



Date of issue : Centre :
Sup. Sign. : Seat No. :

NC-20060001010001-O

First Year M. B. B. S. Examination

January - 2022

Anatomy : Paper-I

(New CBME Curriculum Pattern)

Time : 30 Minutes]

[Total Marks : 20

Instructions :

(1)

नीचे दर्शाविए निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी. Fillup strictly the details of signs on your answer book. Name of the Examination : First Year M. B. B. S. Name of the Subject : Anatomy : Paper-I Subject Code No. : 2 0 0 6 0 0 0 1 0 1 0 1 0 0 0 1 Section No. (1, 2,.....): Nil	Seat No. : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Student's Signature
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(2) In section A all MCQ are compulsory, only one answer will be accepted, no negative marking, correct answer must be marked in OMR sheet with black pen & submit in first 30 Minutes.

Section A

1 MCQ 20

(1) Which of the following is the exocrine part of pancreas.

- (a) Alpha cells (b) Beta cells
(c) Acini (d) Portal triad

(2) Which layer is present only in thick skin.

- (a) Stratum granulosam (b) Stratum lucidum
(c) Stratum spinosum (d) Stratum corneum

- (3) The _____ triangle of the neck lies between the anterior bellies of digastric muscles.
- (a) Submandibular (b) Posterior.
(c) Muscular (d) Submental.
- (4) Medial pterygoid muscle is inserted into the medial surface of the:
- (a) Zygomatic bone.
(b) Medial pterygoid plate.
(c) Lateral pterygoid plate.
(d) Ramus of the mandible.
- (5) The pharynx extends lower down to the level of _____ vertebra:
- (a) 3rd cervical. (b) 4th cervical
(c) 6th cervical. (d) 1st thoracic.
- (6) Cervical plexus is formed by fibers of following spinal nerves:
- (a) C1-C6 (b) C2-C5
(c) C3-C5 (d) C1-C4
- (7) Secretomotor supply to the parotid gland is derived from postganglionic fibres from which ganglion ?
- (a) pterygopalatine (b) otic
(c) ciliary (d) submandibular
- (8) Which of the following is the Phylogenetically oldest part of cerebellum ?
- (a) Paleocerebellum (b) Archicerebellum
(c) Neocerebellum (d) Spinal cerebellum
- (9) Medial geniculate body is part of _____.
- (a) thalamus (b) epithalamus
(c) metathalamus (d) subthalamus

- (10) Milard - gublar syndrome develops because of vascular lesion in
- (a) medualla oblongata (b) pons
(c) mid brain (d) cerebellum
- (11) Which sulcus is known as sulcus of Rolando
- (a) central (b) lateral
(c) calcarine (d) parieto occipital
- (12) Anterior circumflex humeral artery is branch of which part of axillary artery ?
- (a) 1st (b) 2nd
(c) 3rd (d) 4th
- (13) Klumpke's paralysis involves which nerve roots ?
- (a) C5-C6 (b) C7
(c) C8-T1 (d) C4
- (14) Long head of triceps forms which boundary of quadrangular space?
- (a) Superior (b) Inferior
(c) medial (d) lateral
- (15) Foment's sign is clinical testing of which muscle ?
- (a) Lumbricals (b) palmar interossei
(c) dorsal interossei (d) adductor pollicis
- (16) Latissimus dorsi muscle is supplied by which nerve ?
- (a) long thoracis (b) median
(c) dorsal scapular (d) thoraco dorsal
- (17) Septum primum develops during which week ?
- (a) 1st week (b) 4th week
(c) 7th week (d) 12th week

- (18) Approximate number of somites on day 20 is
- (a) 1-4
 - (b) 10-20
 - (c) 22-25
 - (d) 26-28
- (19) The cleavage line of the skin are
- (a) Skin creases over joint
 - (b) Junctional lines between superficial and deep fascia
 - (c) The direction of rows of elastic fibres in the dermis
 - (d) The direction of rows of collagen fibres in the dermis.
- (20) Sympathetic, postganglionic fibres innervate all of the following except
- (a) Sweat glands
 - (b) Smooth muscle of the blood vessel walls
 - (c) Skeletal muscle
 - (d) Arrector pili muscles.
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NC-2006000101010001

First Year M. B. B. S. Examination

January - 2022

Anatomy : Paper-I

(New CBME Curriculum Pattern)

Time : 3 Hours]

[Total Marks : 80

Instructions :

(1)

नीचे दशांकित निशानीवाणी विगतो उत्तरवही पर अवश्य दपवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
First Year M. B. B. S.

