Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 30-Jan-2024

Time: Three Hours **Max. Marks: 100 Marks**

ANATOMY – PAPER - I (RS-4)
Q.P. CODE: 1020
(QP Contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Classify Dural venous sinuses. Describe cavernous sinus under the following headings :
   a) Extent
   b) Relations and contents
   c) Tributaries and communications

2. A 55 year old male was brought to the emergency with history of road traffic accident. On evaluation he was diagnosed with C_4, C_5 vertebral fracture leading to diaphragmatic paralysis.
   a) Mention the nerve involved
   b) Describe the diaphragm under the following headings
      i. Attachments
      ii. Openings and structure passing through them
      iii. Development

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Describe the microscopic structure of muscular artery with a neat labelled diagram.
4. Describe the formation of intra embryonic mesoderm and its derivatives.
5. Classify white matter of cerebrum. Describe corpus callosum in detail.
6. Describe the origin, insertion, nerve supply and action of Lumbricals.
7. Describe the lymphatic drainage of mammary gland and its clinical significance.
8. A 28 year old patient, came to the emergency department with difficulty in extending the wrist. He mentions sleeping uncomfortably with arms hanging by the side of the chair.
   a) Name the nerve likely to be involved and its root value.
   b) Describe its origin, course and branches in the arm.
9. Describe the extent, contents and formation of Carotid sheath.
10. Describe the origin, course, branches and area of distribution of middle cerebral artery

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Define anastomosis and mention any two types.
12. Draw a neat labelled diagram of blood supply of long bone.
13. Define and describe the process of Capacitation
14. Enumerate any three features of typical thoracic vertebra.
15. Mention the attachments of pulmonary ligament and its clinical significance.
16. Mention the arteries forming the Kiesselbach's plexus (Little's area) and its clinical significance.
17. Draw a neat labelled diagram of lacrimal apparatus.
18. Name the vessel forming the Carotid siphon. Mention its function.
19. List the structures passing deep to flexor retinaculum of hand.
20. Mention the sulcus lodging the visual areas of cerebrum and its Brodmann's number.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Facial colliculus of fourth ventricle is produced by winding of fibres of
   A. Abducent nerve hooking around facial nerve nucleus
   B. Facial nerve hooking around abducent nucleus
   C. Abducent nerve hooking around trigeminal nucleus
   D. Trigeminal nerve hooking around abducent nucleus

21 ii) Elbow joint is an example of
   A. Pivot joint
   B. Ball and socket joint
   C. Hinge joint
   D. Ellipsoid joint

21 iii) How many bronchial arteries supply the left lung?
- A. 1
- B. 2
- C. 3
- D. 4

21 iv) Which of the following is a branch of Arch of Aorta?
- A. Left common carotid artery
- B. Bronchial artery
- C. Thyrocervical trunk
- D. Axillary artery

21 v) Which of the following is pigment producing cell of the skin?
- A. Keratinocytes
- B. Langerhans cells
- C. Merkel cells
- D. Melanocyte

22 i) Which of the following statements regarding clavicle is **NOT** correct
- A. Only long bone lying horizontal
- B. First long bone to start ossification
- C. Shaft ossifies by Endochondral ossification
- D. Has two primary centers of ossification

22 ii) Cephalic vein drains into
- A. Subclavian vein
- B. Axillary vein
- C. Brachiocephalic vein
- D. Basilic vein

22 iii) Facial nerve gives secretomotor fibers to all **EXCEPT**
- A. Submandibular gland
- B. Parotid gland
- C. Lacrimal gland
- D. Nasal gland

22 iv) Following tonsillectomy patient had loss of general and taste sensation in posterior third of tongue. This is due to injury of the following nerve
- A. Glossopharyngeal
- B. Facial
- C. Lingual
- D. Chorda tympani

22 v) Morula is
- A. 2 cell stage
- B. 4 cell stage
- C. 8 cell stage
- D. 16 cell stage

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MBBS Phase – I Degree Examination - 30-Jan-2024

Time: Three Hours **Max. Marks: 100 Marks**

ANATOMY – PAPER - I (RS3)
Q.P. CODE: 1075

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary.

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the shoulder joint under the following headings:
a) Type and articular surfaces b) Ligaments and relations c) Movements d) Muscles producing the movements e) Applied anatomy

2. Classify dural venous sinuses. Describe in detail the Cavernous sinus under following headings a) Location and Extent b) Relations c) Tributaries and communications d) Applied anatomy

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Bronchopulmonary segments.
4. Axilla-boundaries and contents.
5. Histology of Hyaline cartilage.
6. Blood supply of long bone.
7. Lacrimal apparatus.
8. Azygos vein.
9. Implantation.
10. Nerve supply of tongue.
11. Circle of Willis.
12. Lateral wall of nose.

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Median cubital vein.
14. Thoracic duct.
15. Sensory innervation of Dorsum of Hand
16. Buccinator muscle.
17. Sesamoid bones.
18. Draw and label microscopic structure of lymph node.
19. Mammary bed.
20. Superior orbital fissure.
21. Enumerate six derivatives of ectoderm.
22. Lumbar puncture.

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MBBS Phase – I (CBME) Degree Examination - 10-Feb-2024

Time: Three Hours **Max. Marks: 100 Marks**

ANATOMY – PAPER I (RS-4)
Q.P. CODE: 1020
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

Rajiv Gandhi University of Health Sciences, Karnataka

LONG ESSAYS **2 x 10 = 20 Marks**

1. A 70 year old female patient came to hospital with the complaint of hard fixed mass of 8 cms in the right breast. She was diagnosed with carcinoma of breast. Mention the extent, blood supply and lymphatic drainage of mammary gland.

2. Classify dural venous sinuses. Write about the relations, contents and tributaries of cavernous sinus.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Describe the attachments of rotator cuff muscles.
4. Describe the external and internal features of right atrium.
5. Write about formation, course, termination and area of drainage of thoracic duct.
6. Describe the stages and consequences of fertilization.
7. Describe the modification of simple columnar epithelium with diagram and examples.
8. Trace the pathway of submandibular ganglion. (Sensory, sympathetic and parasympathetic)
9. Describe the parts, fibres passing through and blood supply of internal capsule.
10. Describe the boundaries of posterior horn and inferior horn of lateral ventricle.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Mention the formation and fate of Notochord.
12. Compare and contrast general features of arteries and veins.
13. Name the veins connected by Median cubital vein. Mention the clinical importance of median cubital vein.
14. List the papillary muscles of right ventricle and their function.
15. List the branches of internal thoracic artery.
16. Mention the location of Little's area in the nose and arteries anastomosing in this area.
17. Draw a neat labelled diagram of tympanic membrane showing its features.
18. List the cartilages of larynx.
19. List three commissural fibres of brain.
20. Classify cartilaginous joints with examples.

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Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Bronchopulmonary segment is aerated by
- A. Tertiary bronchus
- B. Eparterial bronchus
- C. Secondary bronchiole
- D. Hyparterial bronchus

21 ii) Main artery supplying the Interventricular septum
- A. Anterior interventricular artery
- B. Posterior interventricular artery
- C. Diagonal artery
- D. Marginal artery

21 iii) Which of the following muscles has dual nerve supply
- A. Coracobrachialis
- B. Biceps brachii
- C. Brachialis
- D. Brachioradialis

21 iv) Primary auditory area is located in
- A. Superior temporal gyrus
- B. Middle temporal gyrus
- C. Superior frontal gyrus
- D. Middle frontal gyrus

21 v) Carotid tubercle is present in which of the following vertebra
- A. 4^{th} cervical
- B. 5^{th} cervical
- C. 6^{th} cervical
- D. 7^{th} cervical

22 i) Nerve supply of posterior one third of tongue
- A. Chorda Tympani nerve
- B. Lingual nerve
- C. Glossopharyngeal nerve
- D. Mandibular nerve

22 ii) Elastic fibres are predominantly present in which of the following organs
- A. Spleen
- B. Thymus
- C. Stomach
- D. Lung

22 iii) The outer layer of blastocyst is called
- A. Primitive streak
- B. Yolksac
- C. Embyo proper
- D. Trophoblast

22 iv) The structural and functional unit of a skeletal muscle is
- A. Sarcomere
- B. Sarcosome
- C. Sarcolemma
- D. Sarcoplasm

22 v) Inferior thyroid vein drains into
- A. Internal jugular vein
- B. External Jugular vein
- C. Brachiocephalic vein
- D. Subclavian vein

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MBBS Phase – I (CBME) Degree Examination - 01-Feb-2024

Time: Three Hours **Max. Marks: 100 Marks**

ANATOMY – PAPER - II (RS-4)
Q.P. CODE: 1021
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the anatomy of duodenum under the following headings
   a) Presenting parts
   b) Relations
   c) Blood supply
   d) Development

2. A 60 year old female patient had a fall in the bathroom. She was brought to the casualty with severe pain in the right hip joint. X-ray revealed fracture of necks of right femur. In due course, she developed avascular necrosis of head of femur.
   a) Mention the anatomical basis for avascular necrosis of head of femur.
   b) Describe the anatomy of the hip joint under the following headings:
   i. Articulating surfaces and type of joint
   ii. Ligaments and Relations
   iii. Movements and Muscles causing them
   iv. Blood supply

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Describe the attachments and contents of broad ligament
4. Describe the attachments, openings and action of Pelvic diaphragm
5. Describe the microscopic structure of Vas deferens with a diagram
6. Describe the development of testis and factors responsible for its descent
7. Describe the formation, course, relations and tributaries of portal vein
8. Compare and contrast the karyotype and clinical features of Turner and Klinefelter syndrome
9. Describe the parts, relations, blood supply and functions of Gall bladder.
10. Describe the boundries and contents of Deep Perineal pouch.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Mention the parts of male urethra.
12. Draw a neat labelled diagram showing arterial supply of large intestine.
13. Mention the boundaries of Hesselbach's Triangle
14. Mention the attachments and nerve supply of tensor fascia lata
15. Mention the structures passing deep to flexor retinaculum of foot
16. List any three differences between male and female bony pelvis
17. Name the cells of gastric glands and their functions
18. List any three derivatives of Hindgut
19. Draw a neat labelled diagram showing different positions of appendix
20. Draw a neat labelled diagram of microscopic structure of kidney.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) All are the features of lyon's hypothesis, **EXCEPT**
   A. out of 2X chromosomes, one becomes inactive
   B. Inactivation occurs after birth
   C. Inactivation occurs in early embryonic life
   D. Inactivated chromosomes may be maternally or paternally derived

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21 ii) Which of the following forms the blood-testis barrier?
- A. Interstitial cells of leydig
- B. Spermatocytes
- C. Sertoli cells
- D. Spermatogonia

21 iii) Which of the following is a derivative of Wolffian duct
- A. Uterus
- B. Fallopian tube
- C. Testis
- D. Vas deferens

21 iv) Inferior mesenteric artery arises from abdominal aorta at the level of
- A. T_{12}
- B. L_1
- C. L_2
- D. L_3

