not related to oxygenation

13. Which is a **false** statement regarding haemoglobin $A_2$ ?

(A) Regarded as normal haemoglobin

(B) Comprises about 2.5% of total haemoglobin

(C) Written as $HbA_2$ ($\alpha_2\delta_2$)

(D) Like $\beta$ chain in HbA, $\delta$ chain also contains 141 amino acids

14. Erythropoietin increases RBC count by all of these process **except** :

(A) Early differentiation of stem cells in the bone marrow

(B) Increased release of reticulocytes from bone marrow

(C) Increased synthesis of haemoglobin in already existing normoblast

(D) Increased formation of erythropoietinogen from liver

15. All are the functions of NADPH in RBCs **except** :

(A) Maintains glutathione in the reduced state

(B) Maintains flexibility of RBCs membrane

(C) Maintains haemoglobin iron in ferrous form

(D) Increases life span of RBCs

16. Clinically jaundice appears in infants when serum bilirubin rises beyond :

(A) 1 mg/dL

(B) 2-3 mg/dL

(C) 4 mg/dL

(D) 5 mg/dL

17. Urinary urobilinogen concentration is specially increased in which of the following conditions ?

(A) Hemolytic jaundice

(B) Hepatic jaundice

(C) Obstructive jaundice

(D) Bilirubinuria

18. Contents of which are maximum in eosinophil granules ?

(A) Lysozymes

(B) Histamine

(C) Eosinophil chemotactic factor-A (ECF-1)

(D) Peroxidase enzyme

19. Opsonins are all of the following **except** :

(A) Immunoglobin of IgG group

(B) Antibodies against bacteria

(C) Complement proteins

(D) Leukotrienes

20. Which secretes thrombopoietin ?`

(A) Bone marrow

(B) Liver

(C) Thymus

(D) Spleen

21. Which of the following promotes platelets aggregation ?

(A) ADP

(B) Interleukin

(C) Thromboxane $A_2$

(D) Thrombin

22. What is the first important event in haemostatis following severe tissue injury ?

(A) Blood coagulation

(B) Formation of a platelet haemostatic plug

(C) Vascular spasm

(D) Formation of thromboplastin

23. Thrombomodulin-thrombin complex prevents clotting because :

(A) Thrombomodulin inhibits prothrombin activator

(B) Activates tithrombin III

(C) Removes thrombin

(D) Activates heparin

24. **True** about cold antibodies :

(A) Act best at low temperature between 20°C to 37°C

(B) Act against undiluted RBCs

(C) Are globulin of IgM type

(D) Can cross the placenta readily

25. An A-negative person with high titre of anti-Rh antibodies is to be given whole blood transfusion, which of the following is most important as a precaution ?

(A) Check for agglutination of person's RBCs in donor's plasma

(B) Check for agglutination of person's plasma with donor's RBCs

(C) Direct cross-matching of blood

(D) Check for agglutination of person's RBCs with donor RBCs

26. All types of immune response are fundamentally mediated by :

(A) Tissue macrophages

(B) Lymphoid tissues

(C) Lymphocytes

(D) Plasma cells

27. The most important physiological function of the lymphatic system is to :

(A) Transport fluid and proteins away from the interstitium

(B) Concentrate proteins in the lymph

(C) Remove particulate materials from the interstitium

(D) Create negative pressure in the free interstitial fluid

28. C5b of complement complex is known as :

(A) Opsonizing complex

(B) Lytic complex

(C) Chemotaxic complex

(D) Agglutinating complex

29. Immunity is most suppressed in :

(A) Liver failure

(B) Patients on ACTH therapy

(C) Anaemia

(D) Renal failure

30. **Not true** about myelinogenesis :

(A) Process of deposition of myelin sheath around the axon

(B) Begins 1 year after birth

(C) In peripheral nerves, Schwann cells are responsible to carry out this function

(D) Oligodendroglia are responsible for it within the CNS

31. Phagocytosis within the nervous system is done by :

(A) Microglia

(B) Oligodendroglia

(C) Astrocytes

(D) Schwann cells

32. Presence of calcium on nerve membrane may play a significant role in :

(A) Operation of sodium pump

(B) Regulation of potassium outflow

(C) Keeping sodium gates closed

(D) Preventing protein anions from going out

33. Excitability of a nerve is increased by :

(A) Decrease in ECF calcium ion concentration

(B) Increase in ECF calcium ion concentration

(C) Increase in strength of a stimulus

(D) Increase in duration of a stimulus

34. Type B nerve fibers are seen in :

(A) Preganglionic autonomic

(B) Somatic motor

(C) Motor to muscle spindle

(D) Sympathetic post-ganglionic

35. The neurons may get irreversibly damaged if exposed to significant hypoxia for :

(A) 2 min

(B) 8 min

(C) 15 sec

(D) 30 sec

36. Wallerian degeneration of ruptured nerve begins within :

(A) 6 hours

(B) 12 hours

(C) 24 hours

(D) 6 weeks

37. After the nerve section, to begin with the rate of growth of fibrils is :

(A) 0.05 mm/day

(B) 0.25 mm/day

(C) 1-2 mm/day

(D) 3-4 mm/day

38. Which of the following statements is **not correct** ? Release of acetylcholine at the neuromuscular junction :

(A) Produces an end-plate potential

(B) Increases sodium movement into the muscle cell

(C) Always causes the muscle fibre to contract

(D) Is followed by rapid destruction of acetylcholine

39. Usual amplitude of miniature end plate potential is :

(A) 0.5 mV

(B) 12 mV

(C) 30-40 mV

(D) 120-130 mV

40. The troponin-tropomyosin complex is believed to play, what role in muscle contractile process ?

(A) It provides the major amount of elastic tension during the contractile process

