

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^{++} 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)

- a. Identify the condition and describe its pathophysiology. (1+3 marks)
- b. What is the cause for her symptoms worsening at the end of the day and decreasing with rest and sleep? (2 marks)
- c. Explain the mechanism of improvement with Neostigmine. (2 marks)
- d. 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)**

1. Golgi apparatus
2. Genesis of Resting Membrane Potential
3. Rh Blood group
4. SA node has specialized cells and triggers rhythmic self-excitation. Explain
5. Differences between Isotonic and Isometric contraction.
6. Pernicious anaemia

Q.3**Short notes (Any 3 out of 4)****(3×5=15 marks)**

1. Regulation of Heart rate
2. Types of T-cells and their functions.
3. Thalassemia
4. 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
-



RAN - 2006000101020002

RAN-2006000101020002**First Year M.B.B.S. Examination January - 2023****Physiology : Paper - II****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 - II

Subject Code No.: 2006000101020002

Seat No.:

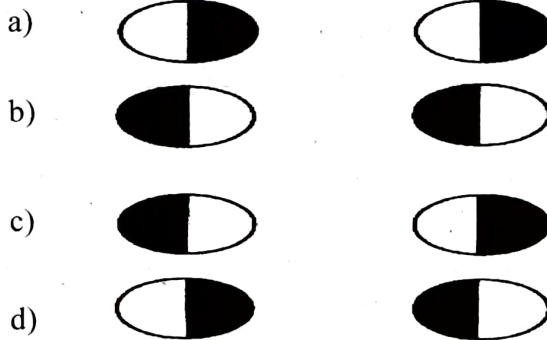
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Student's Signature

- (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**

1. The absence of sense of taste is known as
 a) Anosmia c) Ageusia
 b) Hypogeusia d) Dysgeusia
2. Right homonymous hemianopia means



3. Non fluent aphasia is produced by lesion of
 - a) Broca's area
 - b) angular gyrus
 - c) parietal lobe
 - d) frontal lobe
4. Receptor potential generated in photoreceptors are _____ type
 - a) Depolarizing
 - b) Hyperpolarizing
 - c) Spike potential
 - d) Action potential
5. Which of the following cutaneous receptor responds to painful stimuli?
 - a) Merkel's disc
 - b) Ruffini'send organs
 - c) Naked nerve ending
 - d) Pacinian corpuscles
6. Amorphosynthesis is
 - a) Lack of awareness of somatic sensations from the opposite side of body
 - b) Lack of awareness of somatic sensations from the same side of body
 - c) Lack of awareness of visceral sensations from the same side of body
 - d) Lack of awareness of touch sensations from the opposite side of body
7. Progressive hepatolenticular degeneration leads to
 - a) Athetosis
 - b) Parkinson's disease
 - c) Torsion chorea
 - d) Wilson's disease
8. The receptors for pressure, stretch and kinaesthetic impulses are
 - a) Organ of Corti
 - b) End bulb of Krause
 - c) Meissner's corpuscles
 - d) Pacinian corpuscles
9. Astigmatism may be corrected by use of
 - a) Concave lens
 - b) Bifocal lens
 - c) Cylindrical lens
 - d) Convex lens
10. Umami taste is because of
 - a) Glucose
 - b) Sodium chloride
 - c) Glutamic acid
 - d) Hydrogen ion
11. Secretion of Parathormone is controlled by
 - a) Anterior pituitary
 - b) Posterior pituitary
 - c) Hypothalamus
 - d) Blood calcium level
12. Glucagon secretion is inhibited by
 - a) Hypoglycemia
 - b) Hyperglycemia
 - c) Pancreozymin
 - d) Protein meal

13. Paracrine are chemical messengers
 - a) Secreted by cells into the extracellular fluid and affect neighbouring target cells of different type
 - b) Secreted by cells into the extracellular fluid and affect the functions of the same cell that produced them
 - c) Secreted by cells but remain inside the cell
 - d) None of the above
14. The most active form of Vitamin D is
 - a) Vitamin D3
 - b) 7-Dehydrochole calciferol
 - c) Calcitriol
 - d) 25-OH vitamin D
15. Lactational amenorrhoea is due to the effect of
 - a) Dopamine
 - b) Cortisol
 - c) Prolactin
 - d) Inhibin
16. IUCD (Intrauterine contraceptive device)
 - a) Inhibits ovulation
 - b) Makes the intrauterine environment hostile to nidation of fertilized ovum
 - c) Prevents menstruation
 - d) Prevents fertilization of ovum
17. The deficiency of hormone which causes Osteoporosis of bone in old age
 - a) Progesterone
 - b) Follicle stimulating hormone
 - c) Leutinizing hormone
 - d) Oestrogen
18. The most commonly used synthetic Oestrogen are
 - a) Ethinyl estradiol
 - b) Norgestrel
 - c) Ethynodiol
 - d) Norethindrone
19. Olympic level endurance fitness is associated with an exceptionally high
 - a) Haemoglobin level
 - b) Oxygen saturation of blood
 - c) Vital capacity
 - d) Resting stroke volume
20. A rise in the osmolality of extracellular fluid may lead to all except
 - a) Suppression of sweat secretion
 - b) Thirst
 - c) Release of Vasopressin
 - d) Fall in intracellular fluid volume