21 v) One of the following is a feature of internal hemorrhoids
- A. Is formed below the Hilton's line
- B. Is formed above pectinate line
- C. Is covered by skin
- D. Occurs due to thrombosis of external rectal venous plexus

22 i) Which is the key – stone of medial longitudinal arch of foot
- A. Calcaneum
- B. Talus
- C. Navicular
- D. Cuboid

22 ii) Which ligament connects menisci to tibia
- A. Transverse ligament
- B. Oblique Popliteal ligament
- C. Arcuate Popliteal ligament
- D. Coronary ligament

22 iii) The third part of duodenum is crossed by
- A. Superior mesenteric artery
- B. Inferior mesenteric artery
- C. Gastro duodenal artery
- D. Superior pancreaticoduodenal artery

22 iv) Which of the following muscle is a true hamstring?
- A. Short head of biceps femoris
- B. Semimembranosus
- C. Both A & B
- D. Adductor magnus

22 v) Levator ani is **NOT** formed by
- A. Coccygeus
- B. Puborectalis
- C. Iliococcygeus
- D. Pubococcygeus

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MBBS Phase – I (CBME) Degree Examination - 03-Feb-2024

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY – PAPER - I (RS-4)
Q.P. CODE: 1022
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Define cardiac output, mention two methods to estimate cardiac output and explain the mechanism of regulation of cardiac output.
2. List out the groups of neurons in respiratory center and describe the neural regulation of respiration.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Mention different types of T-cells and their functions.
4. Explain Mechanism of development of erythroblastosis fetalis.
5. Explain the basis for Heart sounds and correlate it with mechanical activity of heart.
6. Define Lung compliance and factors affecting it.
7. What is dysbarism and explain physiologic basis for its effects.
8. Explain mechanism of secretion of HCl in the stomach.
9. Explain Inulin clearance and write about its application.
10. A 43-year-old man presented with complaints of epigastric pain and diagnosed with peptic ulcer. On endoscopy, he was started on 'proton-pump' inhibitors.
    a) What is proton pump and explain the type of transport?
    b) Write one cause for peptic ulcer
    c) What is the basis for action of any two **drug used in treatment of peptic ulcer?**

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Polycythemia vera.
12. Explain role of Plasmin in Fibrinolysis and its clinical significance.
13. Effect of storage of blood on red blood corpuscles.
14. Draw the diagram of conductive system of the heart.
15. List out the changes in ECG that occur with myocardial ischemia.
16. Role of lymphatic system.
17. List functions of bile salts.
18. Write two examples for positive feedback mechanisms acting in the body.
19. Draw a neat labelled diagram of Cystometrogram and write the cause for phase II.
20. What are diuretics? Name two diuretics with their site of action?

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) In the fetus, removal of webs between fingers is caused by mechanism of
   A. Necrosis
   B. Cloning
   C. Apoptosis
   D. Lysis

21 ii) The normal albumin-globulin ratio is
   A. 1:2.3
   B. 1:1.7
   C. 1.7:1
   D. 3:1

21 iii) The most common type of anemia found in our country is
- A. Thalassemia
- B. Aplastic anemia
- C. Megaloblastic anemia
- D. Iron deficiency anemia

21 iv) P wave in ECG is produced due to
- A. Atrial depolarization
- B. Ventricular depolarization
- C. Atrial repolarization
- D. Ventricular repolarization

21 v) Normal stroke volume is
- A. 70 to 80 dl/beat
- B. 70 to 80 ml/beat
- C. 70 to 80 lit/min
- D. 5 to 6 lit/min

22 i) The volume of air remaining in the lungs after a normal expiration is
- A. Tidal volume
- B. Functional Residual capacity
- C. Vital capacity
- D. Total lung capacity

22 ii) Normal respiration is called
- A. Apnea
- B. Eupnea
- C. Dyspnea
- D. Orthopnea

22 iii) Intrinsic factor is required for the absorption of
- A. Vitamin C
- B. Vitamin B1
- C. Vitamin B6
- D. Vitamin B12

22 iv) Renal threshold for glucose is
- A. 180 mg/min
- B. 325 mg/dL
- C. 180 mg/dL
- D. 375 mg/min

22 v) The normal urine output is
- A. 1.5-2 L/day
- B. 5-6 L/day
- C. 10-20 mL/min
- D. 125 mL/min

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MBBS Phase – I (CBME) Degree Examination - 05-Feb-2024

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY – PAPER - II (RS-4)
Q.P. CODE: 1023
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Name the functional divisions of cerebellum. Explain the connections and functions of cerebellum

2. What is normal serum calcium level? Describe the hormones that maintain normal serum calcium. Add a note on Tetany

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Describe the differences between upper motor neuron and lower motor neuron lesion

4. Explain the metabolic actions of insulin

5. Describe the actions of estrogen

6. A man aged 70 years was brought to hospital with history of difficulty in walking, stoops forwards while walking, abnormal rhythmic movements in hands were observed at rest. He shows tendency to fall forwards or backwards
   a) What is the provisional diagnosis?
   b) Discuss the pathophysiology behind this condition
   c) What is the physiological basis of treatment?

7. Describe the classification of nerve fibres

8. Explain visual pathway with a neat labelled diagram

9. List the properties of synapse. Explain any two properties

10. Describe various female contraceptive methods

SHORT ANSWERS **10 x 3 = 30 Marks**

11. List the functions of limbic system

12. Explain the mechanism of action of steroid hormones

13. Explain parturition reflex

14. Mention any two neuro muscular blocking drugs and their mechanism of action

15. What is Aphasia? Discuss different types of aphasias

16. Explain the patho physiology of fever

17. Explain the types of deafness

18. Explain Papez circuit

19. What is the pathophysiology of myasthenia gravis?

20. Enumerate the heat loss mechanisms occurring in the body

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Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Kluver-Bucy syndrome is due to the lesion in which of the following structure:
- A. Amygdala
- B. Hippocampus
- C. Hypothalamus
- D. Temporal lobe

21 ii) Increased secretion of growth hormone after puberty leads to
- A. Cretinism
- B. Dwarfism
- C. Acromegaly
- D. Gigantism

21 iii) Diabetes insipidus occurs due to deficiency of
- A. Growth hormone
- B. Insulin
- C. ADH
- D. Thyroxine

21 iv) Blood – testis barrier is formed by:
- A. Sertoli cells
- B. Leydig cells
- C. Epididymis
- D. Vas deferens

21 v) Corpus luteum in pregnancy is maintained by which hormone:
- A. Progesterone
- B. Oestrogen
- C. HCG
- D. FSH

22 i) Which of the following triggers muscle contraction
- A. Ca binding to tropomyosin
- B. Ca binding to troponin C
- C. ATP breakdown
- D. Ca binding to troponin I

22 ii) Near vision is tested by
- A. Snellen's chart
- B. Jaeger's chart
- C. Ishihara chart
- D. Color vision

22 iii) In nerve deafness while performing Weber's test, the sound is lateralized to (heard better in):
- A. Normal ear
- B. Defective ear
- C. Both the ears
- D. None of the ear

22 iv) Following are the features of metabolic syndrome EXCEPT
- A. Blood pressure of more than 130/85 mmHg
- B. Fasting glucose of 100mg/dL or more
- C. Triglycerides of more than 150 mg/dL in the blood
- D. Normal BMI of 18-24 kg/m^2

22 v) Insulin causes
- A. Decreased blood glucose
- B. Inhibits protein synthesis
- C. Inhibits fatty acids synthesis
- D. Promotes breakdown of glycogen

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MBBS Phase – I (CBME) Degree Examination - 07-Feb-2024

Time: Three Hours **Max. Marks: 100 Marks**

BIOCHEMISTRY – PAPER I (RS-4)
QP Code: 1024
(QP contains three pages)

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A 40-year-old navy officer contacted his physician for development of spongy and bleeding gums. He also had loosening of teeth, pain in the joints and complained of poor wound healing. History revealed that he was in submarine tour for 40 days and was only on staple diet.
   (a) Name the vitamin deficiency associated with symptoms in the above case.
   (b) Name the disorder caused due to deficiency of above vitamin.
   (c) List two dietary sources of above vitamin.
   (d) Mention any four biochemical functions of above vitamin.
   (e) Explain the biochemical basis of spongy and bleeding gums.

2. Explain the hormonal regulation of glucose homeostasis. Mention the biological reference interval of fasting and post-prandial plasma glucose levels. Substantiate the role of glycated hemoglobin (HbA1c) in monitoring blood glucose levels.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. A 50-year-old man was diagnosed with hemorrhoids and underwent operation in relation to it. He had several bleeding episodes in the past and was found to have microcytic hypochromic anaemia.
   (a) Which mineral deficiency is associated with anaemia in the above case?
   (b) Mention two good dietary sources of above mineral.
   (c) Explain the process of absorption, transport and storage of the above mineral.

4. The following are the values obtained in an Arterial Blood Gas (ABG) analysis.

Parameter	**pH**	**Plasma bicarbonate (HCO_3^-)**	**pCO_2**	**O_2 Saturation**	**Base Excess**
Values	7.55	35 mEq/L	36 mmHg	99%	10.5

   (a) Name the acid-base disorder based on the findings in the above report.
   (b) Mention the possible causes for the above acid-base disorder.
   (c) Explain the compensatory mechanism in the above acid-base disorder.

5. What are dietary fibres? Give four examples of dietary fibres. Mention four advantages of consuming dietary fibres.
6. What is carnitine? Explain its role in transport of fatty acids for oxidation process.
7. Compare and contrast between passive and active transport with two examples.
8. Explain competitive inhibition with two examples.
9. Explain the steps in the synthesis and breakdown of ketone bodies.
10. Define isoenzymes. Name two enzymes and their isoenzyme forms with their significance.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Write the amino acid composition of collagen. Mention two clinical disorders associated with defective collagen.
12. Give three examples of glycosaminoglycans with their functions.
13. What are phospholipids? Mention the biochemical importance of lecithin and cephalin.
14. Write the components of Complex I of electron transport chain and mention one inhibitor of this complex.
15. Compare and contrast between kwashiorkor and marasmus.
16. Name serum electrolytes. Mention two causes associated with hypokalemia.