(B) It is believed that in the resting state it covers the active sites on the actin filament

(C) Combination of this complex with myosin excites the activity of "power stroke"

(D) Combination of potassium with the troponin portion of this complex is believed to triger muscle contraction

41. Best method to increase the muscle strength is :

(A) Isometric exercises

(B) Isotonic exercises

(C) Aerobic isotonic exercises

(D) Electrical stimulation

42. Gap junction :

(A) Are absent in cardiac muscle

(B) Are absent in smooth muscle

(C) Connect the sarcotubular system to individual skeletal muscle fibers

(D) Provide the pathway for rapid spread of excitilation from one cardiac muscle fiber to another

43. All statements are **true** about All-or-None Law in the heart **except** :

(A) This is all-or-nonrelationship between the stimulus and the response

(B) This is because of the syncytial and interconnecting nature of cardiac muscle fibers

(C) This principle applies to the whole of the heart

(D) This principle also applies to the individual skeletal muscle fiber

44. Visceral smooth muscles are characterized by :

(A) Unstable RMP

(B) Average RMP is approx – 80 mV

(C) High $K^+$ concentration inside the cells

(D) Spontaneous depolarization begins with $Na^+$ influx mainly

45. Stimulation of sympathetic nerve to intestinal smooth muscle results in :

(A) Increase in muscle tension

(B) Muscle relaxation

(C) Increase in rhythmic contraction

(D) Increased secretions

46. Paneth cells in the Mucosa of the small intestine secrete :

(A) Defensins

(B) Bioactive peptides

(C) Bicarbonate

(D) Pepsin

47. **True** about Brunner's gland :

(A) Present throughout the small intestine

(B) Produce a great variety of enzymes capable of digesting proteins, carbohydrates and fats

(C) Produce thick alkaline mucous secretions to protect duodenal mucosa from gastric acid

(D) Secrete 5-HT

48. At high salivary flow rate, all are seen **except** saliva :

(A) Resembles the primary secretion

(B) $Na^+$ and $Cl^-$ concentration increases

(C) $K^+$ concentration decreases

(D) $HCO_3^-$ concentration decreases

49. In 'water brash', fluid brought into mouth in one or two gushes is mainly :

(A) Saliva

(B) Oesophageal secretion

(C) Acid

(D) Bile

50. **False** statement about secondary oesophageal peristalsis :

(A) Initiated by presence of food within the oesophagus

(B) Occurs due to mechanical stimulation receptor

(C) Activation of irritant receptors may also produce it

(D) Begins when food passes into oesophagus

51. In a patient with achalasia cardia, biopsy taken from the sphincter region is expected to show decrease in :

(A) Oesophageal peristalsis

(B) Nitric oxide containing neurons

(C) Acetylcholine receptors

(D) Peptide YY

52. The mechanism which causes maximum gastris acid secretion is :

(A) Cholinergic receptor stimulation

(B) $H_2$ receptor stimulation

(C) Neurogenic

(D) $Na^+ - K^+$ ATPase pump

53. Which of the following is the function of M-cells in intestine ?

(A) Antigen presenting cells

(B) Meissner's plexus cells

(C) Mucus secreting cells

(D) Helps mineral absorption

54. Hypersecretion of gastric acid leads to ulcer of the :

(A) Body of the stomach

(B) Fundus of the stomach

(C) Oesophagus

(D) Duodenum

55. Secretin stimulation of pancreas causes secretion of pancreatic juice deficient in :

(A) Bicarbonate

(B) Water

(C) Enzymes

(D) Chloride

56. What fails to happens to pancreatic juice in pancreatitis ?

(A) Volume decreases

(B) $HCO_3^-$ level decreases

(C) Enzyme levels normal or low

(D) Marked fall in serum-amylase levels

57. Hepatic failure :

(A) Results in low A : G ratio

(B) Results in high A : G ratio

(C) Results in high serum albumin

(D) Always is associated with jaundice

58. Bile salts :

(A) Are conjugated sodium and potassium salts of bile acids

(B) Are derivatives of biliverdin and bilirubin

(C) Concentration in liver bile is 140-810 mg/dL

(D) Provide alkaline reaction to the bile

59. **Not** a function of gall bladder :

(A) Storage of bile

(B) Regulates equalization of pressure in biliary system

(C) Increases alkalinity of stored bile

(D) Actively absorbs fluid and electrolytes of stored bile

60. **False** about ileum and jejunal resection :

