



RAN - 2006000101010001

**RAN-2006000101010001**

**F.Y. M.B.B.S. Examination April - 2023**

**Human Anatomy : Paper 1 - Set I**

**(New CBME Curriculum Pattern)**

**Time: 3 Hours ]**

**[ Total Marks: 100**

**सूचना : / Instructions**

(१)

नीचे दृष्टविले निशानीवाणी विगतो उत्तरवली पर अवश्य लक्षणी.  
Fill up strictly the details of signs on your answer book

Name of the Examination:

F.Y. M.B.B.S.

Name of the Subject :

Human Anatomy : Paper 1 - Set I (New CBME Curriculum Pattern)

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**

**1x20=20**

1. Medial branch of external carotid artery is
  - a) Ascending pharyngeal
  - b) Lingual
  - c) Posterior auricular
  - d) Facial
2. Combined actions of which muscles produce extorsion of eyeball
  - a) Superior oblique & superior rectus
  - b) Inferior oblique & inferior rectus
  - c) Inferior oblique & superior rectus
  - d) Superior oblique & inferior rectus
3. Muscle innervated by glossopharyngeal nerve is
  - a) Salpingopharyngeus
  - b) Stylopharyngeus
  - c) Palatopharyngeus
  - d) Levator veli palatini

4. Internal carotid nerve is branch of
  - a) Superior cervical sympathetic ganglion
  - b) Middle cervical sympathetic ganglion
  - c) Inferior cervical sympathetic ganglion
  - d) Otic ganglion
  
5. Expression of surprise is caused by
 

a) Corrugator supercilli	b) Nasalis
c) Frontalis	d) Procerus
  
6. All pierce clavipectoral fascia EXCEPT
 

a) Lateral pectoral nerve	b) Thoraco-acromial artery
c) Cephalic vein	d) Medial pectoral nerve
  
7. Structure(s) in deltopectoral groove is/are
  - a) Cephalic vein
  - b) Deltoid branch of thoraco-acromial artery
  - c) Both a & b
  - d) None of a & b
  
8. Action of dorsal interossei is
  - a) Flexion of interphalangeal joints
  - b) Adduction of fingers
  - c) Abduction of fingers
  - d) Extension of metacarpo-phalangeal joints
  
9. True about extensor pollicis longus
  - a) Insert over distal phalanx of thumb
  - b) Supplied by posterior interosseus nerve
  - c) Blood supply from anterior interosseus artery
  - d) All of above
  
10. Stabilising factors for shoulder joint include all EXCEPT
  - a) Tight capsule
  - b) Glenoid labrum
  - c) Rotator cuff
  - d) Splinting of humeral head between tendons of biceps & triceps



20. Example of elastic ligament is
- |                     |                           |
|---------------------|---------------------------|
| a) Ligamenta flava  | b) Sacrotuberous ligament |
| c) Deltoid ligament | d) Ilio-femoral ligament  |

**SECTION B**

**Marks:40**

**Que 2. Attempt any TWO case scenario questions.**

**16 marks**

- (1) 45 years old female attended clinic with complain of gradually developed painless mass in upper lateral quadrant of right breast. She also had complain of retracted nipple. On examination, clinician found that right axillary lymph nodes were palpable. **(2+2+4 marks)**
- (A) What is probable diagnosis?  
(B) Give anatomical basis of retracted nipple.  
(C) Describe lymphatic drainage of breast.
- (2) 50 years old male attended clinic with complain of loss of pain & thermal sensations on right side of face and loss of same sensations from left lower part of body. He also had complains of difficulty of speech and dysphagia. MRI revealed vascular lesion in postero-lateral aspect of medulla. **(2+1+5 marks)**
- (A) What should be probable diagnosis?  
(B) Name the artery involved.  
(C) Give anatomical basis of above mentioned clinical features.
- (3) 35 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.

