



RAN - 2006000101020001

**RAN-2006000101020001****First Year M.B.B.S. Examination January - 2023****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:

First Year M.B.B.S.

Name of the Subject:

Physiology: Paper - I

Subject Code No.: 2006000101020001

Seat No.:

     

Student's Signature

- (2) SECTION A (MCQ) is given in separate sheet.  
(3) Draw diagrams and flow chart wherever required.

**SECTION A (MCQs)****20 Marks****Select the most appropriate choice in each of the following MCQ**

- Microfilaments are made up of
  - Actin and Myosin
  - Tubulin  $\alpha$  and  $\beta$
  - Kinesin
  - Dynein
- Example of negative feedback mechanism
  - Hodgkin's cycle
  - Enzyme cascade of coagulation
  - Blood pressure regulation
  - Parturition reflex initiated by oxytocin
- $\text{Na}^+ - \text{K}^+ \text{ATPase}$  is
  - Extrinsic protein
  - Transmembrane protein
  - Peripheral protein
  - Intracellular protein
- Equilibrium potential of an ion is determined by
  - Gibb-Donnan membrane equation
  - Nernst equation
  - Constant field Goldman Hodgkin Katz equation
  - Sodium potassium ATPase pump

5. Increase in cytosolic calcium ion from intracellular storage during smooth muscle contraction is due to
  - a) cAMP
  - ☒ b) IP3-DAG
  - c) cGMP
  - d)  $Ca^{2+}$  channels
6. Erythropoietin secretion is decreased by
  - a) Thyroxine
  - b) Nucleotide
  - c) ACTH
  - ☒ d) Oestrogen
7. Increase in ESR is seen in
  - a) Sick cell Anaemia
  - b) Allergic condition
  - ☒ c) Chronic infection
  - d) Polycythemia
8. Biconcave shape of the RBC is maintained by ..... & deficiency will lead to.....
  - ☒ a) Glutathione, Anemia
  - ☒ b) Spectrin, Spherocytosis
  - c) G-6-P-D, microcytic anemia
  - d) Spectrin, Sick cell anemia
9. Sequence of events involved during phagocytic mechanism are
  - ☒ a) Chemotaxis - Diapedesis - Opsonization - Phagocytosis
  - b) Diapedesis - Opsonization - Chemotaxis - Phagocytosis
  - ☒ c) Diapedesis - Chemotaxis - Opsonization - Phagocytosis
  - d) Phagocytosis - Diapedesis - Chemotaxis - Opsonization
10. Sinus arrhythmia occurs because of
  - ☒ a) Variation in vagal tone
  - b) Hyperthyroidism
  - c) Exercise
  - d) Reflex response to hypotension
11. Inverted T wave is observed in
  - a) Ventricular hypertrophy
  - ☒ b) Myocardial infarction
  - c) Hyperkalemia
  - d) AV Nodal block
12. Atrial systole is represented by which of the following wave in JVP?
  - a) x
  - ☒ b) y
  - c) v
  - ☒ d) a
13. Normal value of Respiratory Quotient is
  - a)  $> 1$
  - b) 1
  - ☒ c) 0.8
  - d) 0.5
14. Hyperventilation leads to
  - a) Tetany
  - b) Dyspnoea
  - ☒ c) Respiratory Alkalosis
  - ☒ d) Respiratory Acidosis

15.  $H^+$  secretion by proximal tubule involves
- ☒ a) Formation of Carbonic Acid
  - ☐ b)  $Na^+K^+ATPase$
  - ☐ c) Generation of new  $HCO_3^-$
  - ☐ d) Excretion of  $NH_4$
16. Hyperosmotic urine is produced in
- ☐ a) Diabetes Mellitus
  - ☒ b) SIADH
  - ☒ c) Cushing Syndrome
  - ☐ d) Renal Failure
17. Renin secretion is increased by
- ☒ a) Hypotension
  - ☐ b) Hypertension
  - ☐ c)  $Na^+$  excess
  - ☐ d) Overhydration
18. All are True for Swallowing Reflex except
- ☒ a) It has its reflex centres in the cervical segments of the spinal cord
  - ☒ b) It includes inhibition of respiration
  - ☐ c) It is initiated by a voluntary act
  - ☐ d) It is dependent on intrinsic nerve networks in the oesophagus
19. The liver is the principal site for
- ☐ a) Synthesis of plasma globulins
  - ☒ b) Synthesis of plasma albumin
  - ☐ c) Synthesis of vitamin B12
  - ☒ d) Storage of vitamin C
20. All the following are True for Brown Fat except
- ☒ a) Richer in mitochondria than ordinary fat
  - ☐ b) More vascular than ordinary fat
  - ☒ c) Is stimulated to generate more heat when its parasympathetic nerve supply is stimulated
  - ☐ d) Is more important than shivering in neonatal thermoregulation

**SECTION - B**
**40 Marks**

- Q.1** A 41 year old female exhibits limb muscle weakness and difficulty in swallowing leading at the end of the day to total dysphagia, symptoms decreasing with rest and sleep. On examination she also has difficulty in chewing, dysarthria and bilateral eyelid ptosis. Remarkable recovery was seen after intramuscular injection of Neostigmine. **(10 marks)**
- Identify the condition and describe its pathophysiology. **(1+3 marks)**
  - What is the cause for her symptoms worsening at the end of the day and decreasing with rest and sleep? **(2 marks)**
  - Explain the mechanism of improvement with Neostigmine. **(2 marks)**
  - Indicate any test which can be done for diagnosis and write additional method of management. **(1+1 marks)**
- Q.2 Answer in Short (Any 5 out of 6)** **(5×3=15 marks)**
- Golgi apparatus
  - Genesis of Resting Membrane Potential
  - Rh Blood group
  - SA node has specialized cells and triggers rhythmic self-excitation. Explain
  - Differences between Isotonic and Isometric contraction.
  - Pernicious anaemia
- Q.3 Short notes (Any 3 out of 4)** **(3×5=15 marks)**
- Regulation of Heart rate
  - Types of T-cells and their functions.
  - Thalassemia
  - Short term mechanism of Regulation of Blood Pressure





**SECTION - C**

**40 Marks**

- Q.4** Describe the mechanism of gastric HCl secretion. Enumerate functions of gastric HCl. Describe Regulation of gastric HCl secretion. **(5+2+3=10 marks)**
- Q.5 Answer in Short (Any 5 out of 6)** **(5x3=15 marks)**
1. Cause and Clinical manifestations of Caisson's disease
  2. Draw and label Normal Electrocardiogram
  3. Describe three Functions of platelets
  4. Describe movements of large intestine
  5. Osmosis
  6. Obligatory urine volume
- Q.6 Short notes (Any 3 out of 4)** **(3x5=15 marks)**
1. Obstructive versus Restrictive Lung disease
  2. Oxy-Hb dissociation curve
  3. Countercurrent mechanism
  4. Micturition reflex