(A) Results in pale bulky stools

(B) Osteomalacia

(C) Steatorrhoea

(D) Rise in prothrombin time

61. Peristallsis may be initiated by all of the following **except** :

(A) Inhibitors of striated muscle contraction

(B) Distension of the gut wall

(C) Irritation of the mucosa

(D) The composition of the chyme

62. The first urge to defecate occurs when rectal pressure increases to :

(A) 10 mmHg

(B) 20 mmHg

(C) 40 mmHg

(D) 80 mmHg

63. High fiber diet helps reducing in all of the following **except** :

(A) Postprandial hyperglycemia

(B) Blood cholesterol

(C) Interestinal motility

(D) Cancer of colon incidences

64. In human the first enzymes to act on milk is :

(A) Pepsin

(B) Rennin

(C) Trypsin

(D) Enterokinase

65. Colonic fluid loss in chronic diarrhoea results in :

(A) Pernicious anaemia

(B) Dehydration

(C) Hypotension

(D) Severe hypokalemia

66. Which is **not** an action of gastric inhibitory peptide ?

(A) Relaxes gastric sphincters

(B) Inhibits gastric juice secretion

(C) Increases insulin secretion

(D) Also called glucose-dependent insulinotropic polypeptide

67. Which of the following is **not** a neuro-transmitter in G. I. T. ?

(A) Cholecystokinin

(B) Substance P

(C) Gastrin releasing peptide

(D) Neuropeptide Y

68. Sino atrial node (SAN) is called cardiac pacemaker because :

(A) It allows almost immediate transmission of cardiac impulse throughout the entire ventricular system

(B) It is capable of generation of impulse and conduction of the heart beat

(C) It determines the rate at which the heart beats

(D) The speed of conduction of impulse is fastest in SAN

69. Cardiac muscle :

(A) Has a velocity of conduction of action potentials at 1 meter per second

(B) Never contracts for more than 0.12 second

(C) Is not influenced by nor-epinephrine

(D) Has a longer duration of contraction during tachycardia

70. Ejection fraction of the ventricle refers to the ratio of :

(A) Amount of blood received/ amount of blood ejected

(B) Stroke volume/end-diastolic volume

(C) End-systolic volume/end-diastolic volume

(D) Stroke volume/end-systolic volume

71. 'c' wave of the jugular venous pressure record is due to the :

(A) Atrial systole

(B) Bulging of tricuspid valve into the atria during isovolumetric ventricular contraction

(C) Rise in atrial pressure before the tricuspid valve opens during diastole

(D) Pulling down of A-V valves with onset of ventricular systole proper

72. Splitting in second heart sound is due to :

(A) Atrial systole

(B) Delay in closure of aortic valves

(C) Delay in closure of mitral valves

(D) Delay in closure of pulmonary valves

73. The delay between the P wave and the Q wave in the normal electrocardiogram is primarily caused by :

(A) A slow transmission through the A-V node and junctional fibres

(B) Delay at the internodal pathways

(C) Circus movement

(D) The slow rate of conduction in atrial heart muscle

74. Which of the following description of electrocardiographic leads $V_1$ through $V_6$ is **true** ?

(A) They are unipolar leads measuring electric potential in the frontal plane

(B) They are unipolar leads measuring electric potential in the horizontal plane

(C) They are bipolar leads measuring electric potential in the frontal plane

(D) They are bipolar leads measuring electric potential in the horizontal plane

75. Myocardial infarction differs from angina pectoris, the former is :

(A) Cry of dying myocardial fibers

(B) Reversible damage to the myocardium

(C) Produced by transient occlusion of coronaries supplying the myocardium

(D) Aseptic necrosis of the myocardium

76. High pressure system is responsible for :

(A) Control of blood volume

(B) Control of venous return to the heart

(C) Control of distribution of blood flow

(D) Conversion of pulsatile ejection of heart into steady flow through the capillaries

77. The arteriolar constriction, capillaries are supplied by :

(A) Pulsatile flow

(B) Non-pulsatile flow

(C) steady flow

(D) Very rapid flow

78. Which of the following statement about cutaneous shunt vessel is **true** ?

(A) Perform nutritive function

(B) Have role in thermoregulation

(C) Not under control of ANS

(D) Evenly distributed throughout the skin

79. According to Poiseuille Hagen formula, the relationship is calculated between the following **except** :

(A) Flow in a long narrow tube

(B) Viscosity of fluid

(C) Radius of tube

(D) pH of blood

80. **True** regarding human heart :

(A) Conduction of impulse from endocardium to inwards

(B) During exercise duration of systole is reduced more than diastole

(C) Heart rate increases with parasynpathetic denervation

(D) Vagal stimulation decrease force of contraction

81. In axon reflex, neurotransmitter responsible to produce long lasting cutaneous arteriolar dilatation is :

(A) Serotonin

(B) Substance P

(C) Acetyl choline

(D) $K^+$ released from the damaged cells

82. Carotid sinus baroreceptor is most sensitive to :

(A) Mean blood pressure

(B) Diastolic blood pressure

(C) Systolic blood pressure

(D) Pulse pressure

83. Sudden death may occur in an individual following a massive heart attack due to activation of :

(A) Bainbridge reflex

(B) Cushing reflex

(C) Bezold-Jarisch reflex

(D) Hering-Breurer reflex

84. Resting vagal tone in a normally breathing individual is due to :

(A) Baroreceptor activity

(B) Chemoreceptor activity

(C) Cerebral cortex activity

(D) Inspiratory centre activity

85. Increased venous return leads to increased cardiac output by way of the Frank-Starling mechanism. Which one of the following would **not** happen ?