**Que 3. (A) Write short notes on (ANY TWO)**

**10 marks**

- (1) Intermuscular spaces of scapular region  
(2) Pectoralis major muscle  
(3) Ulnar nerve in hand

**(B) Write short notes on**

**10 marks**

- (1) Somites **OR** Fertilization  
(2) Development of tongue **OR** Development of pituitary gland

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

4 marks

- (1) Cartilagenous joint
- (2) Deep fascia

SECTION C

Marks:40

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

16 marks

- (1) Describe larynx under following heads.
  - (a) Fibrous framework
  - (b) Laryngeal cavity
  - (c) Motor & sensory innervation
- (2) Describe parotid gland under following heads.
  - (a) External features & relations
  - (b) Structures traversing through its substance
  - (c) Neuro-vascular supply
- (3) Describe pterygopalatine fossa under following heads.
  - (a) Boundaries and communications
  - (b) List of contents
  - (c) Connections and branches of pterygo-palatine ganglion

10 marks

Que 5(A) Write short notes on (ANY TWO)

- (1) Pyramidal tracts
- (2) Circle of Willis
- (3) Superior colliculus

10 marks

(B) Write short notes on

- (1) Histology of hyaline cartilage OR Histology of cardiac muscle
- (2) Histology of mix salivary gland OR Histology of cerebellum

4 marks

(C) Write short note on (ANY ONE)

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



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**RAN-2006000101010002**

**F.Y.MBBS Examination April - 2023**

**Human Anatomy : Paper II - Set 3**

**(New CBME Curriculum Pattern)**

**Time: 3 Hours ]**

**[ Total Marks: 100**

**सूचना : / Instructions**

(१)

नीचे दृष्टावेल निशानीवाणी विगतो उत्तरवली पर अवश्य लभवी.  
Fill up strictly the details of signs on your answer book

Name of the Examination:

F.Y.MBBS

Name of the Subject :

Human Anatomy : Paper II - Set 3 (New CBME Curriculum Pattern)

Subject Code No.: 2006000101010002

Seat No.:

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Student's Signature
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- (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**

**1x20=20**

1. Stomach has relations with all of the following EXCEPT
  - a) Anterior abdominal wall
  - b) Left kidney
  - c) Gall bladder
  - d) Transverse mesocolon
2. True regarding coeliac trunk
  - a) Vertebral level of origin is L1
  - b) Right gastro-epiploic artery is branch of gastroduodenal artery
  - c) Common hepatic artery is the largest branch
  - d) It is artery of midgut

3. Right kidney is related to all EXCEPT
- 11<sup>th</sup> rib
  - Quadratus lumborum muscle
  - Transversus abdominis muscle
  - Thoraco-abdominal diaphragm
4. Vertebral level of vena caval opening in thoraco-abdominal diaphragm is
- T8
  - T9
  - T10
  - T12
5. Subdivision of peritoneal cavity posterior to stomach is called
- Omental bursa
  - Lesser sac
  - Omentum
  - Both a & b
6. Medial boundary of femoral ring is formed by
- Lacunar ligament
  - Inguinal ligament
  - Pectinate ligament
  - Pectineal fascia
7. Ligament preventing hyper-extension of hip joint is
- Pubo-femoral ligament
  - Ilio-femoral ligament
  - Inguinal ligament
  - Ischio-femoral ligament
8. Profunda femoris artery leaves femoral triangle by passing between
- Iliacus & psoas major
  - Psoas major & pectineus
  - Pectineus & adductor longus
  - Adductor longus & adductor brevis
9. Posterior primary rami of L1-L3 and S1-S3 supply skin of which quadrant of gluteal region?
- Upper & anterior
  - Upper & posterior
  - Lower & anterior
  - Lower & posterior
10. Lateral plantar nerve innervates all EXCEPT
- Adductor hallucis
  - Flexor digiti minimi brevis
  - 2<sup>nd</sup> lumbrical
  - Flexor digitorum brevis

11. Incorrect about intercostal nerves
- a) Provide motor fibres to peripheral part of diaphragm
  - b) Provide motor fibres to intercostals muscles
  - c) Provide sensory fibres to costal pleura
  - d) Lower nerves provide sensory fibres to peritoneum
12. Sternal angle level corresponds to all EXCEPT
- a) Beginning & end of arch of aorta
  - b) 2<sup>nd</sup> sterno-costal joint
  - c) Demarcation between superior and inferior mediastinum
  - d) Formation of superior vena cava
13. How many pairs of posterior intercostal arteries arise from descending thoracic aorta?
- a) 7
  - b) 8
  - c) 9
  - d) 10
14. Incorrect about visceral pleura
- a) Adherent to lung surfaces
  - b) Lines fissures of lungs
  - c) Pain insensitive
  - d) Innervated by somatic nerves
15. Lining epithelium of trachea is
- a) Pseudo-stratified ciliated columnar
  - b) Simple columnar
  - c) Stratified squamous non-keratinized
  - d) Stratified squamous keratinized
16. Example of dense regular connective tissue is
- a) Dermis
  - b) Superficial fascia
  - c) Capsule of glands
  - d) Tendon
17. Tissue develop from ectoderm of embryo is
- a) Nervous tissue
  - b) Muscular tissue
  - c) Connective tissue
  - d) None of above
18. Mullerian duct gives rise to
- a) Ovary
  - b) Fallopian tube
  - c) Uterus
  - d) Both b & c





