



RAN-2006000101020001-S

RAN-2006000101020001-S

1st MBBS Examination January - 2024

Physiology : Paper - I

Time: 3 Hours]

[Total Marks: 100

સૂચના : / Instructions

- (1) નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of signs on your answer book

Name of the Examination:

1st MBBS

Name of the Subject :

Physiology : Paper - I

Subject Code No.: 2006000101020001-S

Seat No.:

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
|--|--|--|--|--|--|

Student's Signature

Section - A : MCQ

(20 marks)

- 1) Dehydration develops more rapidly and is frequently more severe in children than adults because in children :
 - a. ECFV/ICFV ratio is smaller
 - b. ECFV/ICFV ratio is same
 - c. Total body water is larger
 - d. Total ECFV is smaller
- 2) Nernst equation deals with :
 - a. Oxygen uptake by the body
 - b. Forces acting on ions across the cell membrane
 - c. Cellular ATP levels
 - d. Plasma bicarbonate level
- 3) Intrinsic factor of castle is secreted by which of the following cells in gastric glands:
 - a. Chief cells
 - b. Enterochromaffin cells
 - c. Parietal or oxyntic cells
 - d. B cells
- 4) Electrical coupling between adjacent cells in visceral smooth muscle can be attributed to which of the following?
 - a. Dense bodies
 - b. Gap junctions
 - c. Intermediate fibers
 - d. Mechanical junctions

RAN-2006000101020001-S]

[1]

[P.T.O.]

P1787

- 5) A single contraction of skeletal muscle is most likely to be terminated by which of the following actions?
- Closure of the postsynaptic nicotinic acetylcholine receptor
 - Removal of acetylcholine from the neuromuscular junction
 - Removal of Ca^{2+} from the terminal of the motor neuron
 - Ca^{2+} reuptake by Sarcoplasmic Reticulum.
- 6) Sequence of events involved during phagocytic mechanism are
- Chemotaxis - Diapedesis - Opsonization - Phagocytosis
 - Diapedesis - Opsonization - Chemotaxis - Phagocytosis
 - Diapedesis - Chemotaxis - Opsonization - Phagocytosis
 - Phagocytosis - Diapedesis - Chemotaxis - Opsonization
- 7) Which is **WRONG** regarding von Willebrand's factor?
- Regulates circulating level of factor VIII
 - Produced by endothelial cell
 - Prevents platelet adhesion to collagen
 - Factor VIII gets activated after separating from it
- 8) Widely used clinical test for estimation of GFR is
- Inulin clearance
 - Creatinine clearance
 - Sucrose clearance
 - Radioactive cobalt labeled vitamin B12
- 9) Decompression sickness :
- Results from CO_2 bubbles in the body fluids
 - Can be prevented by rapid decompression
 - Is characterized by pains and sometimes paralysis
 - Can occur if one descends a mountain too rapidly
- 10) Functional residual capacity of lung :
- Is the volume remaining in the lungs after a forceful expiration
 - In normal individual is 1100 ml.
 - Represents the point of the breathing cycle where the lung tissue elastic recoil and chest wall outward expansion are balanced and equal.
 - Is equal to $\text{RV} + \text{ERV} + \text{TV}$
- 11) Right shift of HbO_2 is observed in
- | | |
|-------------------------|----------------|
| a. Hypothermia | b. Alkalosis |
| c. Increased 2, 3 - DPG | d. Hypocapnoea |

- 12) Oncotic pressure of plasma is affected in majority by ;
- Albumin
 - Globulin
 - Electrolytes
 - Fibrinogen
- 13) All or none response in a nerve is applicable to :
- A mixed nerve
 - Only a sensory nerve
 - Only a motor nerve
 - A single nerve fibre
- 14) Cardiac muscle **CAN NOT** be tetanized because :
- Heart has abundant blood supply
 - It has high myoglobin content
 - Contractile response is more than half over during the action potential
 - Less than 1% of total energy liberated is provided by aerobic metabolism
- 15) Achalasia cardia is characterized by :
- Accumulation of food in the oesophagus
 - Relaxation of cardiac sphincter
 - Decreased response of lower oesophageal sphincter to circulating gastrin
 - Increase in number of nitric oxide neurons in the lower oesophagus
- 16) Given Maximum Voluntary Ventilation as 150 l/min and Respiratory Minute Volume as 6 l/min, Dyspneic Index is calculated to be :
- 4%
 - 104%
 - 96%
 - 65%
- 17) The hematocrit is the most useful single index in determining the degree of :
- Anemia
 - Hypochromia or anemia
 - Leukopenia
 - Thrombocytopenia or thrombocytosis
- 18) What percentage of glomerular filtrate is normally reabsorbed?
- 1%
 - 10%
 - 80%
 - 99%
- 19) Which of the following immunity is present from our birth?
- Innate Immunity
 - Active immunity
 - Passive immunity
 - Acquired immunity