SECTION - B**(40 Marks)**

- Q.1** An 8 year old child was brought to the OPD by the parents. On enquiry from the parent, the child had outplayed milestones, standing, speech, eruption of teeth etc. On examination, the child appeared dwarf and showed pot belly, umbilical hernia, stunted growth, low IQ and reduced reflex activity. **(10 marks)**
- a) Identify the condition. **(1 mark)**
 - b) What is the cause of the disorder? **(1 mark)**
 - c) What tests can be performed to confirm diagnosis? **(2 marks)**
 - d) Describe the various types of Dwarfism with their causes and features. **(6 marks)**

- Q.2** **Answer in Short(Any 5 out of 6)** **(5×3=15 marks)**
- 1. Responsibilities of a doctor
 - 2. Functions of Sertoli cells
 - 3. Effects of increase in Serum Calcium levels
 - 4. Secretion, Regulation and Function of Melatonin **(1+1+1 mark)**
 - 5. Neuroglia
 - 6. Effects of removal of ovaries

- Q.3** **Short notes (Any 3 out of 4)** **(3×5=15 marks)**
- 1. Functions and Regulation of Aldosterone **(3+2 marks)**
 - 2. Mechanisms of Heat loss from body to maintain Body Temperature
 - 3. Maternal changes during Pregnancy
 - 4. Puberty

SECTION - C**(40 Marks)**

- Q.4** Describe connections and Functions of Hypothalamus. **(3+7) (10 marks)**
- Q.5** **Answer in Short (Any 5 out of 6)** **(5×3=15 marks)**
- 1. Visual Agnosia
 - 2. Sound frequency is determined by place principle. Explain.
 - 3. Reduced Eye
 - 4. Factors affecting excitability of nerve fibre
 - 5. Upper Motor Neurons and Lower Motor Neurons
 - 6. Sensory and Association areas of Temporal Lobe.

- Q.6** **Short notes (Any 3 out of 4)** **(3×5=15 marks)**
- 1. Sympathetic Nervous system
 - 2. Parts and Functions of Middle Ear **(2+3marks)**
 - 3. Properties of Receptors
 - 4. Neurons in Retina (including their connections and Functions)



RAN - 2006000101030001

RAN-2006000101030001**1st MBBS Examination January - 2023****Biochemistry - Paper I - Set I****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 :

Biochemistry - Paper I - Set I

Subject Code No.: 2006000101030001

Seat No.:

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Student's Signature

Section A : MCQ**20**

- (2) All questions are compulsory.
 (3) Each MCQ has only one correct answer.
 (4) One mark for correct answer. No negative marking.

- The organ which cannot utilize ketone bodies as fuel is
 - Brain
 - Cardiac muscle
 - Skeletal muscle
 - Liver
- Which of the following organelle has DNA?
 - Lysosomes
 - Peroxisomes
 - Mitochondria
 - Microsomes
- Zinc is present in all enzymes EXCEPT:
 - Alkaline phosphatase
 - Amylase
 - Carbonic anhydrase
 - Carboxypeptidase
- Which of the following is not synthesised in endoplasmic reticulum?
 - Ganglioside
 - Glycoproteins
 - RNA
 - Lipoproteins
- Which of the following organelle can cause autidigestion?
 - Golgi bodie
 - Peroxisome
 - Microsomes
 - Lysosomes