- Que:3(A) Write short notes on (ANY TWO) 10 Marks**
- (1) Profunda femoris artery
  - (2) Ligaments of knee joint
  - (3) Tibialis anterior muscle
- (B) Write short notes on 10 marks**
- (1) Histology of autonomic ganglion **OR** Histology of lymph node
  - (2) Histology of colon **OR** Histology of ureter
- (C) Write short note on.... (ANY ONE) 4 marks**
- (1) Karyotyping
  - (2) Klinefelter syndrome

**SECTION C**

**Marks:40**

- Que:4 Long questions.... (ANY TWO) 16 marks**
- (1) Describe uterus under following heads.
    - (a) Subdivisions
    - (b) Axes
    - (c) Relations
    - (d) Supports
  - (2) Describe thoraco-abdominal diaphragm under following heads.
    - (a) Attachments
    - (b) Major openings
    - (c) Nerve supply
    - (d) Actions
  - (3) Describe portal vein in detail with applied aspects.

- Que:5(A) Write short notes on (ANY TWO) 10 marks**
- (1) Internal thoracic artery
  - (2) Coronary sinus
  - (3) Thoracic duct
- (B) Write short notes on (ANY TWO) 10 marks**
- (1) Development of right atrium
  - (2) Development of pancreas
  - (3) Mesonephric duct
- (C) Write short note on 4 marks**
- Cadaver as a teacher
- OR**
- Hysterosalpingography



5. In the body muscle contractions are subtetanic type but not jerky because of
  - a) Recruitment of motor units
  - b) Frequency of nerve impulse
  - c) Synchronization of nerve impulse
  - d) Asynchronous discharge of motor units
  
6. Eosinophilia occurs in
 

a) Stressful condition.	b) Urticaria
c) Pyogenic infection.	d) Corticosteroid therapy.
  
7. The function of suppressor T (Ts) cells is
  - a) Secreting interleukin-2
  - b) Suppressing the activity of B lymphocytes.
  - c) Preventing the activity of cytotoxic T cells
  - d) Induction of Apoptosis
  
8. A 2-year-old boy bruises easily and has a history of nosebleeds. He has also had bleeding into his knee joints after minimal trauma. You would suspect that this patient has a deficiency of which coagulation factor?
 

a) Prothrombin activator	b) Factor II
c) Factor VIII	d) Factor X
  
9. The property of aggregation of platelets is because of
 

a) von Willebrand factor	b) Thrombosthenin
c) Thromboxane A2	d) Serotonin
  
10. Atrioventricular dissociation occurs in
  - a) First degree AV nodal block
  - b) Second degree AV nodal block
  - c) Third degree AV nodal block
  - d) Mobitz type II block
  
11. Which is the most potent coronary vasodilator
 

a) Adenosine	b) Lactate
c) Prostaglandins	d) Dopamine
  
12. Heart rate is calculated by dividing 1500 by distance between which of the following two consecutive waves?
 

a) P-P	b) R-R
c) P-R	d) T-T
  
13. Carbon monoxide poisoning is a type of
 

a) Anemic hypoxia	b) Histotoxic hypoxia
c) Hypoxic hypoxia	d) Stagnant hypoxia



[Time:3 Hours]

[Total Marks: 100]

**Instruction:**

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

**Section - "B"**

**(40 Marks)**

- Q.1** A 43-year-old man presents to the physician's clinic with complaints of epigastric pain. After a thorough workup, the patient is diagnosed with peptic ulcer disease. He is started on a medication that inhibits the "proton pump" of the stomach. **(10 marks)**
- a. What is the "proton pump" that is referred to above? **(1 mark)**
  - b. What type of cell membrane transport would this medication be blocking? **(1 mark)**
  - c. Describe the types of transport where molecules use ATP as energy to move against concentration gradient across a cell membrane? **(4 marks)**
  - d. Describe Peptic ulcer disease. **(4 marks)**