17. Write the features of bicarbonate buffer system.
18. Write three features to differentiate type I and type II diabetes mellitus.
19. Mention the role of oxidized LDL in atherogenesis.
20. Write the clinical features associated with skeletal and dental fluorosis.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Which one of the following is rich in saturated fatty acid?
- A. Coconut oil
- B. Groundnut oil
- C. Corn oil
- D. Sesame oil

21 ii) Optimum pH for alkaline phosphatase activity is
- A. 2-3
- B. 4-5
- C. 6-7
- D. 9-10

21 iii) Which of the following is an epimer of glucose?
- A. Galactose
- B. Ribose
- C. Erythrose
- D. Glyceraldehyde

21 iv) Which one of the following lipids is stored in adipose tissue?
- A. Triglyceride
- B. Phospholipid
- C. Cholesterol ester
- D. Free fatty acids

21 v) Which one of the following enzymes is specific to gluconeogenesis?
- A. Phosphohexose isomerase
- B. Pyruvate carboxylase
- C. Aldolase
- D. Enolase

22 i) The rate limiting enzyme in denovo cholesterol synthesis is
- A. Acetoacetyl-CoA synthase
- B. HMG CoA synthase
- C. HMG CoA reductase
- D. Mevalonate kinase

22 ii) Specific dynamic action for protein is
- A. 5
- B. 13
- C. 18
- D. 30

22 iii) Which one of the following is a good source of vitamin E?
- A. Cod liver oil
- B. Wheat germ oil
- C. Green leafy vegetables
- D. Egg yolk

22 iv) The condition Acrodermatitis enteropathica is due to deficiency of
- A. Selenium
- B. Iodine
- C. Zinc
- D. Manganese

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22 v) Which one of the following is an important urinary buffer?
- A. Bicarbonate
- B. Ammonia
- C. Phosphate
- D. Proteins

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MBBS Phase – I (CBME) Degree Examination - 09-Feb-2024

Time: Three Hours **Max. Marks: 100 Marks**

BIOCHEMISTRY – PAPER II (RS-4)
Q.P. CODE: 1025
(QP contains three pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A fair 5 year old child was brought to the hospital by his parents, who complained of delayed milestones in the child. Investigations revealed a high phenylalanine content in the blood and a diagnosis of phenylketonuria was made.
   a) Name the enzyme defect in the above disorder.
   b) Explain the pathway for catabolism of phenylalanine.
   c) Name the compound responsible for the mousy odour in the above condition.
   d) List the biochemical investigations in phenylketonuria

2. Explain the process of recombinant DNA technology and list four applications in the field of medicine.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. A 40 year old female with history of gall stones presented with acute pain abdomen, yellowish discoloration of sclera and passing clay coloured stools. Following investigations, a diagnosis of obstructive jaundice was made.
   a) Describe van Den Berg test and its findings in this condition.
   b) Name the enzyme that is elevated in this condition.
   c) Explain the biochemical reason for clay coloured stools in this case.

4. A 50 year old female presented with hoarseness of voice, dryness of skin and excess weight gain. The case was suspected to be hypothyroidism.
   a) List the tests for assessment of thyroid function.
   b) Write laboratory findings in a case of hypothyroidism.
   c) Differentiate between primary and secondary hypothyroidism.

5. Define proto-oncogene and oncogene. Explain the activation of oncogene.

6. Compare and contrast between replication in prokaryotes and eukaryotes.

7. Enumerate kidney function tests. Explain tubular function test.

8. Describe DNA repair mechanism with suitable examples.

9. What is gout? Write the causes and clinical features of gout.

10. Enumerate the functional classification of proteins with examples.

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MBBS Phase – I (CBME) Degree Examination - 09-Feb-2024
Q.P. CODE: 1025

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Draw and label the cell cycle.
12. What are histones? Enumerate their functions.
13. Draw a neat labelled diagram of immunoglobulin.
14. What are restriction endonucleases? Mention their importance.
15. Give biological reference interval of serum urea, serum albumin and serum creatinine.
16. Enumerate post-transcriptional modifications and write their significance.
17. Mention any three antioxidants and state their mechanism of action.
18. Write the structure and function of t-RNA
19. Give three examples for detoxification by conjugation mechanism.
20. Name thee pre-analytical variables that affect the biochemical laboratory results.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Which of the following is an essential amino acid?
- A. Glycine
- B. Phenyl alanine
- C. Aspartic acid
- D. Serine

21 ii) Hypoalbuminemia is seen in all the following conditions **EXCEPT**
- A. Cirrhosis of liver
- B. Nephrotic syndrome
- C. Kwashiorkor
- D. Dehydration

21 iii) Which of the following is a secretory immunoglobulin?
- A. IgG
- B. IgA
- C. IgM
- D. IgD

21 iv) Deficiency enzyme causing alkaptonuria is
- A. Tyrosinase
- B. Fumarylacetoacetate hydrolase
- C. Homogentisate oxidase
- D. Dopa decarboxylase

21 v) Bile salts and bile pigments are excreted in urine in
- A. Incompatible blood transfusion
- B. Gilbert's syndrome
- C. Carcinoma of head of pancreas
- D. Crigler-Najjar syndrome

22 i) Which of the following conditions is **not** associated with hyperuricemia?
- A. Gout
- B. Leukemia
- C. Psoriasis
- D. Xanthinuria

22 ii) CA 125 is a tumor marker for
- A. Ovarian cancer
- B. Hepatoma
- C. Carcinoma breast
- D. Pheochrmocytoma

22 iii) Which of the following is an example of enzyme which scavenges free radicals?
- A. Hexokinase
- B. Aconitase
- C. Fumarase
- D. Catalase

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22 iv) α-1 antitrypsin deficiency is associated with
A. Wilson's disease
B. Cirrhosis of liver
C. Emphysema
D. Multiple myeloma

22 v) Clearance values of all of the following compounds are used to test glomerular function of kidney **EXCEPT**
A. Glucose
B. Creatinine
C. Inulin
D. Urea

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MBBS Phase – I Degree Examination - 01-Feb-2024

Time: Three Hours **Max. Marks: 100 Marks**

ANATOMY – PAPER - II (RS3)
Q.P. CODE: 1076

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary.

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the extra hepatic biliary apparatus in detail. Add a note on its applied anatomy.
2. Describe the anatomy of Sciatic nerve under the following headings: a) origin and termination b) Course c) Relations d) Branches and applied anatomy

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Microscopic structure of ureter.
4. Karyotyping.
5. Popliteal fossa.
6. Development of urinary bladder.
7. Coeliac trunk.
8. Microscopic structure of spleen.
9. Development of duodenum.
10. Ischio - rectal fossa.
11. Klinefelter's syndrome.
12. Prolapse of uterus.

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Mc Burney's point.
14. Contents of rectus sheath.
15. Spermatic cord – coverings and contents.
16. Lobes of prostate and its applied anatomy.
17. Great saphenous vein - formation termination and two tributaries.
18. Iliac crest.
19. Lymphatic drainage of stomach.
20. Inguinal ligament.
21. Epiploic foramen.
22. Hamstring muscles.

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MBBS Phase – I Degree Examination - 03-Feb-2024

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY – I (RS3)
Q.P. CODE: 1077

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Define arterial blood pressure. Describe the neural regulation of arterial blood pressure
2. Describe the neural regulation of respiration. Add a note on periodic breathing

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Classify the fluid compartment of body giving their normal value. Mention two methods to determine Extra Cellular Fluid Volume
4. Transport across cell membrane
5. Describe the intrinsic method of coagulation.
6. Non-excretory function of kidney
7. Describe the factors affecting glomerular filtration rate.
8. Describe the composition and functions of surfactant.
9. Define hypoxia. Describe its types.
10. Factors affecting cardiac output
11. Morphology and properties of cardiac muscle
12. What is Functional Residual Capacity?? How will you measure FRC and its clinical importance?

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Define Landsteiner's law
14. Draw a neat labelled diagram of ECG.
15. Types of T lymphocytes
16. Explain mechanism of secretion of hydrochloric acid in stomach
17. List the functions of platelets
18. Erythroblastosis Foetalis
19. Enlist liver function test
20. Explain components and functions of bile
21. Functions of plasma proteins
22. Stages of deglutition

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MBBS Phase - I Degree Examination – 05-Feb-2024

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY - II (RS3)
QP Code: 1078

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the functions of hypothalamus.
2. Describe the hormonal, ovarian and uterine changes during menstrual cycle.

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Referred pain
4. Actions of glucocorticoids
5. Functions of CSF
6. Taste pathway
7. Vestibular apparatus
8. Milk ejection reflex
9. Hypothyroidism
10. Errors of refraction
11. Functions of limbic system
12. Contraception in males

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Blood Brain Barrier
14. Myasthenia Gravis.
15. Menopause
16. Stretch reflex
17. Hypothermia
18. Wallerian degeneration
19. Deafness
20. Sleep disorders
21. ACTH
22. Aphasia

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First Phase MBBS Degree Examination – 07-Feb-2024

Time: Three Hours **Max. Marks: 50 Marks**

BIOCHEMISTRY – PAPER I (RS3)
Q.P. CODE: 1079

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary
(Note: Both QP Codes 1079 and 1080 are to be, answered within total duration of three hours)
Use separate answer books for section A and Section B

LONG ESSAYS **1 x 10 = 10 Marks**

1. Explain the process of steps of β oxidation of fatty acids and energetics.

SHORT ESSAYS **5 x 5 = 25 Marks**

2. Anti oxidants.
3. Significance of HMP shunt pathway
4. Transamination reactions and their importance
5. Urea cycle.
6. Homo polysaccharide.

SHORT ANSWERS **5 x 3 = 15 Marks**

7. Essential fatty acids.
8. Lactose intolerance.
9. Name any two glycogen disorders and the associated enzyme defect.
10. Role of enzymes as tumor markers (any three)
11. Structure of collagen

MBBS Phase – I Degree Examination - 07-Feb-2024

Time: Three Hours **Max. Marks: 50 Marks**

BIOCHEMISTRY – PAPER II (RS3)
Q.P. CODE: 1080

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary.
(Note: Both QP Codes 1079 and 1080 are to be, answered within total duration of three hours)
(Use separate Answer books for QP Code 1079 & 1080)

LONG ESSAYS **1 x 10 = 10 Marks**

1. Write in detail about heme synthesis and its regulation. Add a note on Acute intermittent porphyria

SHORT ESSAYS **5 x 5 = 25 Marks**

2. Biochemical functions and deficiency manifestations of Ascorbic acid.
3. Structure and functions of immunoglobulins.
4. Renal regulation of blood pH.
5. Dietary fibre.
6. Recombinant DNA Technology.