6. Which of the following fatty acids present in surfactant?
 - a. Oleic acid
 - b. Stearic acid
 - c. Palmitic acid
 - d. Arachidonic acid
7. Structure of linolenic acid is:
 - a. 16 carbons, 2 double bond
 - b. 16 carbons, 3 double bond
 - c. 18 carbons, 2 double bond
 - d. 18 carbons, 3 double bond
8. Identical osazones are formed by :
 - a. Glucose & fructose
 - b. Glucose & mannose
 - c. Mannose & fructose
 - d. All of the above
9. Dietary fibre has following effect except:
 - a. Increases the blood glucose level
 - b. Increases stool bulk
 - c. Lowers cholesterol levels
 - d. Decreases the risk of cardiovascular disease
10. Excess intake of alcohol may produce lactic acidosis, BECAUSE:
 - a. Alcohol is oxidized to lactic acid
 - b. Alcohol is oxidized to acetaldehyde and then to lactic acid
 - c. NADH is generated, which converts pyruvate to lactate
 - d. Ethanol induces Cori's cycle, by which lactic acid produced from muscle is taken to liver
11. Keshan's disease occurs due to deficiency of:
 - a. Chromium
 - b. Zinc
 - c. Selenium
 - d. Lithium
12. Anion Gap is the difference in the plasma concentrations of:
 - a. (Chloride)-(Bicarbonate)
 - b. (Sodium)-(Chloride)
 - c. (Sodium+Potassium)-(Chloride+Bicarbonate)
 - d. (Sum of cations)-(Sum of anions)
13. Which of the following is not a dietary essential nutrient?
 - a. Linoleic acid
 - b. Isoleucine
 - c. Phenylalanine
 - d. Cysteine

14. Glycemic index is highest for:
- a. Fructose
 - b. Starch
 - c. Sucrose
 - d. Glucose
15. Uncouplers of oxidative phosphorylation :
- a. Inhibit F_0 subunit of ATP synthase
 - b. Inhibit F_1 subunit of ATP synthase
 - c. Make the inner mitochondrial membrane permeable to H^+
 - d. Inactivate cytochromes
16. Glucose uptake by liver is:
- a. Insulin dependent
 - b. Insulin independent
 - c. Energy consuming
 - d. All of the above
17. Which mineral element is prevent the development of dental caries?
- a. Calcium
 - b. fluoride
 - c. Phosphorus
 - d. Sodium
18. NADPH is required for all except:
- a. Cholesterol synthesis
 - b. Fatty acid synthesis
 - c. Reduction of Glutathione
 - d. Electron transport chain
19. Calculate LDL for this blood report: Cholesterol: 250 mg/dL, Triglyceride: 150 mg/dL, HDL: 30 mg/dL:
- a. 40mg/dL
 - b. 50 mg/dL
 - c. 190mg/dL
 - d. 170mg/dL
20. All of the following are antioxidant except:
- a. Hydrogen peroxide
 - b. Superoxide dismutase
 - c. Glutathione peroxidase
 - d. Catalase

Instructions for section B & C:

- (1) Use blue/black ball point pen only.
- (2) The numbers to the right indicates full marks.
- (3) Draw diagrams wherever necessary

Q. 2 Long Answer Questions. (ANY TWO) (2 × 10 = 20)

- A. Explain beta-oxidation of 16 carbon saturated fatty acid. Add a note on its regulation and energetics. (6+4).
- B. Describe various components of electron transport chain. Explain chemi-osmotic theory of oxidative phosphorylation. Describe the inhibitors and uncouplers of electron transport chain. (4+2+4)
- C. Define the gluconeogenesis. Enumerate the substrates for gluconeogenesis. Describe briefly the metabolic pathways involved in gluconeogenesis. (1+2+7)

Q. 3 Write Brief Answer / Justifications/ Biochemical basis. (ANY TEN)

(10 × 2 = 20)

- a) Mention the significance of dietary fibres in the diet.
- b) Significance of HMP shunt pathway.
- c) Bile salts are required for digestion and absorption of lipid.
- d) Cataract is more common in uncontrolled diabetes mellitus patients.
- e) Metabolic adaptations in starvation.
- f) Omega 3 fatty acids are beneficial to health. Justify.
- g) Fruity odour of breath is characteristic of Diabetic Ketoacidosis patients. Give reason.
- h) Significance of Rapaport-Leubering cycle in RBC.
- i) Fluoride container used to collect blood sample for blood glucose estimation.
- j) Mention the causes of metabolic acidosis. (Any four)
- k) Explain: copper is essential for normal collagen synthesis.

→ **SECTION C** ←

Q. 4 Short Answer Questions (ANY FOUR)

(2 × 10 = 20)

- A. Digestion and absorption of carbohydrates in the GIT.
- B. Detoxification reactions along with examples.
- C. What is BMR? What are the factors influencing the BMR?
- D. Kidney function test.
- E. Write the elements of effective communication of doctor and patient.