- Q.2 Answer in Short (Any 5 out of 6)** **(5x3=15 marks)**

1. Apoptosis
2. Draw a labelled diagram of Sarcomere
3. Functions of Monocytes
4. Conducting system of heart
5. Excitation contraction coupling in smooth muscle
6. Importance of cross matching in blood transfusion

- Q.3 Short notes (Any 3 out of 4)** **(3x5=15 marks)**

1. Ventricular events in Cardiac cycle
2. Immunoglobulins
3. Sites and Stages of erythropoiesis
4. Functions of Liver **(2+3marks)**

**Section - "C"**

**(40 Marks)**

- Q.4** Define Cardiac output. Explain any one method by which Cardiac Output is determined. Explain the factors that regulate Cardiac output.  
(1+3+6=10marks) **(10 marks)**
- Q.5 Answer in Short (Any 5 out of 6)** **(5x3=15 marks)**
1. Acclimatization at high altitude
  2. Definition and classification of Diuretics **(1+4 marks)**
  3. Pancreatic Enzymes
  4. Morphological classification of Anaemia
  5. Role of ADH in homeostasis
  6. Respiratory membrane
- Q.6 Short notes (Any 3 out of 4)** **(3x5=15 marks)**
1. Neural Regulation of Respiration.
  2. Lung Surfactant and its function and applied aspect **(1+2+2 marks)**
  3. What is Tubular maximum for glucose (TmG) and what is Splay? Explain with diagram. **(2.5 +2.5marks)**
  4. Functions of Juxtaglomerular apparatus



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**F. Y. M.B.B.S. Examination April - 2023**

**Physiology : Paper - II**

**Time: 3 Hours ]**

**[ Total Marks: 100**

**सूचना : / Instructions**

(1) नीचे दृष्टविले निशानीवाणी विगतो उत्तरवली पर अवश्य लभवी.  
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Name of the Examination:  
F. Y. M.B.B.S.

Name of the Subject :  
Physiology : Paper - II

Subject Code No.: 2006000101020002

Seat No.:

Student's Signature

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

**Set - 2**

**Section - A (MCQs) 20 Marks**

**Select the most appropriate choice in each of the following MCQ.**

- Cryptorchidism refers to:
  - Male hypogonadism
  - Removal of testis before puberty
  - Removal of testis after puberty
  - Undescended testis
- Which of the following sensory function is not carried by dorsal white column of spinal cord?
  - Fine touch
  - Crude touch
  - Proprioceptive
  - Pressure
- Which area as per Brodmann's classification is termed as Primary motor cortex?
  - Area 3,2,1
  - Area 4
  - Area 6
  - Area 8
- Cerebellar dysfunction will not cause which of the following sign and symptom?
  - Resting tremors
  - Intention tremors
  - Atonia or Hypotonia
  - Dysarthria







- Q. 2. Answer in Short. (Any 5 out of 6) (5 × 3 = 15 marks)**
1. Descent of Testis
  2. Indicators of ovulation
  3. Importance of Communication in Doctor-patient relationship
  4. Differences in Decerebrate and Decorticate Rigidity (1.5 + 1.5 marks)
  5. Aldosterone is essential for life. Explain.
  6. Mechanism of onset of Puberty

- Q. 3. Short notes. (Any 3 out of 4) (3 × 5 = 15 marks)**
1. Methods of Contraception
  2. Compare and contrast sympathetic and parasympathetic system
  3. Parturition
  4. Disorders of Parathyroid hormone

**Section - C (40 Marks)**

- Q. 4. Draw the cerebellar circuit. Describe functions and dysfunctions of Cerebellum. (2 + 5 + 3 marks) (10 marks)**
- Q. 5. Answer in Short. (Any 5 out of 6) (5 × 3 = 15 marks)**
1. Night blindness
  2. Describe any 3 abnormalities of smell sensation
  3. Otolith organs
  4. Compound Action Potential
  5. Aphasias
  6. Somatosensory cortex
- Q. 6. Short notes. (Any 3 out of 4) (3 × 5 = 15 marks)**
1. Which are the Heat gain mechanisms in body and when are they activated?
  2. Write Course and features of Auditory pathway including Areas of Auditory cortex. (3 + 1 + 1 mark)
  3. Dark Adaptation
  4. Differentiate Conditioned Reflex and Unconditioned reflex