20) During acclimatization to high altitude all of the following take place
EXCEPT :

- a. Increase in minute ventilation
- b. Increase in the sensitivity of central chemoreceptors
- c. Increase in the sensitivity of carotid body to hypoxia
- d. shift of HbO₂ dissociation curve to the left

Section - B

(40 marks)

Q. 1. Long Answer Questions.

(10 marks)

- 1) A 50 old male with type 1 personality, a heavy smoker and an alcoholic came with complain of retrosternal burning and abdominal pain 2-3 hours after the meal. The burning was relieved on having a glass of cold milk.
 - a) Name this pathological condition. - 1 mark
 - b) Enumerate few causes for this condition. - 1 mark
 - c) Describe the Davenport mechanism of HCl secretion. - 5 marks
 - d) What is the physiological basis of treatment for this condition. - 3 marks

Q. 2. Answer in Short. (Any 5 out of 6)

(5 × 3 = 15 marks)

- a. Explain the physiological basis of management of myasthenia gravis.
- b. Fight and flight reaction
- c. Erythropoietin.
- d. Intercellular Junctions.
- e. Micturition Reflex.
- f. Doctor patient relationship

Q. 3. Short notes. (Any 3 out of 4)

(3 × 5 = 15 marks)

- a. Apoptosis.
- b. Cell mediated Immunity.
- c. Factors affecting Cardiac output.
- d. Chemical regulation of respiration

Section - C

(40 marks)

Q. 4. Long Answer Questions.

(10 marks)

Define blood pressure. - 1 mark

Enumerate various regulatory mechanisms for maintaining arterial blood pressure. - 4 marks

Describe baroreceptor mechanism. - 4 marks

What is orthostatic hypotension. - 1 mark

Q. 5. Answer in Short. (Any 5 out of 6)

(5 × 3 = 15 marks)

- a. Erlanger Gasser classification of nerve fibres
- b. Monge's disease
- c. Pharyngeal phase of Deglutition
- d. Tubulo-glomerular feedback mechanism
- e. Endoplasmic Reticulum
- f. Lymph

Q. 6. Short notes. (Any 3 out of 4)

(3 × 5 = 15 marks)

- a. Describe walk along theory of muscle contraction
- b. Platelets
- c. Functions of Saliva
- d. Dead space



RAN - 2006000101020002 - S

RAN-2006000101020002-S

1st MBBS Examination January - 2024

Physiology : Paper - II

Time: 3 Hours]

[Total Marks: 100

सूचना : / Instructions

(1)

नीचे दृष्टवित् नशानीवाणी विगतो उत्तरवही पर अवश्य लभवी.

Fill up strictly the details of ✎ signs on your answer book

Name of the Examination:

✎ 1st MBBS

Name of the Subject :

✎ Physiology : Paper - II

Subject Code No.: 2006000101020002-S

Seat No.:

| | | | | | |
|--|--|--|--|--|--|
| | | | | | |
|--|--|--|--|--|--|

Student's Signature

Section - A : MCQ

(20 marks)

- 1) Stereognosis is lost if there is damage to :
 - a) Dorsal column
 - b) Cerebellum
 - c) Motor cortex
 - d) Basal ganglia
- 2) After falling down from a staircase a young woman is found to have partial loss of voluntary movement on the right side of the body and loss of pain and temperature sensation on the left side below the mid-thoracic region. The probable site of lesion is
 - a) Transection of the right half of the spinal cord in the thoracic region
 - b) Transection of the left side of the spinal cord in the thoracic region
 - c) Transection of sensory and motor pathways on the right side of the pons
 - d) Transection of the left half of the spinal cord in the lumbar region
- 3) Regarding lower motor neurone disease, which sentence is FALSE :
 - a) It involves large number of muscles
 - b) Causes eventual wasting of the muscles concerned.
 - c) deep reflexes are abolished.
 - d) Superficial reflexes are abolished