(A) Increased end diastolic sarcomere length

(B) Increased myocardial tension during systole

(C) Increased stroke volume

(D) Decreased end diastolic volume

86. Intrinsic myocardial depressant decreases the myocardial contractility by :

(A) Causing part of myocardium to become fibrotic

(B) Decreasing cAMP formation in myocardium

(C) Increasing breakdown of cAMP in myocardium

(D) Decreasing catecholamine content of myocardium

87. According to Bernoulli's principle :

(A) When blood flows through a narrowed section of vessel, kinetic energy decreases

(B) Sum of the kinetic energy of flow and pressure energy is always constant in a blood vessel

(C) At high velocity of blood flow, pressure energy increases and kinetic energy is reduced

(D) Kinetic energy of flow increases as the blood flow increases

88. **False** about last ditch stand is, it :

(A) Acts to prevent the final death of a person

(B) Acts to maintain normal supply of blood to the brain

(C) Operates in response to CNS ischaemia

(D) Operates via baroreceptor reflexes

89. Which of the following plays an important role in acute as well as long-term regulation of arterial BP ?

(A) Renin-angiotensin system

(B) Capillary fluid shift mechanism

(C) ADH system

(D) Aldosterone system

90. Extracellular oedema may result from all of the following **except** :

(A) Increased plasma colloid osmotic pressure

(B) Lymphatic blockage

(C) Increased capillary permeability

(D) Increased interstitial fluid colloid osmotic pressure

91. Coronary arteries are end arteries because :

(A) A given area of the myocardium is supplied by a single artery

(B) There occurs overlapping of arteries supplying an area of the myocardium

(C) Anastomosis is seen between the branches of coronary arteries and branches of deep system of veins

(D) Anastomosis is seen between coronaries and vessels lying outside the heart

92. Which of the following has the maximum oxygen consumption (ml/100 gm/min) at rest ?

(A) Brain

(B) Skeletal muscle

(C) Heart muscle

(D) Kidneys

93. All statements are **true** for protective compensatory mechanism in subendo-cardial portions of LV where incidences of myocardial infractions are higher **except** that :

(A) Capillary density is more

(B) Minimal diffusion between capillaries and myocardial cell is shorter

(C) Myoglobin content is higher

(D) Ratio of lactic acid to pyruvic acid is more

94. Which of the following is **true** regarding physiological changes in the brain during exercise ?

(A) Blood flow is decreased

(B) Blood flow is increased

(C) Blood flow remains unaltered

(D) Blood flow initially increases and then decreases

95. With CSF all are **true except** :

(A) Persistant leakage causes headache

(B) Neutrophils are normally not present

(C) pH is less than that of blood

(D) Secreted by the arachnoid villi

96. Effectiveness of blood brain barrier is by :

(A) Tight endothelial junction

(B) Microglial cell

(C) Thick basement membrane

(D) Tight arrangement of astrycytes

97. Second rise in systemic BP following the splanchnic nerve stimulation is due to :

(A) Activation of sympathetic constrictor nerve

(B) Liberation of epinephrine from adrenal medulla

(C) Activation of baroreceptor reflex

(D) Activation of chemoreceptor reflex

98. Cold blue or grey skin is one in which :

(A) Arterioles are constricted and capillaries dilated

(B) Both arterioles and capillaries are dilated

(C) Arterioles are dilated and capillaries constricted

(D) Both arterioles and capillaries are constricted

99. Contraction of capacitance vessels in splanchnic circulation can pump approx. _____ of blood into the arterial circulation.
(A) 500 ml
(B) 1 litre
(C) 1.5 litres
(D) 2 liters

100. Pulmonary wedge pressure corresponds to :
(A) Right atrial pressure
(B) Right ventricular pressure
(C) Left atrial pressure
(D) Left ventricular pressure

101. Hypovolemic shock is characterized by all of the following **except** :
(A) Hypotension
(B) Cold and clammy skin
(C) Intense thirst
(D) Inhibition of respiration

102. Emotional fainting is associated with :
(A) Activation of cholinergic fibers originated in the spinal cord
(B) Pooling of blood in the dependent parts of the body
(C) Decreased myocardial contractility
(D) Cardiac arrhythmias

103. Following acute left ventricle failure, pulmonary oedema generally begins to appear when left atrial pressure approaches _____ mmHg.
(A) 7
(B) 15
(C) 20
(D) 30

104. In chronic hypertension, rate of firing from baroreceptors to CNS is likely :
(A) To present at a high level at the end of several weeks of high BP
(B) Initially increases and then returns to normal
(C) Not to undergo adaptation
(D) To regulate BP effectively

105. Mucociliary action of upper respiratory tract is :
(A) Protective function
(B) Is of no physiological importance
(C) Hinders inspiration
(D) Increase the velocity of inspired air

106. Which is **not** a feature of partial pressure of a gas ?
(A) It is the pressure exerted by any one gas, in a mixture of gases
(B) Diffusion of gases depends on it
(C) Determines the amount of gas dissolved in any solution
(D) Not affected by presence of water vapours

107. Violent coughing can cause intrapleural pressure to rise to :
(A) The level of atmospheric pressure
(B) +40 mmHg
(C) +50 mmHg
(D) +60 to 70 mmHg