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**RAN-2006000101030002**

**1<sup>st</sup> M.B.B.S. Examination April - 2023**

**Biochemistry - Paper - II (New CBME Pattern)**

**સૂચના : / Instructions**

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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 :

Biochemistry - Paper - II (New CBME Pattern)

Subject Code No.: 2006000101030002

Seat No.:

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Student's Signature

**SET-2**

**Section A: MCQ**

**(20 Marks)**

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

1. Severe Combined Immunodeficiency could be due to deficiency of?  
a) Adenosine Deaminase      b) Xanthine Oxidase  
c) Dihydrofolate Reductase      d) Carbamoyl Phosphate Synthetase
2. Molybdenum containing enzyme of purine catabolism is  
a) Guanine Deaminase      b) Nucleotidase  
c) Xanthine Oxidase      d) Purine Nucleotide Phosphorylase
3. Gene cloning largest fragment can be incorporated in?  
a) Plasmid      b) Bacteriophage  
c) Cosmid      d) YAC
4. FIGLU Test is done to detect deficiency of  
a) Cobalamin      b) Folate  
c) Thiamine      d) PLP
5. Cystinuria is associated with excretion of which group of amino acids:  
a) Cystine, Ornithine, Arginine and Leucine  
b) Cystine, Ornithine, Arginine and Lysine  
c) Cystine, Ornithine, Alanine and Leucine  
d) Cystine, Tyrosine, Alanine and Leucine

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[ P.T.O. ]

P1881

6. Which of the following is NOT True about PCR?
- Thermostable enzyme Taq Polymerase is used
  - Annealing comes after denaturation
  - Specific primers are required
  - Taq Polymerase is added at each cycle of PCR Reaction
7. Which of the following amino acid is seen being excreted in Maple Syrup Urine Disease?
- Tyrosine
  - Leucine
  - Tryptophan
  - Glycine
8. Vitamin B<sub>12</sub> and folate supplementation in megaloblastic anemia leads to improvement of anemia due to
- Increased DNA synthesis in bone marrow
  - Increased Heme synthesis
  - Erythroid Hyperplasia
  - Increased iron absorption
9. Which of the following is True regarding silent mutation
- No change in mRNA
  - Change in Amino acid Sequence
  - Altered Gene Expression
  - No change in Protein Expression
10. Which of the following blocks DNA Replication with getting incorporated in DNA strands
- Cytarabine
  - Paclitaxel
  - Nalidixic Acid
  - Ciprofloxacin
11. All of the following aminoacids are used for synthesis of purine nucleotides, EXCEPT
- Glycine
  - Aspartate
  - Alanine
  - Glutamine
12. PLP is required for all of the following reactions EXCEPT
- Trans-sulfuration Reactions
  - Transamination Reactions
  - Heme Synthesis
  - Carboxylation Reactions
13. Buffering action of hemoglobin is seen due to which Amino Acid?
- Histidine
  - Aspartate
  - Tryptophan
  - Arginine
14. Which of the following is competitive inhibitor of Dihydrofolate reductase?
- Aminopterin
  - Allopurinol
  - Flurouracil
  - Para aminobenzoic Acid
15. Which of the following is plasma functional enzyme
- Alkaline Phosphatase
  - Lipoprotein Lipase
  - Acid Phosphatase
  - Gamma Glutamyl Transpeptidase

16. All are true regarding Cushing's syndrome EXCEPT:
- Serum electrolytes reveal hyperkalemia and hyponatremia
  - Due to hyper function of the adrenal cortex
  - It is characterized by muscle weakness and fatigue
  - Blood glucose levels reveal hyperglycemia
17. Which of the following is not an enzymatic marker for diagnosis of Acute MI
- SGOT
  - CPK-MB
  - LDH
  - Troponin T
18. Which of the following is true about Hemoglobin?
- Parabolic curve of dissociation
  - Co-operative effect in binding of O<sub>2</sub>
  - Dimer Protein
  - Store O<sub>2</sub> in muscle
19. Enzyme deficient in erythropoietic porphyria is
- PBG deaminase
  - Uroporphyrinogen III Cosynthase
  - Coproporphyrin Oxidase
  - Ferrochelatase
20. Which plasma protein prevents excretion of Haemoglobin in urine?
- Haptoglobin
  - Hemopexin
  - Albumin
  - Transferrin