SHORT ANSWERS **5 x 3 = 15 Marks**

7. **Interpretation of Van den Bergh test**
8. Polymerase Chain Reaction
9. Causes of metabolic acidosis.
10. oncogene
11. Write the reference values of i) Serum calcium ii) Serum uric acid iii) Serum total protein

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MBBS Phase – I (CBME) Degree Examination - 09-Aug-2024

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - I (RS4/RS5/RS6)
Q.P. CODE: 1020
(QP Contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the Mediastinum under the following headings
   a) Definition and Classification
   b) Boundaries and contents of Superior mediastinum
   c) Applied anatomy
2. A 30 year old lady meets with an accident while riding a bike. She is brought to the hospital with injury to her forehead. On clinical examination there is ptosis of the right eye. A diagnosis of Occulomotor nerve palsy is made.
   a) Mention the muscle paralysed in ptosis.
   b) Describe the anatomy of Extraoccular muscles under the following headings:
      i. Attachments
      ii. Nerve supply
      iii. Action
      iv. Applied anatomy

SHORT ESSAYS **8 x 5 = 40 Marks**

3. A patient with a lump in the left breast is examined for lymph node enlargement.
   a) Mention the lymph nodes enlarged immediately in breast carcinomas.
   b) Describe the anatomy of Axillary lymph nodes.
4. Describe the course and distribution of median nerve in the hand
5. Describe the anatomy of Interior of the right ventricle
6. Describe the boundaries and contents of digastric triangle
7. Describe the parts and functions of basal ganglia
8. Describe the development of trophoblast
9. Compare and contrast microscopic structure of serous and mucous salivary gland with examples
10. Define and classify white matter of cerebrum with examples

SHORT ANSWERS **10 x 3 = 30 Marks**

11. List the structures piercing clavipectoral fascia
12. Enumerate the branches of posterior cord of brachial plexus with root value
13. Mention the veins opening into the right atrium
14. Enlist any six branches of external carotid artery
15. Mention the boundaries and applied anatomy of Suprameatal triangle
16. Enlist the midline structures of the Neck
17. Draw a neat labelled diagram of section of midbrain at the level of superior colliculus
18. Define Hilton's law. Mention one structure obeying it
19. Mention the types of capillaries and its functions
20. Define Gastrulation and Implantation

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) The structure closely related to the medial epicondyle is
   A. Radial nerve
   B. Basilic vein
   C. Ulnar artery
   D. Ulnar nerve

21 ii) The stylopharyngeus is derived from _____ pharyngeal arch
   A. I
   B. II

C. III
D. IV

21 iii) The placenta secretes
A. Aldosterone
B. Oxytocin
C. Prolactin
D. Progesterone

21 iv) _____ is an irregular bone
A. Parietal
B. Vertebra
C. Metatarsal
D. Phalanges

21 v) The esophagus is related to which chamber of the heart?
A. Left ventricle
B. Right ventricle
C. Left atrium
D. Right atrium

22 i) The anterior fontanelle closes by _____ months
A. 6
B. 12
C. 18
D. 24

22 ii) The communication of the lateral ventricle to third ventricle is via
A. Cerebral aqueduct
B. Foramen of Lushka
C. Foramen of Magendie
D. Foramen of Munro

22 iii) The type of neurons in the dorsal root ganglia is
A. Unipolar
B. Pseudounipolar
C. Bipolar
D. Multipolar

22 iv) The posterior ethmoidal air cells drain into
A. Middle meatus
B. Superior meatus
C. Inferior meatus
D. Supreme meatus

22 v) The conducting system of the heart is predominantly supplied by
A. Right coronary artery
B. Left coronary artery
C. Anterior interventricular artery
D. Posterior interventricular artery

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MBBS Phase – I (CBME) Degree Examination - 12-Aug-2024

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - II (RS-4)
Q.P. CODE: 1021
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A dancer came to the OPD complaining of pain in the foot. Doctor diagnosed the condition as pes planus. Describe the bony components of the longitudinal arches of the foot. Describe factors responsible for the maintenance of these arches.
2. Describe the boundaries and contents of inguinal canal. Explain the protective mechanisms of the inguinal canal that prevent inguinal hernia. Compare and contrast coverings of direct and indirect inguinal hernia.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Describe the formation, termination, tributaries and applied anatomy of great saphenous vein.
4. Describe the coverings of kidney. Add a note on its applied anatomy.
5. Describe the origin, termination and branches of Inferior mesenteric artery. Add a note on marginal artery of Drummond.
6. A patient came to OPD with history of pain and bleeding on passing stools. He was diagnosed as suffering from haemorrhoids. Describe the features in the interior of anal canal. Add a note on its blood supply.
7. Describe the supports of uterus. Add a note on its applied anatomy.
8. Describe structural chromosomal abnormalities with examples.
9. Compare and contrast microscopic structure of ureter and vas deferens
10. Describe the development and congenital anomalies of pancreas.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Enumerate any three short lateral rotators of hip joint and mention their nerve supply.
12. Enumerate the boundaries of epiploic foramen and mention its clinical significance.
13. Enumerate the parts of gall bladder. Explain the anatomical basis of pain in the right shoulder in cholecystitis.
14. Name the muscles forming the pelvic floor and their clinical importance.
15. Enumerate the parts of male urethra and the lining epithelium.
16. Enumerate the clinical features and karyotype in Down syndrome.
17. Compare and contrast microscopic structure of hepatic and portal lobule.
18. Draw and label microscopic structure of duodenum.
19. Enumerate the remnants of paramesonephric duct.
20. Enumerate the remnants of mesogastrium.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Trochanteric fossa receives the insertion of
   A. Obturator internus
   B. Obturator externus
   C. Piriformis
   D. Psoas major

21 ii) Pyramidalis is supplied by
- A. Subcostal nerve
- B. Ilioinguinal nerve
- C. Iliohypogastric nerve
- D. Genitofemoral nerve

21 iii) Innermost covering of testis is
- A. Parietal layer of Tunica vaginalis
- B. Visceral layer of Tunica vaginalis
- C. Tunica vasculosa
- D. Tunica albuginea

21 iv) Mucous glands of oesophagus are found in
- A. Mucosa
- B. Submucosa
- C. Muscularis externa
- D. Adventitia

21 v) **Premaxilla is derived from**
- **A. Frontonasal process**
- **B. Maxillary process**
- **C. Mandibular process**
- D. **Pterygoid process**

22 i) Which of the following banding techniques is routinely used in chromosome analysis?
- A. C - banding
- B. Q - banding
- C. G - banding
- D. R - banding

22 ii) Cutaneous branch of posterior division of Femoral nerve is
- A. Sural nerve
- B. Peroneal nerve
- C. Pudendal nerve
- D. Saphenous nerve

22 iii) Permanent mucosal folds in the small intestine are called
- E. Semilunar valves
- F. Semicircular valves
- G. Valves of Kerckring
- H. Crypts of Lieberkuhn

22 iv) Inferior rectal artery is a branch of
- E. Superior gluteal artery
- F. Inferior gluteal artery
- G. Inferior mesenteric artery
- H. Internal pudendal artery

22 v) All the neurons in the cerebellar cortex are inhibitory **EXCEPT**
- E. Stellate cells
- F. Granule cells
- G. Basket cells
- H. Golgi cells

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MBBS Phase – I (CBME) Degree Examination - 14-Aug-2024

Time: Three Hours **Max. Marks: 100**

PHYSIOLOGY – PAPER - I (RS-4)
Q.P. CODE: 1022
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Define blood pressure. Explain in detail about regulation of blood pressure. Add a note on hypertension

2. Discuss in detail the uptake, transport and release of O_2 from lungs to tissues

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Classify anticoagulants with examples. Discuss the physiological basis of action of any two anti coagulants
4. Describe the left ventricular pressure changes during cardiac cycle with a neat labelled diagram
5. Define Glomerular Filtration Rate (GFR). Discuss the factors affecting GFR
6. Describe the mechanism of cell mediated immunity
7. A 60 year old woman is admitted to the hospital after complaining of extreme fatigue, weakness, dyspnoea and swelling of her ankles. She has Orthopnea and previous history of chest pain and shortness of breath upon exertion. Her physical examination reveals cyanosis, distended neck veins, ascites and cold clammy skin. Her ejection fraction is 0.30
    a) What is the probable diagnosis?
    b) What is the physiological basis of cyanosis and easy fatigability?
    c) What is the physiological basis of treating this condition with diuretics?
8. Describe the synthesis and actions of surfactant
9. Describe briefly mechanism of secretion of HCl and its regulation
10. Discuss the renal regulation of acid-base balance

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Draw a neat labelled diagram of normal lead II ECG
12. Compare and contrast intra pleural and intra pulmonary pressure
13. What is the role of iron and Vit B12 in erythropoiesis?
14. Explain the pathophysiology of gastro-oesophageal reflux disease
15. Write a note on apoptosis
16. List the indications and hazards of blood transfusion
17. Enumerate the functions of bile juice
18. Classify jaundice. Give one example for each
19. What is the physiological basis of dialysis therapy?
20. List the types of movements in small intestine and large intestine

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Starling's Law implies:
- A. Increased venous return leads to increased cardiac output
- B. Increased discharge leads to increased cardiac output
- C. Increased heart rate leads to increased cardiac output
- D. Increased blood pressure leads to increased cardiac output

21 ii) Seat of peripheral resistance is
- A. Large arteries
- B. Arterioles
- C. Capillaries
- D. Venules

21 iii) Ventilation perfusion ratio is maximum at:
- A. Apex of lung
- B. Base of lung
- C. Posterior lobe of lung
- D. Middle of the lung

21 iv) Routine spirometer cannot estimate:
- A. Vital capacity
- B. Residual volume
- C. Expiratory reserve volume
- D. Tidal volume

21 v) Glomerular filtration rate is increased when:
- A. Plasma oncotic pressure is increased
- B. Glomerular hydrostatic pressure is decreased
- C. Tubular hydrostatic pressure is increased
- D. Renal blood flow is increased

22 i) Angiotensin II causes all of the following except
- A. Stimulation of thirst
- B. Aldosterone secretion
- C. Increased ADH secretion
- D. Vasodilatation

22 ii) Cell shape and motility is provided by:
- A. Centrosomes
- B. Microtubules
- C. Golgi apparatus
- D. Nucleus

22 iii) Resting membrane potential is close to the isoelectrical potential of:
- A. Na^{+}
- B. K^{+}
- C. Cl^{+}
- D. Mg^{++}

22 iv) Vit B_{12} is mainly absorbed from:
- A. Terminal ileum
- B. Duodenum
- C. Jejunum
- D. Stomach

22 v) Neutropenia is caused due to:
- A. Acute bacterial infections
- B. Myocardial infarction
- C. Severe burns
- D. Typhoid fever

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MBBS Phase – I (CBME) Degree Examination - 17-Aug-2024

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY – PAPER - II (RS-4)
Q.P. CODE: 1023
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the properties of synapse. Add a note on postsynaptic potentials
2. Describe the metabolic actions of growth hormone. Add a note on different types of dwarfism

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Explain excitation contraction coupling in skeletal muscles
4. Explain the physiological responses on exposure to cold environment
5. Describe the pathway for crude touch with the help of a neat labelled diagram
6. A young married couple visited their family doctor for advice regarding contraceptive methods. The doctor prescribed combined oral contraceptive pills
    a) Explain the mechanism of action of oral contraceptive pills
    b) What are the other methods of contraception in females?
7. Describe the contents and functions of middle ear
8. Describe the actions of parathormone
9. Describe the functions of basal ganglia
10. Explain the theories of referred pain

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Explain the role of hypothalamus in food intake
12. List the functions of testosterone
13. Explain the physiological basis of Exophthalmos in hyperthyroidism
14. Explain the changes that occur during accommodation **in the eye**
15. Explain the mechanism of action of steroid hormone
16. List three differences between upper motor neuron and lower motor neuron lesions
17. Erlanger and Gasser classification of nerve fibers
18. Explain the physiological basis of resting membrane potential in a nerve cell
19. What is Klinefelter's syndrome?
20. Justify how infections cause fever