Case 1:

A primigravida was admitted to the emergency department due to bleeding per vagina at 28 weeks of gestation. She underwent for emergency caesarean section delivery due to fetal distress. Newborn required endotracheal intubation at birth for absence of respiratory efforts. New born had pale skin and was severely hypoxic. New born was diagnosed as acute respiratory distress syndrome.

ABG Finding	Observed values	Reference range
pH:	6.90	(7.35-7.45)
HCO ₃ ⁻	23 mmol/L	(22-26 mmol/L)
pCO ₂ :	54 mmHg	(35-45 mmHg)

Questions :

- 1) What is surfactant? Give name of major surfactant in lung.
- 2) Interpret the ABG report with explanation.
- 3) How this condition can be diagnosed during pregnancy?
- 4) Why acute respiratory distress syndrome is more common in pre-term newborn? What is a role of steroid in this patient?
- 5) Enumerate two examples of phospholipids with its functions.

Case 2:

A women (26 year) presented in obstetric department with complain of abnormal menstrual cycles with heavy bleeding. She had also complained of tiredness, lethargy. On examination, she was clinically anaemic. She was diagnosed as case of Iron deficiency anaemia by clinician.

Lab parameter	Observed values	Reference range
Hb:	8.2 gm/dL	(12-16 gm/dL)
Iron:	25 micro g/dL	(33-193 micro g/dL)
TIBC.	480 micro g/dL	(261-462 micro g/dL)

Questions:

- 1) Give the major causes of Iron deficiency anaemia.
- 2) Mention the daily requirement and dietary sources of Iron.
- 3) Why iron is known as one-way element?
- 4) Enumerate factor affecting on Iron absorption.
- 5) Give name of protein required for Iron storage and Iron transport.



RAN-2006000101030002

1st MBBS Examination January - 2023

Biochemistry- Paper 2 - Set 3 (New CBME Pattern)

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 :

Biochemistry- Paper 2 - Set 3 (New CBME Pattern)

Subject Code No.: 2006000101030002

Seat No.:

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Student's Signature

SECTION A: MCQ

(20 marks)

Instructions:

- (1) All questions are compulsory.
- (2) Each MCQ has only one correct answer.
- (3) One mark for correct answer. No negative marking.

1. Which of the following is true for xeroderma pigmentosa?
 - a) It is a DNA mismatch repair defect disorder.
 - b) It is not associated with skin cancer.
 - c) Formation of thymine dimer in DNA.
 - d) None of the above.
2. The normal range of plasma osmolality is (mOsm/kg)
 - a) 450-500
 - b) 285-295
 - c) 180-200
 - d) 90-100
3. Which of the following is NOT true about regulation of eukaryotic gene regulation?
 - a) Chromatin remodeling
 - b) Lysine residues acetylation at amino terminal tails of histone molecule
 - c) Deoxycytidine residue methylation.
 - d) LacI gene products form a repressor tetramer that binds at the operator site to prevent inhibition of transcription.

RAN-2006000101030002]

[1]

[P.T.O.]

P2030

4. What is the binding site for regulatory protein in DNA?
 - a) N-base
 - b) pentose sugar
 - c) Major & minor groove
 - d) None of the above
5. All of the following biochemical parameters are indices of liver function, EXCEPT:
 - a) Bilirubin
 - b) Aminotransferases
 - c) Albumin
 - d) Creatinine
6. Which of the following vitamin deficiency is seen after gastrectomy?
 - a) Vitamin B₂
 - b) Vitamin B_i
 - c) Vitamin B₆
 - d) Vitamin B₁₂
7. Following substance is required for PCR
 - a) MgCl₂
 - b) CaCl₂
 - c) NaCl
 - d) All of the above
8. Which of the following is not a characteristic of genetic code?
 - a) Ambiguity
 - b) Universality
 - c) Non punctuality
 - d) Degeneracy
9. Pellegra is due to the deficiency of
 - a) Thiamine
 - b) Ribofabin
 - c) Niacin
 - d) Biotin
10. Which of the following are required for recombinant DNA technology?
 - a) Restriction endonucleases
 - b) Vectors
 - c) Blotting
 - d) All of the above
11. Which of the following statement is not true about tRNA?
 - a) It is a clover leaf shaped RNA
 - b) It is required for translation process
 - c) Ribosome moves along tRNA during Translation
 - d) Ribosome has peptidyl transferase activity