Name of the Subject :
Anatomy : Paper-I

Subject Code No. : 2 0 0 6 0 0 0 1 0 1 0 1 0 0 0 1

Section No. (1, 2,.....) : Nil

Seat No.:

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Student's Signature

- (2) Draw labelled diagram wherever required.
- (3) Write to the point.
- (4) Figures to right indicate marks.

SECTION - B

2 Write down any 2 case scenario questions- 16

(1) A 45-year male was having a habit of smoking 2+2+4

since 20yrs brought to the ENT department for the complain of hoarseness of voice and difficulty in phonation and swallowing. On examination a mass in the larynx noted.

- (a) What is the reason of hoarseness of voice?
- (b) What is the nerve supply of cricothyroid muscle?
- (c) Which one is the safety muscle of larynx and why?

(2) Aditya 25 year fall from the scooter and met 2+4+2
with a trauma on the right upper limb. A swelling
noted on the arm. He was not able to extend the wrist
joint. X-Ray shows fracture in the middle of the
humerus.

- (a) Which nerve is damaged and what is the root value?
- (b) Name the muscles supplied by the damaged nerve?
- (c) What is the name of the condition if wrist joint is not able to extend?

(3) Ramesh Bhai 60 year male was a known case 2+2+4
of hypertension, suddenly one evening he felt severe
headache. On clinical examination hemiplegia of left
side with hypertonia and loss of proprioception noted.
Physician find out right fronto-parietal lobe infarction
and internal capsule.

- (a) Which are the parts of internal capsule?
- (b) In this case which part of internal capsule is affected?
- (c) Draw and label the diagram of circle of willis.

3 (A) Write short note : (2 out of 3) 10

- (1) Describe 1st carpometacarpal joint with type, articular surface, relation and movement.
- (2) Describe cubital fossa with clinical importance.
- (3) Define dorsal digital expansion.

(B) Write short notes on : 10

- (1) Somites or Primitive streak.
- (2) Development of Thyroid gland or Pituitary Gland.

- (C) Write short notes on any one : 4
- (1) Describe anastomosis.
 - (2) Sesamoid bone.

SECTION C

- 4 Long question : (2 out of 3) 16
- (1) Define posterior triangle of neck with boundaries, floor, content and applied aspects.
 - (2) Describe tongue with blood supply, innervation and lymphatic drainage.
 - (3) Describe Extraocular muscles and their action and nerve supply.
- 5 (A) Write short note : (2 out of 3) 10
- (1) Write in detail about connection, function and applied aspects of cerebellum.
 - (2) Define spinothalamic tract.
 - (3) Enumerate floor of fourth ventricle.
- (B) Write short note on Histology of : 10
- (1) Thymus or Thyroid
 - (2) Stratified squamous epithelium or adipose tissue.
- (C) Write short note any one : 4
- (1) Pivot joint
 - (2) Blastocyst
 - (3) Histology of Thin skin



NC-2006000101010002

First Year M. B. B. S. Examination

January - 2022

Anatomy : Paper-II

(New CBME Curriculum Pattern)

Time : 3 Hours]

[Total Marks : 80

Instructions :

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fillup strictly the details of signs on your answer book.	Seat No.:
Name of the Examination :	<input type="text"/>
First Year M. B. B. S.	<input type="text"/>
Name of the Subject :	<input type="text"/>
Anatomy : Paper-II	<input type="text"/>
Subject Code No.:	Section No. (1, 2,.....): Nil
2 0 0 6 0 0 0 1 0 1 0 1 0 0 0 2	<input type="text"/>
	Student's Signature

- (2) Draw labelled diagram wherever required.
- (3) Write to the point.
- (4) Figures to right indicate marks.