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Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Normal sperm count in adult male is about
- A. 50,000/ml
- B. 50 lakhs/ml
- C. 100 million/ml
- D. 150 million/ml

21 ii) Circumventricular organs include all of the following except
- A. Sub fornical organ
- B. Area postrema
- C. OVLT
- D. Corpus striatum

21 iii) Resting tremor is seen in lesion of
- A. Basal ganglia
- B. Cerebellum
- C. Thalamus
- D. Hypothalamus

21 iv) Insulin facilitates glucose uptake in
- A. Brain
- B. Renal tubule
- C. Red blood corpuscles
- D. Skeletal muscle

21 v) In a 28-day menstrual cycle regression of corpus luteum occurs on
- A. 14^{th} day
- B. 21^{st} day
- C. 24^{th} day
- D. 28^{th} day

22 i) Peripheral nerve is myelinated by
- A. Schwann cells
- B. Oligodendrocytes
- C. Astrocyte
- D. Microglia

22 ii) Primary auditory cortex is located in
- A. Superior temporal gyrus of temporal lobe
- B. Posterior gyrus of occipital lobe
- C. Post central gyrus of parietal lobe
- D. Superior part of frontal lobe

22 iii) "A" band in Sarcomere is made of
- A. Myosin
- B. Actin
- C. Troponin
- D. Myosin and actin

22 iv) REM sleep is characterized by all except
- A. Large phasic potentials
- B. Reduction of tone in muscles
- C. Beta waves in EEG
- D. Less towards morning hours

22 v) Highest concentration of cones is seen in
- A. Ciliary body
- B. Iris
- C. Optic disc
- D. Fovea

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MBBS Phase – I (CBME) Degree Examination - 21-Aug-2024

Time: Three Hours **Max. Marks: 100 Marks**

BIOCHEMISTRY – PAPER II (RS-4)
Q.P. CODE: 1025
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A 2 day old neonate was found to have yellowish discoloration of skin. Biochemical investigation revealed: serum total bilirubin 5.5 mg/dl and serum direct bilirubin was 0.2 mg/dl.
    a) Write biological reference interval for serum total bilirubin and serum direct bilirubin.
    b) Explain the formation and fate of bilirubin.
    c) What is the biochemical basis for physiological jaundice?
    d) Write the basis of giving phototherapy in a case of physiological jaundice.
2. Describe the recombinant DNA technology and mention its applications in medicine.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. A 45 year old business executive after partying in the night with alcohol and red meat got up in the morning with severe pain in the right toe. It was swollen. He rushed to a hospital and his biochemical investigations were as follows: Serum creatinine: 0.9 mg/dl and serum uric acid: 10mg/dl.
    a) Interpret serum uric acid level in this patient
    b) Explain the steps in the formation of uric acid
    c) Explain role of allopurinol in this condition
4. A 60 year old man who has a history of diabetes mellitus and hypertension, presented to Nephrology OPD with swelling in the lower limb. His serum creatinine value was 3.8 mg/dl. A diagnosis of chronic kidney disease was made.
    a) Write biological reference interval for serum creatinine.
    b) Explain creatinine clearance test.
5. Explain mechanism of action of steroid hormones.
6. Classify plasma proteins. Describe the functions of albumin.
7. Explain DNA replication in prokaryotes.
8. Explain urea cycle. Mention its regulation.
9. Describe post-transcriptional modifications of RNA.
10. Explain secondary structural organisation of protein.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Define Transamination and mention the importance of Transamination.
12. Write the characteristics of genetic code.
13. Write the role of p53 protein in cancer.
14. How is aspirin detoxified in the body?
15. Write three examples of transmethylation reactions.
16. Name three biologically important nucleotides and write their functions.
17. Enumerate three classes of immunoglobulins and write their functions.
18. Name the antioxidant enzymes and write the biochemical reaction of anyone of them.
19. Mention any three pre-analytical variables encountered in the clinical laboratory.
20. Write the reactions of purine salvage pathway.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) The following are carcinogens **EXCEPT**
    A. Aflatoxin
    B. Gamma rays
    C. Benzopyrene
    D. Actinomycin

21 ii) The class of antibody most abundant in the serum is
- A. IgG
- B. IgM
- C. IgA
- D. IgE

21 iii) Which of the following amino acids is **not** found in proteins?
- A. Arginine
- B. Histidine
- C. Methionine
- D. Citrulline

21 iv) Which of the following is a nucleotide?
- A. Adenylic acid
- B. Adenine
- C. Adenosine
- D. Agmantine

21 v) Bilirubin is made water soluble by conjugation with
- A. Lithocholic acid
- B. Cholic acid
- C. Glucuronic acid
- D. Chenodeoxycholic acid

22 i) Serotonin is synthesized from
- A. Tyrosine
- B. Tryptophan
- C. Phenylalanine
- D. Proline

22 ii) Western blotting technique is used for the detection of
- A. DNA
- B. RNA
- C. Proteins
- D. Lipoproteins

22 iii) N_1 of pyrimidine ring is contributed by
- A. Glutamine
- B. Aspartic acid
- C. Glycine
- D. Arginine

22 iv) Which of the following cells **does not** produce **free** radicals?
- A. Erythrocytes
- B. Neutrophils
- C. Basophils
- D. Macrophages

22 v) Test used to detect urobilinogen in urine is
- A. Fouchet's test
- B. Hay's test
- C. Ehrlich's test
- D. Rothera's test

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MBBS Phase – I Degree Examination - 09-Aug-2024

Time: Three Hours **Max. Marks: 100 Marks**

ANATOMY – PAPER - I (RS3)
Q.P. CODE: 1075

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary.

LONG ESSAYS **2 x 10 = 20 Marks**

1. Elaborate on Temporomandibular joint under the following headings: a) Type of joint and articular surfaces b) Capsule and ligaments c) Relations d) Movements and muscles producing them e) applied anatomy

2. Describe the blood supply of heart. Add a note about its clinical significance.

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Blood supply of Thyroid gland.
4. Types of Epiphysis with examples.
5. Cubital **fossa**.
6. Histology of Thymus.
7. Fourth ventricle.
8. Nerve supply of tongue.
9. Pleural recesses.
10. Spermatogenesis.
11. Events occurring at the level of insertion of coracobrachialis.
12. Soft palate.

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Any six contents of superior mediastinum.
14. Parts, deep nuclei, and arterial supply of cerebellum.
15. Erb's paralysis.
16. Draw and label microscopic structure of thin skin.
17. Dangerous layer of scalp.
18. Coracoid process.
19. Draw and label parts of a multipolar neuron.
20. Structures piercing Clavipectoral fascia.
21. Openings in the right atrium.
22. Blastocyst.

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I Degree Examination - 12-Aug-2024

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - II (RS-3)
Q.P. CODE: 1076

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the gross anatomy of Kidney in detail. Add a note on its applied anatomy.

2. Describe the Knee joint under following headings:
   a) Articular surfaces
   b) Ligaments
   c) Locking and unlocking mechanism
   d) Applied anatomy

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Blood supply of stomach
4. Femoral Triangle
5. Autosomal Recessive inheritance
6. Microscopic structure of ovary
7. Development of Duodenum
8. Extensor Retinacula of foot
9. Parts and relations of Urinary bladder
10. Gluteus maximus
11. Urogenital Diaphragm
12. Microscopic structure of liver

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Mesentery
14. Bare are of Liver
15. Epiploic foramen
16. Supports of the uterus
17. Ischial tuberosity
18. Name six branches of femoral artery
19. Karyotyping
20. Descent of testis
21. Contents of rectus sheath
22. Down’s syndrome

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I Degree Examination - 14-Aug-2024

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY – I (RS3)
Q.P. CODE: 1077

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Explain the mechanism and regulation of gastric secretion.
2. Define stroke volume and cardiac output and give their normal values. Explain the factors regulating cardiac output.

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Intrinsic pathway of blood coagulation
4. Mechanism of humoral immunity
5. Functions of Neutrophils
6. Explain the waves of **Lead II** ECG with a diagram.
7. Define glomerular filtration rate. Describe the factors regulating it.
8. Dead space
9. Chemical regulation of respiration
10. Functions of saliva.
11. Micturition reflex.
12. Heart sounds.

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Ionic basis of resting membrane potential
14. What is cross matching? What are its types
15. What is Cushing's reflex
16. What is Triple response
17. What is Bohr effect
18. What is Histotoxic hypoxia? Give an example.
19. What is cyanosis? What are its types
20. Peristalsis.
21. List the functions of Juxta-glomerular apparatus.
22. Artificial kidney.

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase - I Degree Examination – 17-Aug-2024

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY - II (RS3)
QP Code: 1078

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the connections and functions of basal ganglia. Add a note on its clinical disorders.
2. Describe the synthesis and functions of thyroid hormones. Add a note on its clinical disorders.

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Cushing's syndrome
4. Testosterone
5. Pregnancy tests
6. Placental hormones.
7. Compare skeletal muscle with smooth muscle
8. Neuromuscular junction
9. Differences between REM and NREM sleep.
10. Color vision and color blindness
11. Visual pathway and its clinical disorders
12. Hemi section of the spinal cord

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Oxytocin
14. Source and actions of i) Relaxin ii) Inhibin.
15. Functions of parathormone.
16. Prefrontal lobe
17. Functions of Aldosterone
18. Rods and cones
19. Astigmatism
20. Travelling wave theory of hearing
21. Draw the diagram of a strength duration curve. Define Chronaxie and Rheobase
22. Acromegaly

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 02-Dec-2024

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - I (RS-4)
Q.P. CODE: 1020
(QP Contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the parts, fissures, relations and blood supply of Right Lung
2. A 34-year-old man is admitted to the hospital with severe headaches, dizziness and vomiting. On examination, there was a tumor in his tongue.
   a) Describe the attachments and actions of the muscles and nerve supply of tongue
   b) Add a note on its lymphatic drainage

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Describe the origin, course, relations, branches and termination of brachial artery
4. .A 30-year-old patient, who slept with the arm hanging by the side of a chair, came with history of inability to extend the hand at the wrist joint. On examination, there was wrist drop.
   a) Name the nerve compressed in this condition.
   b) Mention the site of compression of nerve?
   c) Enumerate the branches of the nerve given here.
5. .Describe boundaries and contents of Posterior mediastinum
6. Describe the formation, relations, tributaries and termination of Internal jugular vein
7. Draw a neat labelled diagram of spinal cord at mid thoracic level showing the ascending and descending tracts.
8. Explain the formation of Primitive streak and its fate
9. Compare and contrast microscopic features of serous and mucous salivary glands
10. Describe the anatomical division and blood supply of Cerebellum. Enumerate the deep cerebellar nuclei