108. Patients with restrictive lung diseases differ from those with obstructive airways disease by having :
(A) Lower ratio of forced expiratory volume in one second/vital capacity
(B) Lower peak flow rate
(C) Lower residual volume and total lung capacity
(D) Lower $FEV_1$

109. Stability of alveoli is maintained by :
(A) Residual air
(B) Surfactant
(C) Negative intreplural pressure
(D) Lung compliance

110. What will happen to arterial $O_2$ saturation if alveolar $pO_2$ is raised to 300 mmHg ?
(A) 100%
(B) 150%
(C) 200%
(D) 250%

111. Which of the following is not true of 2, 3 DPG ?
(A) Higher concentration in blood
(B) Bohr's effect
(C) Alters affinity to haemoglobin
(D) Increases during exercise

112. When $CO_2$ is removed in the lungs, which of the following also occurs ?
(A) Efflux of $HCO_3^-$ from RBC
(B) Efflux of $Cl^-$ from RBC
(C) Efflux of $CO_2$
(D) Efflux of $O_2$ and influx of $CO_2$

113. Pacemaker of respiration lies at :
(A) Dorsal group of neurons
(B) Pneumotaxis center
(C) Apneustic center
(D) Prebotzinger complex

114. Rate and pattern of breathing is controlled by all **except** :
(A) I-neurons
(B) Apneustic centre
(C) Pneumotaxic centre
(D) Vagi

115. Cheyne-Stokes respiration is characterized by :
(A) Continuous hyperpnoea
(B) Increased sensitivity of respiratory centre
(C) Fluctuating $pO_2$ and stable $pCO_2$
(D) Decreased alveolar $pCO_2$ below threshold level of stimulation of respiratory centre, apnoeic spells occurs

116. Earliest effect of hypoxia :

(A) Increase in heart rate and B. P.

(B) Increase in pulmonary ventilation

(C) Decrease in brain higher function

(D) Cheyne-Stoke respiration

117. Oxygen toxicity causes all **except** :

(A) Rupture of alveoli

(B) Atelectasis lung

(C) Pulmonary edema

(D) Convulsions

118. The environmental temperature falls by _____ °C for every 3,000 mts (10,000 feet) increase in altitude.

(A) 1

(B) 2

(C) 3

(D) 4

119. In high altitude acclimatized individual increase in diffusion capacity is due to following **except** :

(A) Increased permeability of alveolar capillary membrane

(B) Increased alveolar capillary pressure gradient

(C) Greater number of open capillaries

(D) Capillary dilatation

120. Dysbarism is due to :

(A) Sudden fall in pressure of ambient gases in the body

(B) Gradual fall in pressure of ambient gases in the body

(C) Gradual rise in pressure of ambient gases in the body

(D) Sudden rise in pressure of ambient gases in the body

121. False about high pressure nervous syndrome :

(A) Due to increased $pN_2$ in blood

(B) Caused by breathing $O_2$-helium mixture at high atmospheric pressure

(C) Characterized by tremors and drowsiness

(D) Associated with depressed $\alpha$-activity in EEG

122. Best pulmonary function test to tell gaseous exchange across the lungs is :

(A) FRC measurement

(B) Measuring dead space

(C) Assessment of uniformity of alveolar ventilation

(D) Airway resistance measurement

123. During heavy exercise skeletal muscle blood flow increases to _____ ml per 100 gm per minute.

(A) 25

(B) 50

(C) 75

(D) 100

124. During maximum exercise, coefficient of $O_2$ utilization of myocardium is :

(A) 26%

(B) 52%

(C) 78%

(D) 100%

125. Yoga differs from conventional exercise that in yoga :

(A) Sympathetic nervous system dominates

(B) Is goal oriented

(C) Provides normalization of muscle tone

(D) Awareness is external

126. Cortical nephrons differ from juxta-medullary nephrons in all **except** :

(A) Smaller size glomeruli

(B) Rate of filtration is slow

(C) Play a major role in excretion of waste

(D) Filtration at glomeruli occurs under pressure

127. **True** statement regarding oxygen consumption in the kidney is :

(A) Oxygen consumption increases as blood flow increases

(B) $O_2$ consumption is maximum in renal medulla

(C) $O_2$ consumption in ml/min is maximum as compared to any organ in the body

(D) Consumption is equal in both cortex and medulla

128. Agents that cause contraction or relaxation of mesangial cells alter the GFR by all of the following **except** :

(A) Encroaching on the glomerular capillary lumen

(B) Altering the area available for filtration

(C) Altering the filtration coefficient

(D) Altering RBF

129. **Not** a symporter carrier transport mechanism in a nephron :

(A) $Na^+$ – glucose carrier

(B) $Na^+$ – amino acid carrier

(C) $Na^+ – H^+$ carrier

(D) $Na^+ – 2Cl^- – K^+$ carrier

130. Filtered potassium is :

(A) Almost reabsorbed by the PCT

(B) Competes with $Na^+$ for reabsorption

(C) Absorption depends upon aldosterone

(D) Mainly absorbed in the DCT

131. A substance is present in concentration of 2 mg/dL in the afferent arteriole and zero mg/dL in the efferent. True about the substance is :

(A) It is free filtered in glomerulus

(B) Secreted in cortical nephron

(C) Absorbed in PCT

(D) Impermeable in loop of Henk

132. The plasma clearance value of glucose in a diabetes mellitus patient will be :

(A) Zero

(B) Equal to that of insulin clearance

(C) Greater than that of PAH clearance

(D) Greater than zero

133. Normally a horizontal osmotic gradient of _____ osmol/L exists between the ascending segment of loop of Henle and medullary interstitium.