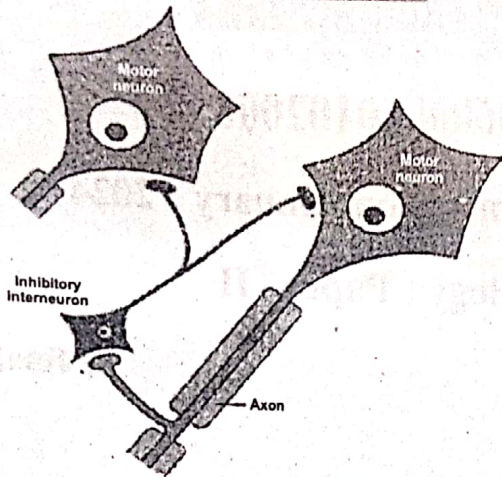
RAN-2006000101020002-S]

[1]

[P.T.O.]

PI788

4) Following diagram shows _____



- a) Direct synaptic inhibition b) Renshaw cell inhibition
c) Feed forward inhibition d) Presynaptic inhibition

5) Place the events of the Action Potential in their correct sequence.

A. Sodium Gates Close Potassium Gates Open

B. Depolarisation

C. Resting Potential Restored

D. Repolarisation

E. Active Transport of Na^+ & K^+

F. All Sodium Gates open

a) A-B-C-D-E-F b) D-F-C-B-E-A

c) F-B-A-D-E-C d) F-E-D-C-A-B

6) Highest integration centre for autonomic nervous system is :

a) Cerebellum b) Hypothalamus

c) Spinal cord d) Basal Ganglia

7) Following cell helps in myelination :

a) WBC b) Oligodendrocyte

c) RBC d) Astrocytes

8) Hormones produced by anterior pituitary gland are all EXCEPT :

a) Aldosterone b) Growth hormone

c) Thyroid stimulating hormone d) Follicle stimulating hormone

9) Vasopressin is secreted by :

a) Paraventricular nucleus b) Supra optic nucleus

c) Anterior nucleus d) Posterior nucleus

- 20) Resting membrane potential is mainly due to :
- a) Sodium ions
 - b) Potassium ions
 - c) Chloride ions
 - d) Calcium ions

Section - B

(40 marks)

1. Case based question.

(10 marks)

A 45-year-old female patient came to hospital for chief complain of intolerance to heat and increased sweating. Other clinical features were diarrhea, exophthalmos (protrusion of eyeball), tachycardia, oligomenorrhea, decrease body weight, nervousness and anxiety, fatigue, inability to sleep, mild tremors in hands. Clinical findings were increased BMR, reduced levels of Thyroid stimulating hormone.

- a) What is the most probable diagnosis? Which hormone is involved in the above condition? (2 marks)
- b) Enumerate any 5 actions of the hormone involved in the above case (5 marks).
- c) Name any 3 tests which can be performed to confirm the above diagnosis. (3 marks)

2. Notes. (3 out of 4)

(15 marks)

- 1) Pyramidal tract
- 2) Temperature regulation
- 3) Spermatogenesis
- 4) Myopia

3. Short notes. (5 out of 6)

(15 marks)

- 1) Ovulation
- 2) Functions of oestrogen
- 3) Myelination
- 4) Functions of cerebellum
- 5) Neuroglia
- 6) Reflex arc

Section - C

(40 marks)

1. Structured LAQ.

(10 marks)

Describe visual pathway with diagram and describe defects in visual pathway. (7 + 3)

2. Notes. (3 out of 4)

(15 marks)

- 1) Functions of Oxytocin
- 2) Waves in a normal Electro encephalogram.
- 3) Properties of sensory receptors.
- 4) Stretch reflex.

3. Short notes. (5 out of 6)

(15 marks)

- 1) Saltatory conduction.
- 2) Pregnancy tests.
- 3) Acromegaly
- 4) Summation
- 5) Functions of frontal lobe.
- 6) Aqueous humor.