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Draw a neat labelled diagram of brachial plexus and its branches
12. List the axillary group of lymph nodes and their location
13. Define Bronchopulmonary segment? List the bronchopulmonary segments of left lung
14. Name the muscles of soft palate and mention their nerve supply
15. Draw a neat labelled diagram showing the features in the interior of larynx
16. Name the muscles, spaces and glands enclosed by general investing layer of deep cervical fascia
17. Explain the formation of circle of Willis
18. List the types of Epiphyses with examples
19. Explain the terms- Proximal, Coronal plane, Medial position
20. Mention derivatives of intermediate mesoderm

Rajiv Gandhi University of Health Sciences, Karnataka

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Which of the following arteries is most likely at risk during venepuncture at the cubital fossa?
- E. Brachial artery
- F. Ulnar artery
- G. Radial artery
- H. Common interosseous artery

21 ii) Restoration of diploidy of chromosomes occurs after _____
- E. Capacitation
- F. Acrosomal reaction
- G. Fertilization
- H. Cleavage

21 iii) Basophilia of extracellular matrix of hyaline cartilage is due to _____
- E. Glycosaminoglycans
- F. Collagen fibres
- G. Chondrocytes
- H. Water

21 iv) Which of the following sutures is an example for serrate type _____
- E. Lambdoid
- F. Coronal
- G. Metopic
- H. Sagittal

21 v) The sternal angle of Louis gives attachments to which pair of costal cartilages _____
- E. 1^{st}
- F. 2^{nd}
- G. 3^{rd}
- H. 4^{th}

22 i) Which of the following muscle is pierced by Parotid duct _____
- A. Temporalis
- B. Masseter
- C. Medial pterygoid
- D. Buccinator

22 ii) Broca's motor speech area is located in _____
- E. Postcentral gyrus
- F. Superior frontal gyrus
- G. Middle frontal gyrus
- H. Inferior frontal gyrus

22 iii) Which of the following modification of columnar epithelium helps to increase surface area and absorption _____
- I. Cilia
- J. Microvilli
- K. Flagella
- L. Kinocilia

22 iv) Which of the following cranial nerve passes through internal acoustic meatus _____
- I. Glossopharyngeal
- J. Vagus
- K. Abducent
- L. Facial

22 v) Which of the following chambers contribute to the base of the heart _____
- I. $2/3^{rd}$ of Right atrium and $1/3^{rd}$ of left atrium
- J. $2/3^{rd}$ of Left atrium and $1/3^{rd}$ of right atrium
- K. $2/3^{rd}$ of Right ventricle and $1/3^{rd}$ of left ventricle
- L. $2/3^{rd}$ of left ventricle and $1/3^{rd}$ of Right ventricle

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 04-Dec-2024

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - II (RS-4)
Q.P. CODE: 1021
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A 40-year-old patient presents with numbness and tingling sensation and radiating pain along the back of the thigh, leg, and foot. Upon examination, it was found that the patient had a compression of a nerve in this region. Physician described this nerve as the thickest nerve in the body.
    a) Name the nerve affected in this condition.
    b) Explain its formation, course, relations, branches and termination.
2. Describe the parts, visceral and peritoneal relations and supports of Uterus

SHORT ESSAYS **8 x 5 = 40 Marks**

3. .Describe the ligaments of Knee joint
4. .A 40-year-old patient presents with persistent, gnawing pain in the upper abdomen that worsens after meals. Upon examination, it is found that the patient has tenderness on palpation in the epigastric region.
    a) Name the organ present in this region.
    b) Describe its blood supply and lymphatic drainage
5. .Describe the intrinsic coverings, parts and blood supply of Testis
6. Explain the parts, relations and blood supply of Pancreas
7. Describe the boundaries and recesses of Lesser Sac
8. Classify structural chromosomal abnormalities with examples
9. Compare and contrast microscopic structure of Vas deferens and Fallopian tube
10. Describe Midgut rotation. Add a note on its abnormalities

SHORT ANSWERS **10 x 3 = 30 Marks**

11. List the arteries forming cruciate anastomosis
12. Explain the formation of posterior layer of Rectus sheath
13. Mention the boundaries of the bare area of liver
14. Draw a neat labelled diagram showing the features in the interior of Anal canal
15. Mention the boundaries of Space of Retzius
16. Define law of Segregation
17. List the cells lining the gastric glands and their functions
18. Name the layers of cerebellar cortex and cells present in each layer
19. List six derivatives of neural crest cells
20. Mention the fate of third and fourth aortic arches

Rajiv Gandhi University of Health Sciences, Karnataka

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Which of the following structures passes through lesser sciatic foramen
- I. External pudendal artery
- J. Internal pudendal artery
- K. Superior gluteal artery
- L. Inferior gluteal artery

21 ii) Left gonadal vein drains into which of the following veins
- I. Portal vein
- J. Inferior venacava
- K. Left renal vein
- L. Left suprarenal vein

21 iii) Ejaculatory duct opens into posterior wall of which of the following part of Male Urethra
- I. Prostatic part
- J. Membranous part
- K. Bulbar part
- L. Spongy part

21 iv) Paneth cells secreting lysozymes are found in
- I. Gastric gland
- J. Brunners gland
- K. Prostatic gland
- L. Intestinal Gland

21 v) Which of the following is derivative of Truncus arteriosus _____
- I. Ascending aorta
- J. Arch of aorta
- K. Descending thoracic aorta
- L. Abdominal aorta

22 i) Which of the following syndrome is an example for Deletion _____
- E. Turner's
- F. Edwards
- G. Klinefelter's
- H. Cri du chat

22 ii) Peroneal artery is a branch of
- I. Anterior tibial artery
- J. Posterior tibial artery
- K. Popliteal artery
- L. Dorsalis pedis artery

22 iii) Taenia coli is the salient feature of _____
- M. Ileum
- N. jejunum
- O. Colon
- P. Appendix

22 iv) Perineal membrane separates which of the following regions
- M. Superficial perineal pouch and ischiorectal fossa
- N. Superficial and Deep perineal pouch
- O. Deep perineal pouch and Ischiorectal fossa
- P. Anal triangle and urogenital triangle

22 v) Podocytes line which part of the nephron _____
- M. Bowman's capsule
- N. Proximal collecting tubule
- O. Loop of Henle
- P. Distal collecting tubule

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 09-Dec-2024

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY – PAPER - II (RS-4)
Q.P. CODE: 1023
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the connections and functions of basal ganglia. Add a note on disorders of basal ganglia

2. Discuss in detail the synthesis and actions of thyroid hormones. Add a note on Grave's disease

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Explain supra spinal control of stretch reflex
4. A 30 year old male who had a recent head injury complained of sudden increase in urine output. He also has immense thirst and nocturia. Blood and urine analysis showed FBS – 95mg/dl; serum osmolality – 305mOsm/kg of water, specific gravity of urine - <1.005; urine volume – 10L/day; urine glucose – nil
    a) What is the probable diagnosis?
    b) Name the hormone involved and its site of action
    c) What is the physiological basis of increased urine output in this condition?
5. Discuss the actions of testosterone and its regulation
6. Draw a neat labelled diagram of pain pathway. Add a note on gate control theory of pain
7. Explain the mechanism of excitation – contraction coupling in skeletal muscle
8. Describe the contents and functions of middle ear
9. Explain postural reflexes integrated at the level of medulla oblongata
10. Describe the uterine changes during menstrual cycle. Add a note on hormonal basis for the same

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Explain classical conditioning
12. What is aldosterone escape?
13. List the functions of placental hormones
14. Explain compound action potential
15. Explain synaptic inhibition
16. Define brain death. List the features of brain death
17. Draw a labelled diagram of taste pathway
18. Explain the different waves of EEG
19. Draw a neat labelled diagram of strength duration curve
20. What is VO_{2max}?

Rajiv Gandhi University of Health Sciences, Karnataka

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) The processing of short-term memory to long-term memory is done in:
- A. Prefrontal cortex
- B. Hippocampus
- C. Neocortex
- D. Amygdala

21 ii) Capacitation of sperms takes place in:
- A. Seminiferous tubules
- B. Epididymis
- C. Vas deferens
- D. Uterus

21 iii) Secretion of growth hormone increases with
- A. Increase in blood glucose level
- B. Increase in cortisol
- C. Increase in free fatty acid level
- D. Increased sleep

21 iv) Action of progesterone:
- A. Causes uterine contraction
- B. Inhibits LH secretion
- C. Decrease in body temperature
- D. Causes proliferative changes in uterus

21 v) Glucose increases plasma insulin by a process that involves:
- A. GLUT 1
- B. GLUT 2
- C. GLUT 3
- D. SGLT 1

22 i) In moderate exercise the respiratory rate is increased due to response of:
- A. Proprioception receptors in the joints
- B. Decreased pCO_2 in arterial blood
- C. Increased pO_2 in arterial blood
- D. J-receptor stimulation

22 ii) In muscle contraction all are true except:
- A. A band remains unchanged
- B. H zone disappears
- C. I band becomes wider
- D. Two Z lines come closer

22 iii) Transducin is required for:
- A. Smell
- B. Hearing
- C. Taste
- D. Vision

22 iv) The potential in the endolymph of inner ear
- A. End-plate potential
- B. Endo lymphatic potential
- C. Action potential
- D. Cochlear microphonic potential

22 v) The body mass index to be considered as obesity if:
- F. More than $30kg/m^2$
- G. More than $25kg/m^2$
- H. Between 20-$24kg/m^2$
- I. Less than $20kg/m^2$

Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 11-Dec-2024

Time: Three Hours **Max. Marks: 100**

BIOCHEMISTRY – PAPER I (RS-4)
QP Code: 1024
(QP contains three pages)

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A 12-year-old, with history of type 1 diabetes was brought to the emergency in a semi-comatose state with rapid breathing and fruity odour of breath. Investigations showed Random blood glucose of 450 mg/dL and positive test for the presence of ketone bodies. Arterial Blood Gas (ABG) analysis suggested features of metabolic acidosis.

    a) Write the reference interval for Fasting and Random plasma glucose.
    b) Mention the ketone bodies that answered the test in this case.
    c) Explain the synthesis and utilization of ketone bodies.

2. Write the sources, coenzyme form, biochemical functions and deficiency manifestations of Thiamine.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. An elderly male visited orthopedic department with history of chronic pain in the knee joint. After examination, he was prescribed medication containing some of the heteropolysaccharides and advised to follow up after two months.

    a) What are heteropolysaccharides?
    b) Name the heteropolysaccharides that are present in cartilage and synovial fluid and mention their importance.
    c) Write the composition and biological importance of Heparin.

4. A mother and 12 year her old son was brought with history of fever and headache. All investigations including Liver Function Test (LFT) were within normal limits for both and symptomatic treatment was advised. However, the mother was worried about higher Alkaline phosphatase (ALP) observed in the LFT of her son compared to her. The physician explained the physiological reason for the raised enzyme in the child.

    a) Mention the physiological reason for higher ALP in the above child.
    b) Name two pathological conditions for increase in serum ALP.
    c) Explain the role of isoenzymes in the diagnosis Myocardial infarction.