(A) 100

(B) 200

(C) 300

(D) 400

134. Role of urea in counter current system is all of the followings **except** :

(A) To exert an osmotic effect on descending limb of loop of Henle

(B) To promote extraction of water into the interstitium

(C) To raise intraluminal concentration of NaCl

(D) To decrease urine osmolality

135. In patient with plasma pH of 7.10, the $[HCO_3^-]/[H_2CO_3]$ ratio in plasma is :

(A) 20

(B) 10

(C) 2

(D) 1

136. The bicarbonate buffer system is important in regulating extracellular fluid $H^+$ concentration because :

(A) The concentration of $CO_2$ and $HCO_3^-$ in the extracellular fluid is relatively high

(B) The pK of the bicarbonate buffer system is very close to the pH of the extracellular fluid

(C) The two elements of the bicarbonate buffer systems $CO_2$ and $HCO_3^-$ are regulated by renal and respiratory mechanisms

(D) (B) and (C) both

137. Which of the following changes would not occur as a result of dehydration (loss of water, but not solute) ?

(A) Increased secretion of antidiuretic hormone

(B) Increased plasma sodium concentration

(C) Decreased permeability of the collecting ducts to water

(D) Increased solute concentration in the renal medulla

138. Hypertonic contraction of fluid volume is caused by :

(A) Addison's disease

(B) Cushing's disease

(C) Salt losing nephropathy

(D) Diabetes insipidus

139. Not true of urinary hyaline casts :

(A) Presence is abnormal

(B) They are non-squamous epithelial tubular cells

(C) They are clear, colourless casts of renal tubules

(D) Seen as small cylinders with rounded ends

140. Withdrawal of fluids for 12-18 hours indicates kidney concentration power is normal if specific gravity of urine is :

(A) 1001 to 1007

(B) 1008 to 1010

(C) 1010 to 1020

(D) Above 1020

141. In early stage of spinal shock, type of micturition **not** seen is :

(A) Passive incontinence

(B) Overflow incontinence

(C) Retention with overflow

(D) Mass reflex

142. Insensible water loss (perspiration) will be absent if humidity is :

(A) 50%

(B) 70%

(C) 90%

(D) 100%

143. True about non-shivering thermogenesis :

(A) Glucose converted to lactate

(B) Fatty acids show uncoupled oxidative phosphorylation

(C) ADP is burnt with heat

(D) Adipose tissue is entirely absent

144. Which of the following produces the most high energy phosphate compounds ?

(A) Aerobic metabolism of 1 molecule of glucose

(B) Anaerobic metabolism of 1 molecule of glucose

(C) Metabolism of 1 molecule of long chain fatty acid

(D) Metabolism of 1 molecule of amino acid

145. Galactosaemia :

(A) It is due to deficiency of enzyme galactose kinase

(B) An inherited metabolic disorder

(C) Associated with accumulation of galactose-1-phosphate in blood

(D) Produces severe digestive disturbances

146. White fat depot differs from brown fat depot in all of the following **except** :

(A) Fat is stored as triglycerides

(B) Scattered throughout the body

(C) Forms 10-15% of body weight

(D) Represents the biggest stores of energy in the body

147. Urea in the liver is formed from :

(A) Two ammonia moles and one mole of $CO_2$

(B) Two ammonia moles and two mole of $CO_2$

(C) One ammonia moles and one mole of $CO_2$

(D) One ammonia moles and two mole of $O_2$

148. All of the following parameters decreases during starvation **except** :

(A) Heart rate

(B) Hunger

(C) Peripheral blood flow

(D) Systemic arterial BP

149. Free radicals produce damage by all **except** :

(A) Oxidising nuclei acid in the DNA

(B) Oxidation of lipids of hormones and cell membranes

(C) Making proteins fuse together

(D) Antioxidant behaviour

150. Junk foods or highly processed foods may result in premature aging because of all of the following **except** :

(A) Low in nucleic acid

(B) More generation of free radicals

(C) Enriched with calories

(D) Antioxidant properties

151. The following hormone does not have any intracellular receptor :

(A) Vitamin $D_3$

(B) Cortisone

(C) Adrenaline

(D) Thyroxine

152. Not a true statement with reference to negative feedback control of hormone secretion :

(A) The response is opposite to the original stimulus

(B) The response is the same as that of the original stimulus

(C) The target organ hormones act either on the anterior pituitary or hypothalamus

(D) The anterior pituitary hormones can act on the hypothalamus

153. Growth hormone level increases by all of the following **except** :

(A) Growth hormone

(B) Stress

(C) Starvation

(D) Sleep deprivation

154. General growth curve applies to :

(A) Growth of brain, spinal cord and special senses

(B) Skeleto-muscular and body organ growth

(C) Growth of thymus, tonsils and lymph nodes throughout the body

(D) Skeletal growth as a whole

155. Pituitary dwarfs treated with testosterone first growth a few centimeters and then stop, because :

(A) It stimulates synthesis and release of GH

(B) It initially stimulates growth but ultimately terminates linear growth by causing epiphyseal closure