Section B

2 Case base question (two out of three) 16

- (1) A 65-year-old man with a history of chronic cough noticed a gradually increasing swelling in the left groin. After physical examination the surgeon noted a lemon sized swelling above the pubic tubercle. The swelling in the left groin. After physical examination the surgeon noted a lemon sized swelling above the pubic tubercle. The swelling increased in size on coughing. After manually reducing the swelling the surgeon occluded the deep inguinal ring with the thumb and then asked the patient to cough. The swelling appeared medial to the thumb.

Questions:**1+1+1+2+1+2**

- (a) Give the type of inguinal hernia in this case.
- (b) Give the surface marking of deep inguinal ring.
- (c) How does the hernia in the above case enter the inguinal canal?
- (d) Write a note on the conjoint tendon.
- (e) Name the artery in lateral relation to the neck of hernia in the patient. What is the branch of?
- (f) Give the boundaries and contents of inguinal canal ?

- (2) A patient with 4 gm hemoglobin was given intramuscular injection of iron in the gluteal region. After a few weeks, the patient complained of difficulty while stepping on the right foot. The examination revealed sensory loss in the intermediate area of the dorsum of right foot and dorsum of all toes except lateral side of little. The patient experienced difficulty in dorsiflexing and everting the right foot.

Questions:**1+1+1+2+1+2**

- (a) Name the nerve that is injured by the injection needle in the gluteal region
 - (b) What is the safe site of injection in gluteal region?
 - (c) Comment on the artery supplying this nerve.
 - (d) Name the two parts of this nerve is giving the root value of each.
 - (e) Explain sensory and motor loss in the above patient.
 - (f) Which nerve is sensory to the lateral side of little toe and what is its branch of ?
- (3) A 38-year-old man was brought to the casualty because of sudden onset of severe chest pain. On examination, his respiration and pulse were rapid. On auscultation, the heart sounds were faintly audible. X ray chest showed a globular enlarged shadow suggestive of fluid around heart.

Questions:

1+1+2+2+2

- (a) Name the space which the fluid is accumulated giving its boundaries.
 - (b) Name the outer most layers surrounding the heart and give its nerve supply.
 - (c) Give the boundaries of transverse sinus and its surgical importance.
 - (d) Describe costoxiphoid approach to pericardial cavity.
 - (e) What is area of cardiac dullness
- 3** (a) Write short note : (2 out of 3) (Lower limb) **10**
- (i) Deep peroneal nerve
 - (ii) Femoral sheath
 - (iii) Anastomosis at back of Thigh
- (b) Write short note : **10**
- (i) Histology of Cardiac Muscle or Elastic cartilage
 - (ii) Histology Jejunum or Fallopiian Tube
- (c) Write short note : (1 out 2) (genetic) **4**
- (i) Karyotyping
 - (ii) Down's syndrome

Section C

- 4** Long question : (two out of three) (abdomen) **16**
- (a) Relation and applied anatomy of Stomach
 - (b) Relation and covering of Kidney
 - (c) Ischio-rectal fossa
- 5** (a) Write short note : (2 out of 3) **10**
- (i) Interior of right atrium
 - (ii) Root of lung
 - (iii) Internal thoracic artery

- (b) Write short note : (2 out of 3) Embryology (systemic) 10
- (i) Development of pancreas
 - (ii) Descent of testes
 - (iii) Inter ventricular septum

- (c) Prerequisite for dead body donation. 4

OR

Intravenous Pyelography.



Date of issue : Centre :
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ND-2006000101020001-O Seat No. _____
First Year M. B. B. S. Examination
January - 2022
Physiology : Paper - 1

Time : Hours]

[Total Marks : 20

Instruction :

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup-strictly the details of signs on your answer book.

Name of the Examination :
First Year M. B. B. S.