5. Write two biological functions and a disorder associated with the metabolism of
    a) Iron b) Copper.

6. Describe the electron transport chain.

7. Name the carbohydrate shunt pathways in RBC. Explain their biological importance.

8. Explain the regulation of blood glucose in starvation.

9. What is the normal pH of blood? Name the buffer systems that maintain blood pH. What is the effect of pH on enzyme activity?

10. Explain how calcium is regulated in the body. Mention its deficiency disorders.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. What are Dietary fibres? Why is it important to include them in the diet?

12. Muscle glycogen does not contribute to blood glucose - Justify. Mention two glycogen storage disorders

13. Name the essential fatty acids. Mention three biological importance poly unsaturated fatty acids

14. What is glycated haemoglobin? Mention its diagnostic applications

15. Write the function of the following lipases

a) Lipoprotein lipase
b) Hormone sensitive lipase
c) Phospholipase A2

16. Write two mechanisms of transport of large molecules across membrane. What is Hartnup's disease?

17. What is hyponatremia? Write two causes for the same.

18. What is anion Gap? Write the reference range for normal anion gap.

19. Write the features of competitive inhibition of enzymes.

20. Write three differences between Marasmus and Kwashiorkar.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) The enzyme used in diagnosis of prostate cancer is
A. Acid phosphatase
B. Alkaline phosphatase
C. Lactate dehydrogenase
D. Alanine transaminase

21 ii) The cholesterol lowering effect of statins is by inhibiting
A. HMG CoA reductase
B. HMG CoA lyase
C. HMG CoA Synthase
D. Cholesterol esterase

21 iii) Which of the following is a glycoside?
A. Digitonin
B. Mannitol
C. Glucuronic acid
D. Glucosamine

21 iv) Which of the following is a derivative of cholesterol
A. Vitamin A
B. Vitamin E
C. Vitamin D
D. Vitamin K

21 v) Transport of water through Aquaporins is an example of
A. Simple diffusion
B. Facilitated diffusion
C. Primary active transport
D. Secondary active transport

22 i) Anemia can be caused by the deficiency of all **EXCEPT**
A. Pyridoxine
B. Vitamin B12
C. Vitamin C
D. Riboflavin

22 ii) Which of the following contains iron?
A. Ceruloplasmin
B. Myoglobin
C. Albumin
D. Collagen

22 iii) The following organs can utilize ketone bodies during starvation **EXCEPT**
A. Liver
B. Brain
C. Heart
D. Skeletal muscle

22 iv) Which of the following amino acid in collagen is hydroxylated
A. Glycine
B. Tyrosine
C. Threonine
D. Lysine

22 v) Which of the following is a feature of respiratory acidosis?
A. Decrease in Bicarbonate
B. Increase in pCO2
C. Decreased hydrogen ion concentration
D. Increase in rate and depth of respiration

Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 02-Dec-2024

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - I (RS-4)
Q.P. CODE: 1020
(QP Contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the parts, fissures, relations and blood supply of Right Lung
2. A 34-year-old man is admitted to the hospital with severe headaches, dizziness and vomiting. On examination, there was a tumor in his tongue.
   c) Describe the attachments and actions of the muscles and nerve supply of tongue
   d) Add a note on its lymphatic drainage

SHORT ESSAYS **8 x 5 = 40 Marks**

3. . Describe the origin, course, relations, branches and termination of brachial artery
4. . A 30-year-old patient, who slept with the arm hanging by the side of a chair, came with history of inability to extend the hand at the wrist joint. On examination, there was wrist drop.
   d) Name the nerve compressed in this condition.
   e) Mention the site of compression of nerve?
   f) Enumerate the branches of the nerve given here.
5. . Describe boundaries and contents of Posterior mediastinum
6. Describe the formation, relations, tributaries and termination of Internal jugular vein
7. Draw a neat labelled diagram of spinal cord at mid thoracic level showing the ascending and descending tracts.
8. Explain the formation of Primitive streak and its fate
9. Compare and contrast microscopic features of serous and mucous salivary glands
10. Describe the anatomical division and blood supply of Cerebellum. Enumerate the deep cerebellar nuclei

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Draw a neat labelled diagram of brachial plexus and its branches
12. List the axillary group of lymph nodes and their location
13. Define Bronchopulmonary segment? List the bronchopulmonary segments of left lung
14. Name the muscles of soft palate and mention their nerve supply
15. Draw a neat labelled diagram showing the features in the interior of larynx
16. Name the muscles, spaces and glands enclosed by general investing layer of deep cervical fascia
17. Explain the formation of circle of Willis
18. List the types of Epiphyses with examples
19. Explain the terms- Proximal, Coronal plane, Medial position
20. Mention derivatives of intermediate mesoderm

Rajiv Gandhi University of Health Sciences, Karnataka

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Which of the following arteries is most likely at risk during venepuncture at the cubital fossa?
- M. Brachial artery
- N. Ulnar artery
- O. Radial artery
- P. Common interosseous artery

21 ii) Restoration of diploidy of chromosomes occurs after _____
- M. Capacitation
- N. Acrosomal reaction
- O. Fertilization
- P. Cleavage

21 iii) Basophilia of extracellular matrix of hyaline cartilage is due to _____
- M. Glycosaminoglycans
- N. Collagen fibres
- O. Chondrocytes
- P. Water

21 iv) Which of the following sutures is an example for serrate type _____
- M. Lambdoid
- N. Coronal
- O. Metopic
- P. Sagittal

21 v) The sternal angle of Louis gives attachments to which pair of costal cartilages _____
- M. 1st
- N. 2nd
- O. 3rd
- P. 4th

22 i) Which of the following muscle is pierced by Parotid duct _____
- E. Temporalis
- F. Masseter
- G. Medial pterygoid
- H. Buccinator

22 ii) Broca's motor speech area is located in _____
- M. Postcentral gyrus
- N. Superior frontal gyrus
- O. Middle frontal gyrus
- P. Inferior frontal gyrus

22 iii) Which of the following modification of columnar epithelium helps to increase surface area and absorption _____
- Q. Cilia
- R. Microvilli
- S. Flagella
- T. Kinocilia

22 iv) Which of the following cranial nerve passes through internal acoustic meatus _____
- Q. Glossopharyngeal
- R. Vagus
- S. Abducent
- T. Facial

22 v) Which of the following chambers contribute to the base of the heart _____
- Q. 2/3rd of Right atrium and 1/3rd of left atrium
- R. 2/3rd of Left atrium and 1/3rd of right atrium
- S. 2/3rd of Right ventricle and 1/3rd of left ventricle
- T. 2/3rd of left ventricle and 1/3rd of Right ventricle

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 04-Dec-2024

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - II (RS-4)
Q.P. CODE: 1021
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A 40-year-old patient presents with numbness and tingling sensation and radiating pain along the back of the thigh, leg, and foot. Upon examination, it was found that the patient had a compression of a nerve in this region. Physician described this nerve as the thickest nerve in the body.
   c) Name the nerve affected in this condition.
   d) Explain its formation, course, relations, branches and termination.
2. Describe the parts, visceral and peritoneal relations and supports of Uterus

SHORT ESSAYS **8 x 5 = 40 Marks**

3. . Describe the ligaments of Knee joint
4. . A 40-year-old patient presents with persistent, gnawing pain in the upper abdomen that worsens after meals. Upon examination, it is found that the patient has tenderness on palpation in the epigastric region.
   c) Name the organ present in this region.
   d) Describe its blood supply and lymphatic drainage
5. . Describe the intrinsic coverings, parts and blood supply of Testis
6. Explain the parts, relations and blood supply of Pancreas
7. Describe the boundaries and recesses of Lesser Sac
8. Classify structural chromosomal abnormalities with examples
9. Compare and contrast microscopic structure of Vas deferens and Fallopian tube
10. Describe Midgut rotation. Add a note on its abnormalities

SHORT ANSWERS **10 x 3 = 30 Marks**

11. List the arteries forming cruciate anastomosis
12. Explain the formation of posterior layer of Rectus sheath
13. Mention the boundaries of the bare area of liver
14. Draw a neat labelled diagram showing the features in the interior of Anal canal
15. Mention the boundaries of Space of Retzius
16. Define law of Segregation
17. List the cells lining the gastric glands and their functions
18. Name the layers of cerebellar cortex and cells present in each layer
19. List six derivatives of neural crest cells
20. Mention the fate of third and fourth aortic arches

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Which of the following structures passes through lesser sciatic foramen
   Q. External pudendal artery
   R. Internal pudendal artery
   S. Superior gluteal artery
   T. Inferior gluteal artery

21 ii) Left gonadal vein drains into which of the following veins

Q. Portal vein
R. Inferior venacava
S. Left renal vein
T. Left suprarenal vein

21 iii) Ejaculatory duct opens into posterior wall of which of the following part of Male Urethra
Q. Prostatic part
R. Membranous part
S. Bulbar part
T. Spongy part

21 iv) Paneth cells secreting lysozymes are found in
Q. Gastric gland
R. Brunners gland
S. Prostatic gland
T. Intestinal Gland

21 v) Which of the following is derivative of Truncus arteriosus _____
Q. Ascending aorta
R. Arch of aorta
S. Descending thoracic aorta
T. Abdominal aorta

22 i) Which of the following syndrome is an example for Deletion _____
I. Turner's
J. Edwards
K. Klinefelter's
L. Cri du chat

22 ii) Peroneal artery is a branch of
Q. Anterior tibial artery
R. Posterior tibial artery
S. Popliteal artery
T. Dorsalis pedis artery

22 iii) Taenia coli is the salient feature of _____
U. Ileum
V. jejunum
W. Colon
X. Appendix

22 iv) Perineal membrane separates which of the following regions
U. Superficial perineal pouch and ischiorectal fossa
V. Superficial and Deep perineal pouch
W. Deep perineal pouch and Ischiorectal fossa
X. Anal triangle and urogenital triangle

22 v) Podocytes line which part of the nephron _____
U. Bowman's capsule
V. Proximal collecting tubule
W. Loop of Henle
X. Distal collecting tubule

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MBBS Phase – I (CBME) Degree Examination - 09-Dec-2024

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY – PAPER - II (RS-4)
Q.P. CODE: 1023
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the connections and functions of basal ganglia. Add a note on disorders of basal ganglia

2. Discuss in detail the synthesis and actions of thyroid hormones. Add a note on Grave's disease

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Explain supra spinal control of stretch reflex

4. A 30 year old male who had a recent head injury complained of sudden increase in urine output. He also has immense thirst and nocturia. Blood and urine analysis showed FBS – 95mg/dl; serum osmolality – 305mOsm/kg of water, specific gravity of urine - <1.005; urine volume – 10L/day; urine glucose – nil
    d) What is the probable diagnosis?
    e) Name the hormone involved and its site of action
    f) What is the physiological basis of increased urine output in this condition?