(C) It exerts permissive action on growth

(D) Initially exerts anabolic effect followed by catabolic action

156. Which of the following would be least affected by injection of TSH ?

(A) Size of thyroid gland

(B) Thyroid uptake of iodine

(C) Synthesis of thyroglobulin

(D) cGMP in thyroid cells

157. Active vitamin $D_3$ differs from para-thormone in which of the following physiological effects ?

(A) Increased renal phosphate reabsorption

(B) Increased renal $Ca^{2+}$ reabsorption

(C) Increased intestinal $Ca^{2+}$ absorption

(D) Increased plasma $Ca^{2+}$ concentration

158. Abnormally high glucocorticoids levels would be associated with an increase in all of the following activities in the liver **except** :

(A) Gluconeogenesis

(B) Glycogenesis

(C) Glycogenolysis

(D) Glucose production

159. **False** statement regarding regulation of adrenergic receptors :

(A) A reciprocal relationship exists between catecholamine concentration and number of adrenergic receptors

(B) A reciprocal relationship exists between catecholamine concentration and responsiveness (function) of adrenergic receptors

(C) It accounts for the phenomenon of denervation hypersensitivity

(D) A direct relationship exists between NE and number of adrenergic receptors

160. Ingestion of a meal containing only protein would result in :

(A) Hyperglycemia

(B) Increased insulin release

(C) Decreased insulin release

(D) Decreased hepatic glycogen

161. The signal transduction mechanism of insulin :

(A) Is coupled to G protein

(B) Is via cGMP only

(C) Involves multiple pathways

(D) Acts via increasing cAMP

162. In a chronic diabetes patient, sudden disappearance of glycosuria with hyperglycemia is suggestive of :

(A) Increase renal tubular reabsorption of glucose

(B) Marked decrease in GFR

(C) Sudden fall in blood glucose level

(D) Decrease renal blood flow

163. **Not** a function of melatonin :

(A) Concerned with control of skin colour

(B) Concerned with regulation of onset of puberty

(C) Produces slowing of EEG rhythm

(D) Produces sleep

164. Puberty does not normally occur in human under the age of 8 years because :

(A) The tissues are unresponsive to gonadal steroids

(B) The ovaries and testes are unresponsive to gonadotrophins

(C) The pituitary cannot manufacture adequate amount of gonadotrophins

(D) The hypothalamus fails to secrete GnRH in a pulsatile fashion

165. **Not** a correct statement regarding acrosome :

(A) Envelops the sperm nucleus

(B) Consists of DNA

(C) Contains acid phosphatase

(D) Helps in sperm penetration to the ovum

166. The main source of fructose in semen is :

(A) Prostate

(B) Seminal vesicle

(C) Seminiferous tubules

(D) Leydig cells

167. Menopausal hot flushes is due to :

(A) Decreased oestrogen

(B) Decreased progesterone

(C) LH surge

(D) FSH surge

168. In the event of pregnancy, the mean span of the corpus luteum is lengthened by :

(A) Placental hormone

(B) Ovarian hormone

(C) Anterior pituitary hormone

(D) Calcitonin

169. Reflux of semen into the urinary bladder and simultaneous discharge of urine is prevented by all **except** :

(A) Contraction of muscle coat of epididymis

(B) Contraction of internal vesical sphincter

(C) Contraction of external vesical sphincter

(D) Vas deferens

170. During later months of pregnancy there is tendency for :

(A) Respiratory acidosis

(B) Respiratory alkalosis

(C) Metabolic acidosis

(D) Metabolic alkalosis

171. Cardiopulmonary changes in the baby immediately upon birth include all **except** :

(A) Increased total peripheral resistance

(B) Decreased pulmonary vascular resistance

(C) Increased systemic and decreased pulmonary arterial pressure

(D) Fall of pressure in LA and LV

172. **False** about topographical arrangement of motor neurons within the anterior horn of spinal cord is :

(A) Motor neurons supplying the muscles of the trunk are situated medially

(B) Those supplying the extremities are situated laterally

(C) Flexors group of the muscles are represented posteriorly

(D) The muscles that extend the limbs are represented posteriorly

173. Renshaw cell inhibition is :

(A) An example of lateral inhibition

(B) Involves an interneuron in its reflex arc

(C) Exerted entirely as presynaptic inhibition

(D) An example of positive feedback

174. **Not true** statement about cold receptors :

(A) Are unmyelinated C fibers

(B) 4-10 times more than warm receptors

(C) Respond primarily to temperature of tissues which immediately surround them

(D) Also get activated when tissue temperature is raised beyond 45°C

175. Tonic receptors differ from phasic receptors in all **except** :

(A) Are poor, slow and incompletely adapting receptors

(B) Generator potential is prolonged and decays slowly

(C) Examples include : muscle spindle, baroreceptors and chemoreceptors

(D) Transmit signals only when the stimulus strength is changed

176. Main function of primary or annulospiral endings in muscle spindle is to :

(A) Respond to static change in length and to rate of change of elongation of receptors

(B) Transmit the sensation of pain in the muscle to CNS

(C) Respond to total tension imposed on the muscle but not on the rate of change of length of receptors