12. Which of the following is required for Aminoacid transamination reaction?
- NAD
 - PLP
 - FAD
 - NADH
13. Which of the following amino acid contain pyrrole ring?
- Histidine
 - Proline
 - Tryptophan
 - None of the above
14. Which of the following amino acid is not translated?
- Threonine
 - Hydroxy proline
 - Tyrosine
 - Isoleucine
15. Which of the following amino acids are excreted in urine due to membrane transport defect?
- Lysine, Arginine, Ornithine & Cystine
 - Lysine, Leucine, Ornithine & Cystine
 - Leucine, Arginine, Ornithine & Cystine
 - Lysine, Arginine, Ornithine & Citrulline
16. Okazaki fragments occur on:
- Leading strand
 - Lagging strand
 - Double helical parental strand
 - All of the above
17. In which cell of brain ammonia get metabolized to glutamine?
- Microglia
 - Neurons
 - Astrocytes
 - All of the above
18. Which of the following is not an intermediate in urea cycle?
- Carbamoyl phosphate
 - Ornithine
 - Citrulline
 - Lysine
19. Following is an example of functional enzyme in plasma.
- Aspartate transaminase
 - Amylase
 - Alkaline phosphatase
 - Plasminogen

20. Heme contains:
- a) Iron
 - b) Calcium
 - c) Magnesium
 - d) None of the above

SECTION B:

(40 marks)

Instructions for section B & C:

- (1) Use blue/black ball point pen only.
- (2) The numbers to the right indicates full marks.
- (3) Draw diagrams wherever necessary.

Q 2: Long Answer Questions (ANY TWO) (20)

- A. Describe procedure for DNA recombination. Add a note on applications of Recombinant Technology in medicine. (5+5)
- B. What is calcitriol and how it gets synthesized in the body? Write biochemical functions and deficiency manifestations of Vitamin D. Add a note on Hyper vitaminosis D (1+2+5+2)
- C. Describe important products synthesized from glycine. Add a note on inborn error of metabolism related to glycine. (5+5)

Q 3: Write Brief Answer / Justifications/ Biochemical basis (ANY TEN) (20)

- a) Histidine in protein has an important role as a buffer in the body.
- b) Folate deficiency is associated with FIGLU excretion in urine.
- c) Telomerase inhibitors are viewed as a potential anti cancer agents.
- d) Peptide glutathione is important for maintaining RBCs membrane integrity.
- e) Carcinoid syndrome leads to pellagra.
- f) Vitamin C deficiency leads to bleeding gums.
- g) Enumerate the different phases of cell cycle & their significance.
- h) Sick cell anemia is a molecular disease.
- i) What is proto-oncogene? Give 2 examples.
- j) Homocystinemia is one of the risk factor for Myocardial Infarction.
- k) Dietary deficiency of the proteins is associated with low blood urea levels.

SECTION C:**(40 marks)****Q 4: Short Answer Questions (ANY FOUR)****(20)**

- A. Electrophoresis.
- B. Wald's visual cycle.
- C. Post transcriptional modification.
- D. Biologically important peptides.
- E. Biochemical role of vitamin B12 & related disorders.

Q 5: Clinical Cases (ALL COMPULSORY)**(20)****Case 1:**

52 years old patient was admitted to the casualty department of hospital in a serious condition. He had become increasingly depressed after the death of his wife. His daughter found him in an unconscious state when she had come to see him in the morning. One and a half empty bottles of alcohol were found in the room. When the alcohol was examined for its contents it was found to be containing high amount of methanol. Doctors on duty diagnosed that it was a case of methanol intoxication and decided to start the intravenous infusion of ethanol.

1. Enumerate various classes of enzymes. Which class of enzymes is required to metabolize alcohols?
2. Why methanol is toxic?
3. Explain ethanol is used in the treatment of methanol poisoning.
4. Enumerate salient differences between competitive and non competitive inhibition.
5. Why in competitive inhibition K_m is increased but V_{max} is not affected?

Case 2:

A 56 year old man presented to his family doctor with weight loss, generalized weakness and lethargy of 6 months duration. During this time, he had been passing less urine than usual. On examination the patient was found to be slightly anemic and had a BP of 180/112mmHg.

Lab Investigations: blood urea- 200mg/dl, Serum Creatinine- 4mg/dl, Serum Na^+ -130 mmol/l, Serum K^+ 7 mmol/l Serum Ca^{+} 8 gm/dl and Serum phosphorous 7 gm/dl. Urine investigations: Sulphosalicylic acid test positive and Benedict's test negative. The diagnosis of chronic renal failure was made.