**Section B:**

**40 Marks**

**Instructions for section B & C:**

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

**Q 2: Long Answer Questions (ANY TWO) (2 x 10 = 20).**

- Describe in detail the process of protein synthesis? Add a note on various drugs affecting the process of protein synthesis. (7+3).
- Describe the metabolism of Tyrosine. Enumerate important biological product synthesized from tyrosine. Add a note on various inborn error of metabolism related to tyrosine (3+2+5)
- Describe source, RDA, biochemical role of Thiamine. Add a note on various disorders related to thiamine (1+1+4+4)

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

**(10 x 2 = 20)**

- a) Vitamin B12 deficiency is associated with increased risk of myocardial infarction.
- b) Genetic code is universal with few exceptions.
- c) Enzyme has a role in diagnosis of a disease.
- d) Vitamin C deficiency is associated with anemia.
- e) Restriction enzymes are used in recombinant DNA technology.
- f) DNA replication is called semi conservative & semi discontinuous.
- g) Difference between CPS-I & CPS-II enzymes.
- h)  $\alpha$ -1 antitrypsin deficiency leads to development of emphysema.
- i) Adenosine deaminase (ADA) enzyme deficiency is associated with Severe Combined Immune Deficiency (SCID).
- j) Methotrexate is used as an anticancer drug.
- k) Warfarin is used as an oral anticoagulant.

**Section C:**

**40 Marks**

**Q 4: Short Answer Questions (ANY FOUR)**

**(2 X 10 = 20)**

- A. Biologically important peptides and their clinical significance.
- B. Allosteric enzyme inhibition.
- C. Describe the various types of DNA repairs & related disorders.
- D. Describe the role of vitamin D in regulating blood calcium levels. Add a note on disorders related to vitamin D deficiency. (3+2)
- E. PCR and its applications.

**Q 5: Clinical Cases (ALL COMPULSORY)**

**(2 X 10 = 20)**

**Case 1:**

A pediatrician was called to attend a 3 days old neonate as the baby's skin had become yellowish in color. Pediatrician found the icterus was present. Lab investigation showed: Serum Total Bilirubin = 14 mg/dl, Direct Bilirubin = 0.8 mg/dL, Indirect Bilirubin = 13.2 mg/dl. He advised phototherapy to baby & drug phenobarbitone. Daily monitoring of serum Bilirubin level was advised.

1. What is the diagnosis? Why do many neonates suffer from jaundice?
2. Enumerate the site & steps of bilirubin synthesis in the body.
3. Differentiate between direct & indirect bilirubin.
4. How is phototherapy helpful in this condition?

5. Explain the biochemical role of phenobarbitone as a treatment modality in this patient.

**Case 2:**

A 60-year-old alcoholic male with preferential non vegetarian diet suddenly wakes up at night with excruciating pain in great toe. He was admitted in the hospital, on examination, on examination he had fever & his great toe was swollen and red, felt hot to touch. Routine peripheral smear revealed mild leucocytosis. The laboratory data revealed following. Blood Urea: 38 mg/dl; Serum Creatinine 1.5 mg/dl; Serum Uric Acid: 12 mg/dl. A diagnosis of gouty arthritis was made. Patient was started on Allopurinol & anti inflammatory drugs.

1. What is gout? Explain its pathophysiology.
2. What is role of Allopurinol in patients suffering from gout?
3. Enumerate the causes of Primary gout?
4. What is Normal range of Uric acid?
5. Alcohol tends to precipitate the acute attack of gout.