Name of the Subject :
Physiology : Paper - 1

Subject Code No. : 2 0 0 6 0 0 0 1 0 1 0 2 0 0 0 1

Section No. (1, 2,.....): Nil

Seat No. :

Student's Signature

Section A

MCQs

20 marks

- The phospholipid seen mostly on the outer leaflet of cell membrane is
 - Phosphatidylethanolamine
 - Phosphatidylserine
 - Phosphatidylcholine
 - Phosphatidylinositol
- Fluidity of the lipid bilayer cell membrane is decreased by Decreasing the cell membrane concentration of
 - the unsaturated fatty acids
 - transmembrane protein
 - the saturated fatty acids
 - glycoprotein
- Hemostasis refers to the
 - unwavering control of a physiological set point
 - maintaining a stable internal environment
 - maintaining a stable external environment
 - coagulation of blood

4. Blood does not coagulate inside the body due to the presence of-
- a) Fibrin
 - b) Heparin
 - c) Hemoglobin
 - d) Thromboplastin
5. The region of the sarcomere which contains thick filaments is
- a) M Line
 - b) Z Line
 - c) I Band
 - d) A Band
6. In skeletal muscle myosin head binding site on actin is covered by
- a) Troponin I
 - b) Tropomyosin
 - c) Troponin C
 - d) Titin
7. During the contraction of a skeletal muscle fiber, the actin and myosin filaments slide past each other. Which of the following represents expected changes in the widths of I bands and A-bands during the contraction process?

I Band Width	A Band Width
a. Increase	No Change
b. Decrease	Increase
c. No Change	Increase
d. Decrease	No Change

8. Smooth muscle differs from skeletal muscle by
- a) Highly developed sarcoplasmic reticulum
 - b) Lesser duration of contraction
 - c) Role of extracellular calcium in contraction
 - d) More number of mitochondria
9. In rapid repolarization of ventricular muscle fibres
- a) Slow calcium channels close & slow potassium channels open
 - b) Fast sodium channels close & fast potassium channels open
 - c) Slow calcium channels open & fast potassium channels close
 - d) Fast sodium channels close & fast calcium channels open
10. Which of the following pathway begins at the anterior portion of SA node and ends at AV node
- a) Intermodal pathway of Wenkebach
 - b) Intermodal pathway of Bachman
 - c) Internodal pathway of Thorel
 - d) Bundle of Kent
11. Warm and red skin is seen in
- a) Constricted arterioles and capillaries
 - b) Dilated arterioles and capillaries
 - c) Constricted arterioles and capillaries
 - d) Only dilated capillaries

12. During which phase of cardiac action potential, the inward rectifier potassium current is observed
- a) Initial rapid repolarisation
 - b) Plateau
 - c) Final repolarisation
 - d) Depolarisation
13. Which of the following organ disorder is least likely to result in steatorrhea
- a) Liver
 - b) Small Intestine
 - c) Pancreas
 - d) stomach
14. The mitotically active, undifferentiated cells that replenish Enterocytes, are located in
- a) Brunner's gland
 - b) Crypts of Lieberkuhn
 - c) Payer's patches
 - d) Gut associated lymphoid tissue
15. Intrinsic factor of Castle is secreted by
- a) Chief cells
 - b) Parietal cells
 - c) G cells
 - d) S cells
16. Which of the following can result in gastric ulcer by damaging the mucosal barrier and increasing acid secretion
- a) Gastrin
 - b) H. Pylori
 - c) Bile salts
 - d) Epidermal growth factor
17. Most of the work during tidal inspiration is done by
- a) Diaphragm
 - b) External intercostals muscles
 - c) Internal intercostals muscles
 - d) Sternocleidomastoid muscles
18. Surfactant helps to
- a) Lower the surface tension
 - b) Bring about the closure of the alveoli
 - c) Relax the bronchial wall
 - d) Increase the work of breathing
19. Most of the resistance to the renal blood flow is offered by
- a) Efferent arterioles
 - b) afferent arterioles
 - c) Peritubular capillaries
 - d) renal vein
20. The first micturition reflex is initiated at the urine volume of ___ in urinary bladder
- a) 50 ml
 - b) 150 ml
 - c) 250 ml
 - d) 350 ml



ND-2006000101020001 Seat No. _____

First Year M. B. B. S. Examination

January - 2022

Physiology : Paper - 1

Time : Hours]

[Total Marks : 80

Instruction :

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Name of the Examination :
First Year M. B. B. S.