1. Justify the diagnosis with the help of clinical and laboratory features.
2. Explain the basis of anemia and hypocalcaemia.
3. What is microalbuminuria? Write its normal range.
4. Mention any four important functions of Albumin
5. Mention normal values of blood urea and serum Creatinine.



RAN - 2006000101010001

RAN-2006000101010001**1st M.B.B.S Examination January - 2023****Human Anatomy - Paper 1 (Set - 3)****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 M.B.B.S
- Name of the Subject :
 Human Anatomy - Paper 1 (Set - 3)
- Subject Code No.: 2006000101010001

Seat No.:

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Student's Signature

- (2) Write each section in separate answer book.
- (3) **In section A, all MCQs are compulsory, only one answer will be accepted, no negative marking & must be submitted within first 30 minutes.**
- (4) Section A carry 20 marks and Section B & C carry 40 marks each.
- (5) Draw labelled diagrams wherever necessary.
- (6) Write to the point.

SECTION A - MCQs**1×20 = 20 marks**

- Inferior thyroid artery is branch of
 - External carotid artery
 - Thyrocervical trunk
 - Costocervical trunk
 - Deep cervical artery
- Which of following is motor nerve to scalp?
 - Lesser occipital nerve
 - Greater occipital nerve
 - Auriculo-temporal neve
 - Posterior auricular nerve
- Which of following venous sinus lies in meningeal layers of dura matter?
 - Superior sagittal
 - Inferior sagittal
 - Occipital
 - Cavernous
- Combined actions of which muscles result in intorsion of eyeball?
 - Superior rectus and superior oblique
 - Inferior rectus and inferior oblique
 - Superior rectus and inferior oblique
 - Inferior rectus and superior oblique

5. Vertebral level of laryngotracheal junction is
 - a) C6
 - b) C7
 - c) T1
 - d) C5
6. Axilla contains all EXCEPT
 - a) Axillary tail
 - b) Intercostobrachial nerve
 - c) Trunks of brachial plexus
 - d) Long thoracic nerve
7. Action of acromial fibres of deltoid on shoulder joint is
 - a) Medial rotation
 - b) Lateral rotation
 - c) Adduction
 - d) None of above
8. All arise from common extensor origin of humerus EXCEPT
 - a) Extensor carpi radialis brevis
 - b) Extensor digiti minimi
 - c) Extensor carpi radialis longus
 - d) Extensor carpi ulnaris
9. Incorrect about ERB's paralysis is
 - a) Arm is adducted
 - b) Arm is medially rotated
 - c) Forearm is extended
 - d) Forearm is supinated
10. Ulnar nerve innervates
 - a) Medial half of flexor digitorum profundus
 - b) Lateral half of flexor digitorum profundus
 - c) Medial half of flexor digitorum superficialis
 - d) Lateral half of flexor digitorum superficialis
11. Pain & thermal sensations from forehead area is projected in
 - a) Principal sensory nucleus of trigeminal nerve
 - b) Spinal nucleus of trigeminal nerve
 - c) Mesencephalic nucleus of trigeminal nerve
 - d) Nucleus ambiguus
12. False about thalamic nuclei is
 - a) Anterior nucleus is part of limbic system
 - b) Medial nucleus is connected with prefrontal cortex
 - c) Ventral posterior medial nucleus receives spinal lemniscus
 - d) Ventral anterior nucleus is connected with motor & premotor cortex
13. All pass through inferior cerebellar peduncle EXCEPT
 - a) Vestibulocerebellar tract
 - b) Cerebello-vestibular tract
 - c) Anterior spino-cerebellar tract
 - d) Posterior spino-cerebellar tract
14. Which of following is functional component of trigeminal nerve?
 - a) General somatic afferent
 - b) Special somatic afferent
 - c) General visceral efferent
 - d) Somatic efferent
15. Which of following is receptor in muscle?
 - a) Motor end plate
 - b) Muscle spindle
 - c) Neurotransmitter
 - d) Motor unit

16. Perichondrium is absent in all EXCEPT
 - a) Articular cartilage
 - b) Intervertebral disc
 - c) Glenoid labrum
 - d) Elastic cartilage
17. Somites develop from
 - a) Paraxial mesoderm
 - b) Intermediate mesoderm
 - c) Lateral plate mesoderm
 - d) Endoderm
18. Nerve of second pharyngeal arch is
 - a) Facial
 - b) Recurrent laryngeal
 - c) Internal laryngeal
 - d) Glossopharyngeal
19. Type of joint between epiphysis and diaphysis is
 - a) Fibrous
 - b) Primary cartilaginous
 - c) Secondary cartilaginous
 - d) Plane synovial
20. All are examples of portal circulation EXCEPT
 - a) Hepatic circulation
 - b) Hypophyseal circulation
 - c) Pulmonary circulation
 - d) Renal circulation

SECTION B

Marks 40

Question 2. Attempt ANY TWO case scenario questions.