4. Which of the following is not belong to omega-6 family?
  - a. Linoleic acid
  - b. Alpha linolenic acid
  - c. Arachidonic acid
  - d. Gamma linolenic acid
5. Rothra's test used for detection of
  - a. Ketones
  - b. Glucose
  - c. Protein
  - d. Fatty acid
6. Bile acids are derivative of:
  - a. Bilirubin
  - b. Cholesterol
  - c. Ketone body
  - d. Fatty acids
7. Which glycosaminoglycan that serve as an anticoagulant?
  - a. Dermatan sulfate
  - b. Heparin
  - c. Chondroitin sulfate
  - d. Heparan sulfate
8. All of the following are used for gluconeogenesis except.
  - a. Glycerol
  - b. Acetoacetate
  - c. Lactate
  - d. Alanine
9. The organ which cannot utilize ketone bodies as fuel is
  - a. Brain
  - b. Cardiac muscle
  - c. Skeletal muscle
  - d. Liver
10. What is true about Basal Metabolic rate (BMR)?
  - a. Increase in old age
  - b. Similar for males and female
  - c. Increased during exercise
  - d. low in hyperthyroidism
11. Which of the following organelle has DNA?
  - a. Lysosomes
  - b. Peroxisomes
  - c. Mitochondria
  - d. Microsomes
12. Zinc is present in all enzymes EXCEPT:
  - a. Alkaline phosphatase
  - b. Amylase
  - c. Carbonic anhydrase
  - d. Carboxypeptidase
13. Which of the following is not synthesised in endoplasmic reticulum?
  - a. Ganglioside
  - b. Glycoproteins
  - c. RNA
  - d. Lipoproteins
14. Which of the following organelle can cause auto-digestion?
  - a. Golgi bodies
  - b. Peroxisome
  - c. Microsomes
  - d. Lysosomes



**Q. 3 Write Brief Answer/Justifications/Biochemical basis. (2×10 = 20)**  
**(ANY TEN)**

- a) Fruity odour of breath is characteristic of Diabetic ketoacidosis patients. Give reason.
- b) Fluoride container used to collect blood sample for blood glucose estimation.
- c) Metabolic adaptations in starvation.
- d) Explain: copper is essential for normal collagen synthesis.
- e) Serum Potassium should not be estimated in hemolysed blood sample.
- f) Oral rehydration solution is contains both Glucose and Sodium chloride.
- g) Substrate level phosphorylation.
- h) Regulation of blood calcium level.
- i) Combination of Rice and Dal known as complete protein diet.
- j) Essential fatty acids.
- k) Name insulin dependent glucose transporters and their tissue distribution.

**Q. 4 Short Answer Questions (ANY FOUR) (2×10 = 20)**

- A. Detoxification reactions.
- B. Inhibitors of Electron transport chain.
- C. Liver function tests
- D. Describe the protein energy malnutrition (PEM).
- E. Write the elements of effective communication of doctor and patient.

**Q. 5 Clinical Cases (ALL COMPULSORY) (2×10 = 20)**

**Case 1:**

11-month-old boy brought to the paediatrics OPD by parents with complaints of on and off vomiting and lethargy for past 2 months. The mother had also noticed abdominal swelling while giving bath to baby. The developmental milestones were delayed. On examination, boy had a round face with fatty chick (doll like face) and hepatomegaly. Paediatrician made diagnosis of Von Gierke's Disease. Blood investigations were as follows:

Lab parameter	Observed values	Reference range
Blood glucose:	55 mg/dL	70-110 mg/dL
Lactic acid:	3 mmol/L	less than 2 mmol/L
Total cholesterol	325 mg/dL	less than 200 mg/dL
Uric acid:	8.5 mg/dL	3.5-7.5 mg/dL

**Questions:**

- 1) What is a Von Gierke's disease? What is a cause for it?
- 2) What is a reason of hypoglycemia and hypercholesterolemia in this patient?
- 3) What is a reason of hyperuricemia in this patient?
- 4) Give name of two-glycogen storage disease with enzyme deficiency other than Von Gierke's Disease.
- 5) Why muscle glycogen does not contributed to blood glucose level?

**Case 2:**

A male patient brought to casualty by his relative with altered sensorium. He was breathing heavily. His Blood sugar measured by Glucometer and it was 653 mg/dl. Physician made a diagnosis of diabetes ketoacidosis.

ABG report shows following results.

ABG Finding	Observed values	Reference range
pH:	: 7.20	(7.35-7.45)
HCO <sub>3</sub> <sup>-</sup>	12 mmol/L	(22-26 mmol/L)
pCO <sub>2</sub>	23 mm of Hg	(35-45 mmHg)
Sodium	130 mmol/l	
Potassium	3.9 mmol/l	
Chloride	:95 mmol/l	

**Questions:**

- 1) What is a reference range of fasting blood sugar and blood pH?
- 2) Interpret the above ABG report with explanation.
- 3) What is the compensatory mechanism in this case?
- 4) Calculate and comment on the anion gap.
- 5) Give two causes of metabolic alkalosis.