Name of the Subject :
Physiology : Paper - 1

Subject Code No. : 2 0 0 6 0 0 0 1 0 1 0 2 0 0 0 1

Section No. (1, 2,.....): Nil

Seat No. : [] [] [] [] [] []

Student's Signature

Section B (40 marks)

1. A 46 year old Obese male patient is brought to emergency medical room with perspiration, chest pain (radiating to left shoulder) which is relieved on rest. (1+ 6+3 =10)
 - a. Identify the underlying clinical condition
 - b. Describe the blood supply to heart
 - c. Enumerate the investigations likely to be advised to this patient
2. Answer in Short (any 5 out of 6) (5 x 3 = 15)
 - a. Na⁺.K⁺ pump
 - b. Functions of platelets
 - c. Pernicious anaemia
 - d. Anatomical dead space
 - e. Neat, labeled diagram of a nephron
 - f. myosin filament
3. Short notes (any 3 out of 4) (3 x 5 = 15)
 - a. Oxygen transport
 - b. Functions of blie
 - c. Countercurrent mechanism
 - d. Negative feedback mechanism

Section C (40 marks)

4. Draw a well labelled diagram of oxygen dissociation curve. Describe in detail about oxygen uptake, delivery and transport in blood. Add a note on Haldane's effect. (3+5+2 = 10)

5. Answer in Short (any 5 out of 6)

(5 x 3 = 15)

- | | | |
|---------------------|--------------------------|----------------------|
| a. A V nodal delay | b. Herring Breuer reflex | c. Mitochondria |
| d. Latch phenomenon | e. Respiratory membrane | f. Plateau potential |

6. Short notes (any 3 out of 4)

3 x 5 = 15

- | | |
|-------------------------------|---------------------------|
| a. Neuromuscular transmission | b. GFR |
| c. Erythroblastosis foetalis | d. Cell mediated immunity |
-



Date of issue : Centre :
Sup. Sign. : Seat No. :

ND-2006000101020002-O Seat No. _____
First Year M. B. B. S. Examination
January - 2022
Physiology : Paper - 2

Time : Hours]

[Total Marks : 20

Instruction :

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
First Year M. B. B. S.

Name of the Subject :
Physiology : Paper - 2

Subject Code No. : Section No. (1, 2,.....) : Nil
2 0 0 6 0 0 0 1 0 1 0 2 0 0 0 2

Seat No. :

Student's Signature

Section A MCQs

20 marks

1. Which taste sensation is the most sensitive (has the lowest stimulation threshold)?
a. Acid b. Bitter c. Salty d. Sour
2. Which of the following best describes the "blind spot" of the eye?
a. Located 5 degrees lateral to the central point of vision
b. The exit point of the optic nerve
c. Contains only rods and thus has monochromatic vision
d. Contains no blood vessels
3. After olfactory receptor cells bind odor molecules, a sequence of intracellular events occurs that culminates in the entrance of specific ions that depolarize the olfactory receptor cell. Which ions are involved?
a. Calcium b. Chloride c. Hydrogen d. Sodium
4. Which of the following middle ear ossicle is attached to the tympanic membrane?
a. Columella b. Incus c. Malleus d. Modiolus

5. Olfactory receptor cells belong to which group of cells?
 - a. Bipolar neurons
 - b. Fibroblasts
 - c. Modified epithelial cells
 - d. Multipolar neurons

6. Interneurons that utilize the neurotransmitter enkephalin to inhibit afferent pain signals are most likely to be found in which region of the central nervous system?
 - a. Dorsal horn of spinal cord
 - b. Postcentral gyrus
 - c. Precentral gyrus
 - d. Ventral horn of spinal cord

7. Which type of papillae is located in the posterior part of the tongue?
 - a. Circumvallate
 - b. Foliate
 - c. Fungiform
 - d. Fungiform and circumvallate

8. The processing of short term memory to long term memory is done in :
 - a. Prefrontal cortex
 - b. Hippocampus
 - c. Neocortex
 - d. Amygdala

9. Which of the following thalamic nuclei acts as a relay for transmission of Auditory information
 - a. Dorsomedial
 - b. Lateral geniculate
 - c. Medial geniculate
 - d. Ventral posterolateral