(D) Respond to marked muscular tension which then results in inhibition of contraction

177. Sexual sensation ascend to the brain through the :

(A) Spinothalamic tract

(B) Anterior spinocerebellar tract

(C) Posterior spinocerebellar tract

(D) Dorsal column

178. Destruction of somatic sensory area I leads to loss of which sensation ?

(A) Pain

(B) Touch

(C) Stereogonosis gone but two point discrimination retained

(D) Both stereogonosis and two point discrimination

179. Asteriogonosis is due to lesion of :

(A) Nucleus gracilis

(B) Nucleus cuneatus

(C) Spinoreticular tract

(D) Spinothalamic tract

180. During the descent of pyramidal tracts, point to point discrimination of body parts occurs in the substance of :

(A) Internal capsule

(B) Midbrain

(C) Pons

(D) Medulla

181. Body posture and complex coarse movements are controlled mostly by :

(A) Cerebrum

(B) Cerebellum

(C) Spinal cord

(D) Extrapyramidal system

182. Vagal stimulation following intake of food does **not** affect secretion of :

(A) Stomach

(B) Pancreas

(C) Parotid

(D) Gall bladder

183. All of the following may occur as complication of spinal cord transection, **except** :

(A) Postural ulcers

(B) Renal stones

(C) Paraplegia

(D) Dissociated anaesthesia

184. The receptors in semicircular canal respond to :

(A) Linear acceleration

(B) Angular acceleration

(C) Both linear and angular accelerations

(D) Vertical acceleration

185. According to Sherrington classification the decerebrate rigidity is characterised by all **except** :

(A) Rigidity occurs over all muscles of the body

(B) Increased in the rate of discharge of the 'γ' different neuron

(C) Increased excitabilility of all motor neuron pool

(D) Decerebration produces no phenomenon akin to spinal shock

186. Which sensory system might be more important for maintaining a person's balance when he is running against wind than when he is running with the wind ?

(A) Vestibular apparatus

(B) Proprioceptors of the neck

(C) Exteroceptors

(D) Eyes

187. Each celebellar hemisphere controls voluntary movements of its own side of the body because of all of the following **except** :

(A) Each celebellar hemisphere influence the opposite motor cortex

(B) Celebral-cerebellar-cerebral circuit

(C) Cortico-ponto-dentato-thalamo-cortical circuit

(D) Direct control of motor neurons of same side

188. Damage to posteroventral nucleus in thalamic syndrome results in the **except** :

(A) Hyperalgesia

(B) Loss of tactile localization

(C) Ataxia

(D) Tactile discrimination is intact

189. Sleep spindles :

(A) Appear during stage 1 of NREM sleep

(B) Persists till stage 4 of NREM sleep

(C) Are bursts of regular waves of few seconds duration

(D) Slow high voltage waves

190. A child demonstrates irregular, spasmodic, involuntary movements of limbs and facial muscles. He is most likely to have a lesion in :

(A) Caudate nucleus

(B) Precentral gyrus of cortex

(C) Postcentral gyrus of cortex

(D) Rubrospinal tract

191. Without external cue, the sleepwake cycle in humans :

(A) Unchanged

(B) Continue with cycle length of > 24 hours

(C) Continue with cycle length of > 24 hours

(D) Continue with cycle length of > 12 hours

192. Sexual behaviour of a person is dependent upon :

(A) Thalamus

(B) Hypothalamus

(C) Frontal lobe

(D) Temporal lobe

193. Which of the following is the definitive sign of Alzheimer disease ?

(A) Loss of short term memory

(B) The presence of intracellular neurofibrillary tangles

(C) A mutation is genes for amyloid precursor protein on chromosome 21

(D) A loss of cholinergic neurons in the nucleus basalis

194. Role of higher centres in olfaction is all of the following **except** :

(A) Anterior olfactory nucleus transfers olfactory memories from one side to other

(B) Piriform is concerned with discrimination and conscious perception

(C) Amygdala is concerned with emotional responses to olfactory stimuli

(D) Entorhinal cortex is concerned with initiating sneezing

195. Which of the following do **not** depict clear relationship between chemical composition of a substance and basic taste sensation ?

(A) Sour is due to $H^+$

(B) Salt is produced by $Na^+$

(C) Bitter is due to cations

(D) Sweet is due to saccharin

196. Which is not a correct match for dB level of various common sounds ?

(A) Zero dB : Absence of sound

(B) 20-30 dB : Whispering

(C) 60 dB : Normal conversation

(D) 120 dB : Noise and discomfort

197. Why is a sudden loud sound more likely to damage the cochlea than a prolonged loud sound ?

(A) The basilar fibers are sensitive to sudden sounds but adapt to prolonged sounds

(B) A sudden sound carries more energy

(C) The tympanic membrane becomes flaccid during prolonged loud sounds

(D) There is a latent period before the tympanic reflex can occur

198. Which type of ganglion cells transmit colour vision ?

(A) X-cells

(B) Y-cells

(C) Z-cells

(D) H-cells

199. A blind eye sees :

(A) White only

(B) Black

(C) Achromatic vision

(D) Nothing

200. More red colour is needed in the case of :

(A) Deuteranomaly

(B) Tritanomaly

(C) Protonomaly

(D) None of the above

## SPACE FOR ROUGH WORK

SEAL