16 marks

- (1) 35 years old female is injured in a vehicular accident leading to fracture of shaft of humerus. Clinical examination revealed loss of cutaneous sensations in area of anatomical snuff box, lack of sweating on the back of arm and forearm and wrist drop. (1+2+2+3 marks)
 - (A) Enumerate neuro-vascular structures most likely injured in this condition.
 - (B) Describe origin and branches of affected artery.
 - (C) Describe origin and root value of affected nerve.
 - (D) Explain anatomical basis of above clinical findings.
- (2) 40 years old male patient brought to hospital with complains of high grade fever, severe pain in eye & forehead and orbital swelling on right side. He had history of incomplete course of antibiotics given for sepsis of upper lip 1 week ago. Clinical examination revealed periorbital oedema and extraocular muscles palsy on the same side. (2+2+4 marks)
 - (A) What is the most probable diagnosis?
 - (B) Based on clinical features, enumerate the affected nerves.
 - (C) Explain anatomical basis of clinical features.

- (3) 50 years old male with known case of pituitary tumour gradually develops impaired peripheral vision in outer temporal halves of both visual fields. (2+6 marks)

- (A) What is probable diagnosis for impaired vision?
(B) Describe various lesions associated with visual pathway.

Question 3.

- (A) Write short notes on ...(ANY TWO) 10 marks

- (1) Serratus anterior muscle
- (2) Median nerve in hand
- (3) Anastomosis around elbow joint

- (B) Write short notes on... 10 marks

- (1) Fertilization OR Chorionic villi
- (2) Development of spinal cord OR Development of palate

- (C) Write short note on.... (ANY ONE) 4 marks

- (1) Fibrous joint
- (2) Anastomosis

SECTION C

Marks 40

Question 4 Long questions.... (ANY TWO)

16 marks

- (1) Describe larynx as asked.
 - (a) Enumerate intrinsic muscles & describe muscle producing abduction of vocal cords.
 - (b) Laryngeal cavity
 - (c) Motor & sensory innervations
- (2) Describe submandibular gland under following heads.
 - (a) External features & relations
 - (b) Neuro-vascular supply
 - (c) Submandibular duct
- (3) Describe pterygopalatine fossa under following heads.
 - (a) Boundaries and communications
 - (b) List of contents
 - (c) Connections and branches of pterygopalatine ganglion

Question 5

(A) Write short notes on... (ANY TWO)

10 marks

- (1) Posterior spino-cerebellar tract
- (2) Fourth ventricle
- (3) Circle of Willis

(B) Write short notes on....

10 marks

- (1) Histology of spleen **OR** Histology of hyaline cartilage
- (2) Histology of thyroid gland **OR** Histology of cornea

(C) Write short note on....(ANY ONE)

4 marks

- (1) Saddle joints
 - (2) Implantation
 - (3) Histology of thymus
-



3. Inferior mesenteric vein drains into
 - a) Splenic vein
 - b) Left renal vein
 - c) Inferior vena cava
 - d) None of above
4. Vertebral level of aortic opening in thoraco-abdominal diaphragm is
 - a) T12
 - b) T10
 - c) T11
 - d) T8
5. At its lowest, recto-uterine pouch provides coat of peritoneum to
 - a) Urinary bladder
 - b) Uterine cervix
 - c) Uterine body
 - d) Vagina
6. Femoral nerve supplies all of following EXCEPT
 - a) Pectineus
 - b) Iliacus
 - c) Adductor magnus
 - d) Vastus medialis
7. All are lateral rotators of hip EXCEPT
 - a) Gluteus medius
 - b) Obturator internus
 - c) Quadratus femoris
 - d) Sartorius
8. Incorrect about adductor canal
 - a) Located at middle 1/3rd of thigh
 - b) Opens in popliteal fossa
 - c) Lies deep to Sartorius
 - d) Transmits profunda femoris vessels
9. Main muscular supports for medial longitudinal arch are all EXCEPT
 - a) Tibialis anterior
 - b) Peroneus brevis
 - c) Tibialis posterior
 - d) Flexor hallucis longus
10. Spring ligament connects
 - a) Talus & navicular
 - b) Calcaneum & navicular
 - c) Calcaneum & cuboid
 - d) Talus & cuboid
11. Incorrect about right coronary artery is
 - a) Gives marginal branch
 - b) Arises from anterior aortic sinus
 - c) Gives anterior inter-ventricular branch
 - d) Descends in right atrio-ventricular groove