5. Discuss the actions of testosterone and its regulation

6. Draw a neat labelled diagram of pain pathway. Add a note on gate control theory of pain

7. Explain the mechanism of excitation – contraction coupling in skeletal muscle

8. Describe the contents and functions of middle ear

9. Explain postural reflexes integrated at the level of medulla oblongata

10. Describe the uterine changes during menstrual cycle. Add a note on hormonal basis for the same

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Explain classical conditioning

12. What is aldosterone escape?

13. List the functions of placental hormones

14. Explain compound action potential

15. Explain synaptic inhibition

16. Define brain death. List the features of brain death

17. Draw a labelled diagram of taste pathway

18. Explain the different waves of EEG

19. Draw a neat labelled diagram of strength duration curve

20. What is VO_{2max}?

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Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) The processing of short-term memory to long-term memory is done in:
- E. Prefrontal cortex
- F. Hippocampus
- G. Neocortex
- H. Amygdala

21 ii) Capacitation of sperms takes place in:
- E. Seminiferous tubules
- F. Epididymis
- G. Vas deferens
- H. Uterus

21 iii) Secretion of growth hormone increases with
- E. Increase in blood glucose level
- F. Increase in cortisol
- G. Increase in free fatty acid level
- H. Increased sleep

21 iv) Action of progesterone:
- E. Causes uterine contraction
- F. Inhibits LH secretion
- G. Decrease in body temperature
- H. Causes proliferative changes in uterus

21 v) Glucose increases plasma insulin by a process that involves:
- E. GLUT 1
- F. GLUT 2
- G. GLUT 3
- H. SGLT 1

22 i) In moderate exercise the respiratory rate is increased due to response of:
- E. Proprioception receptors in the joints
- F. Decreased pCO_2 in arterial blood
- G. Increased pO_2 in arterial blood
- H. J-receptor stimulation

22 ii) In muscle contraction all are true except:
- E. A band remains unchanged
- F. H zone disappears
- G. I band becomes wider
- H. Two Z lines come closer

22 iii) Transducin is required for:
- E. Smell
- F. Hearing
- G. Taste
- H. Vision

22 iv) The potential in the endolymph of inner ear
- E. End-plate potential
- F. Endo lymphatic potential
- G. Action potential
- H. Cochlear microphonic potential

22 v) The body mass index to be considered as obesity if:
- K. More than $30kg/m^2$
- L. More than $25kg/m^2$
- M. Between 20-24kg/m^2
- N. Less than $20kg/m^2$

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MBBS Phase – I (CBME) Degree Examination - 11-Dec-2024

Time: Three Hours **Max. Marks: 100**

BIOCHEMISTRY – PAPER I (RS-4)
QP Code: 1024
(QP contains three pages)

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A 12-year-old, with history of type 1 diabetes was brought to the emergency in a semi-comatose state with rapid breathing and fruity odour of breath. Investigations showed Random blood glucose of 450 mg/dL and positive test for the presence of ketone bodies. Arterial Blood Gas (ABG) analysis suggested features of metabolic acidosis.

    d) Write the reference interval for Fasting and Random plasma glucose.
    e) Mention the ketone bodies that answered the test in this case.
    f) Explain the synthesis and utilization of ketone bodies.

2. Write the sources, coenzyme form, biochemical functions and deficiency manifestations of Thiamine.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. An elderly male visited orthopedic department with history of chronic pain in the knee joint. After examination, he was prescribed medication containing some of the heteropolysaccharides and advised to follow up after two months.

    d) What are heteropolysaccharides?
    e) Name the heteropolysaccharides that are present in cartilage and synovial fluid and mention their importance.
    f) Write the composition and biological importance of Heparin.

4. A mother and 12 year her old son was brought with history of fever and headache. All investigations including Liver Function Test (LFT) were within normal limits for both and symptomatic treatment was advised. However, the mother was worried about higher Alkaline phosphatase (ALP) observed in the LFT of her son compared to her. The physician explained the physiological reason for the raised enzyme in the child.

    d) Mention the physiological reason for higher ALP in the above child.
    e) Name two pathological conditions for increase in serum ALP.
    f) Explain the role of isoenzymes in the diagnosis Myocardial infarction.

5. Write two biological functions and a disorder associated with the metabolism of
    a) Iron b) Copper.

6. Describe the electron transport chain.

7. Name the carbohydrate shunt pathways in RBC. Explain their biological importance.

8. Explain the regulation of blood glucose in starvation.

9. What is the normal pH of blood? Name the buffer systems that maintain blood pH. What is the effect of pH on enzyme activity?

10. Explain how calcium is regulated in the body. Mention its deficiency disorders.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. What are Dietary fibres? Why is it important to include them in the diet?

12. Muscle glycogen does not contribute to blood glucose - Justify. Mention two glycogen storage disorders

13. Name the essential fatty acids. Mention three biological importance poly unsaturated fatty acids

14. What is glycated haemoglobin? Mention its diagnostic applications

15. Write the function of the following lipases
    d) Lipoprotein lipase
    e) Hormone sensitive lipase
    f) Phospholipase A2
16. Write two mechanisms of transport of large molecules across membrane. What is Hartnup's disease?
17. What is hyponatremia? Write two causes for the same.
18. What is anion Gap? Write the reference range for normal anion gap.
19. Write the features of competitive inhibition of enzymes.
20. Write three differences between Marasmus and Kwashiorkar.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) The enzyme used in diagnosis of prostate cancer is
E. Acid phosphatase
F. Alkaline phosphatase
G. Lactate dehydrogenase
H. Alanine transaminase

21 ii) The cholesterol lowering effect of statins is by inhibiting
E. HMG CoA reductase
F. HMG CoA lyase
G. HMG CoA Synthase
H. Cholesterol esterase

21 iii) Which of the following is a glycoside?
E. Digitonin
F. Mannitol
G. Glucuronic acid
H. Glucosamine

21 iv) Which of the following is a derivative of cholesterol
E. Vitamin A
F. Vitamin E
G. Vitamin D
H. Vitamin K

21 v) Transport of water through Aquaporins is an example of
E. Simple diffusion
F. Facilitated diffusion
G. Primary active transport
H. Secondary active transport

22 i) Anemia can be caused by the deficiency of all **EXCEPT**
E. Pyridoxine
F. Vitamin B12
G. Vitamin C
H. Riboflavin

22 ii) Which of the following contains iron?
E. Ceruloplasmin
F. Myoglobin
G. Albumin
H. Collagen

22 iii) The following organs can utilize ketone bodies during starvation **EXCEPT**
E. Liver
F. Brain
G. Heart
H. Skeletal muscle

22 iv) Which of the following amino acid in collagen is hydroxylated

E. Glycine
F. Tyrosine
G. Threonine
H. Lysine

22 v) Which of the following is a feature of respiratory acidosis?

E. Decrease in Bicarbonate
F. Increase in pCO2
G. Decreased hydrogen ion concentration
H. Increase in rate and depth of respiration

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MBBS Phase – I (CBME) Degree Examination - 13-Dec-2024

Time: Three Hours **Max. Marks: 100 Marks**

BIOCHEMISTRY – PAPER II (RS-4)
QP Code: 1025
(QP contains three pages)

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A 25-year-old female presented with mild anemia, jaundice and splenomegaly. She had previous history of frequent blood transfusion. Laboratory investigations shows spherocyctes (70%), increased reticulocyte count and findings of hemolytic jaundice.
    a. Write the serum and urinary findings in a case of hemolytic jaundice.
    b. Enumerate the steps in the formation and fate of bilirubin.
    c. List two more conditions leading to hemolytic jaundice

2. Enumerate the steps of transcription in prokaryotes. Write the post-transcriptional modifications.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. An Eight month old child was brought to hospital for frequent episodes of vomiting and failure to thrive. On examination, the child was drowsy and had hepatomegaly. Laboratory investigations revealed increased serum ammonia levels.
    a. Mention the transport form of ammonia.
    b. Name the urea cycle disorders and write their enzyme defect.

4. The following is the laboratory investigations in a patient who presented with oedema.

Parameter	**Serum Total Protein**	**Serum Albumin**	**A/G Ratio**
Results	5.0 g/dl	2.3 g/dl	0.85:1

    a. Mention normal A/G ratio (Albumin/Globulin ratio).
    b. Write two conditions in which A/G ratio is altered.
    c. Write two functions of albumin.

5. Enumerate the steps in the formation of uric acid.

6. Explain the structure of immunoglobulin with a neat labelled diagram.

7. Write the nutritional classification of amino acids with examples.

8. Write the steps of polymerase chain reaction (PCR). Mention two applications of PCR.

9. Write five examples of Transmethylation reactions.

10. What are oncogenes and proto-oncogenes? Explain the mechanism of activation of oncogene.

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SHORT ANSWERS **10x3=30 Marks**

11. Write three features of genetic code.
12. What is gene therapy? Mention two conditions where gene therapy is applied.
13. Name the vectors used in Recombinant DNA technology and write their importance.
14. Write the mechanism of action of steroid hormones.
15. Name three pre-analytical variables affecting laboratory results.
16. Write the structure and function of t-RNA.
17. Name three antioxidant enzymes and write their importance.
18. What is clearance test? Why creatinine clearance is preferred over urea clearance test?
19. Write three examples for detoxification reaction by conjugation mechanism.
20. Mention any three biologically important nucleotides and write their importance.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Which of the following is a non-protein amino acid?
- A. Proline
- B. Histidine
- C. Ornithine
- D. Aspargine

21 ii) Transamination of oxaloacetate results in the formation of
- A. Aspartic acid
- B. Valine
- C. Glycine
- D. Serine

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21 iii) Persons with sickle cell trait shows an increased resistance to
- A. Typhoid
- B. Diabetes
- C. Malaria
- D. Cancer

21 iv) Which one of the following compounds is synthesized from tryptophan?
- A. Melanin
- B. Serotonin
- C. Dopamine
- D. Epinephrine

21 v) Salvage pathway for purines involves the enzyme
- A. PRPP amidotransferase
- B. PRPP synthase
- C. Xanthine oxidase
- D. HGPRTase

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22 i) The function of restriction endonuclease enzyme is
- A. Joining DNA to cloning vector
- B. Cleaving DNA at specific sequence
- C. Digesting DNA from its ends
- D. Aggregating DNA at centromere

22 ii) Second messenger which mobilises intracellular calcium is
- A. Phosphatidic acid
- B. Diacylglycerol
- C. cyclic GMP
- D. Inositol triphosphate

22 iii) Biological target for attack by free radicals are all of the following **EXCEPT**
- A. Polyunsaturated fatty acids
- B. Glucose
- C. DNA
- D. Protein

22 iv) Retinoblastoma (RB) gene is a
- A. Proto-oncogene
- B. Oncogene
- C. Carcinogen
- D. Oncosuppressor gene

22 v) Fasting blood sample is preferred for analysis of
- A. Lipid profile
- B. Liver function test
- C. Renal function test
- D. Serum electrolytes

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