12. Pleural sacs extend beyond thoracic cage at following sites EXCEPT
 - a) Right costo-xiphoid angle
 - b) Left costo-xiphoid angle
 - c) Right costo-vertebral angle
 - d) Left costo-vertebral angle
13. Correct about thoracic duct is
 - a) Enter thorax through vena caval opening
 - b) Drains into right subclavian vein
 - c) Courses through posterior & superior mediastinum
 - d) Lies posterior to oesophagus in superior mediastinum
14. All drain in coronary sinus EXCEPT
 - a) Great cardiac vein
 - b) Anterior cardiac veins
 - c) Middle cardiac vein
 - d) Posterior vein of left ventricle
15. Example of dense regular connective tissue is
 - a) Dermis
 - b) Superficial fascia
 - c) Capsule of glands
 - d) Tendon
16. Brunner's glands are located in
 - a) Duodenum
 - b) Jejunum
 - c) Ileum
 - d) Colon
17. Intra-embryonic coelom is formed in
 - a) Lateral plate mesoderm
 - b) Intermediate mesoderm
 - c) Paraxial mesoderm
 - d) Endoderm
18. Sinus venosus contributes in formation of
 - a) Left atrium
 - b) Left ventricle
 - c) Right atrium
 - d) Right ventricle
19. XO chromosomal abnormality in human being results in
 - a) Turner's syndrome
 - b) Down's syndrome
 - c) Cri-du-chat syndrome
 - d) Klinefelter syndrome
20. The karyotype of Androgen Insensitivity Syndrome is
 - a) 46XX
 - b) 46XY
 - c) 47XXY
 - d) 45X0

SECTION B

Q. 2 Attempt ANY TWO case scenario questions.

16 marks

- (1) 50 years old male with history of alcohol addiction since very long attended clinic with complains of distended abdomen and hematemesis. On examination, clinician found enlarged dilated veins radiating from umbilicus. (2+2+2+2 marks)
- (A) What should be the probable diagnosis?
(B) What is the cause of blood in vomit?
(C) Write important sites of porto-caval anastomosis.
(D) Which other common clinical features likely to occur in this patient?
- (2) 52 years old traffic police attended surgical OPD with complain of ulcer on medial side of ankle. On examination, his superficial veins of lower limb were dilated. (2+5+1 marks)
- (A) What is the most probable clinical condition in above case?
(B) Describe venous drainage of lower limb.
(C) What is saphena varix?
- (3) 47 years old male with history of smoking for 25 years presents with chest pain radiating to his left arm, sweating and nausea. His blood pressure is low and investigation reveals infarction of left lateral and parts of sternocostal and diaphragmatic surfaces of heart and damage to anterior aspect of interventricular septum. (1+5+2 marks)
- (A) Which artery is most likely to be affected in above case?
(B) Describe course, branches and areas of heart supplied by that artery.
(C) What is coronary dominance?

Q. 3 (A) Write short notes on. (ANY TWO)

10 marks

- (1) Obturator nerve
(2) Ligaments of knee joint
(3) Soleus muscle

(B) Write short notes on.

10 marks

- (1) Histology of sensory ganglion **OR** Histology of elastic artery
(2) Histology of liver **OR** Histology of vas deference

(C) Write short note on. (ANY ONE)

4 marks

- (1) Down's syndrome
- (2) Genetic counselling

SECTION C

Q. 4 Long questions. (ANY TWO)

16 marks

- (1) Describe stomach under following heads.
 - (a) Presenting parts
 - (b) Relations
 - (c) Blood supply
 - (d) Lymphatic drainage
- (2) Describe prostate along with applied aspects.
- (3) Describe inguinal canal in detail with applied aspects.

Q. 5 (A) Write short notes on. (ANY TWO)

10 marks

- (1) Broncho-pulmonary segments
- (2) Movements of ribs
- (3) Pericardial sinuses

(B) Write short notes on. (ANY TWO)

10 marks

- (1) Development of inter-ventricular septum
- (2) Development of urinary bladder
- (3) Rotation of midgut

(C) Write short note on.

4 marks

Cadaver as a teacher

OR

Intravenous pyelography