10. A 17-year-old boy sustains serious head and neck trauma during a football game. Physical examination shows a positive Babinski sign. Which of the following is most likely to be damaged in this boy?
 - a. Anterior motor neurons
 - b. Cerebellum
 - c. Corticospinal tract
 - d. Premotor cortex

11. Within minutes after a normal delivery, flow through the foramen ovale decreases dramatically. What is the cause of this change?
 - a. Increased formation of prostaglandin E2 (PGE2) in the endocardium
 - b. Increased rate of flow through the pulmonary artery
 - c. Increased left atrial pressure
 - d. Increased right atrial pressure

12. For male differentiation to occur during embryonic development, testosterone must be secreted from the testes. What stimulates the secretion of testosterone during embryonic development?
 - a. LH from the maternal pituitary gland
 - b. HCG
 - c. Inhibin from the corpus luteum
 - d. GnRH from the embryonic hypothalamus

13. Why do infants of mothers who had adequate nutrition during pregnancy not require iron supplements or a diet rich in iron until about 3 months of age?
 - a. Growth of the infant does not require iron until after the third month
 - b. The fetal liver stores enough iron to meet the infant's needs until the third month
 - c. Synthesis of new red blood cells begins after 3 months
 - d. Muscle cells that develop before the third month do not contain myoglobin

14. What accompanies sloughing of the endometrium during the endometrial cycle in a normal woman?
- An increase in progesterone
 - The LH "surge"
 - A decrease in both progesterone and estrogen
 - An increase in estradiol
15. Which of the following increases secretion of GH?
- Senescence
 - Insulin-like growth factor-1
 - Somatostatin
 - Hypoglycemia
16. Which hormone is largely unbound / least bound to plasma proteins?
- Cortisol
 - T4
 - ADH
 - Estradiol
17. A 24-year-old student goes hiking in the Thar Desert during summer break. The environmental temperature is 105°F and the relative humidity is 20 percent. Which option best describes the major mechanism of heat loss in this student?
- Conduction to air
 - Conduction to objects
 - Convection
 - Evaporation
18. Most of the energy for strenuous exercise that lasts for more than 5 to 10 seconds but less than 1 to 2 minutes comes from what source?
- ATP
 - Anaerobic glycolysis
 - Oxidation of carbohydrates
 - Oxidation of lactic acid
19. Parasympathetic neurons
- Originate in the brain stem and then run via the vagus to the paravertebral ganglia
 - Release noradrenaline at their terminals which in turn activates adrenergic receptors
 - Cause vasodilatation in the blood vessels of the external genitalia
 - Coordinate the so-called 'flight or fight' response
20. The neurotransmitter released by axon terminals of preganglionic sympathetic fibre is
- Acetylcholine
 - Noradrenaline
 - Epinephrine
 - Dopamine



ND-2006000101020002 Seat No. _____

First Year M. B. B. S. Examination

January - 2022

Physiology : Paper - 2

Time : Hours]

[Total Marks : 80

Instruction :

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Fillup strictly the details of signs on your answer book.

Name of the Examination :
First Year M. B. B. S.

Name of the Subject :
Physiology : Paper - 2

Subject Code No. : Section No. (1, 2,.....) : Nil

2 0 0 6 0 0 0 1 0 1 0 2 0 0 0 2

Seat No. :
[] [] [] [] [] []

Student's Signature

Section B 40 Marks

1. A neurologist in his clinic observes a patient entering with waddling gait. On examination he finds intentional tremor and dysmetria. (1+8+1 = 10)
 - a. State the neural organ likely to be involved in the case.
 - b. Describe the various neural circuits involved in the functioning of the concerned organ.
 - c. What is ataxia.
2. Answer in short (any 5 out of 6) (5x3 = 15 marks)
 - a. Autonomic neurotransmitters and their receptors
 - b. Compare and contrast between sympathetic & parasympathetic neurons
 - c. EPSP
 - d. Composition and functions of CSF
 - e. Referred pain
 - f. Myopia
3. Short notes (any 3 out of 4) (3x5 = 15 marks)
 - a. Taste buds
 - b. Draw and label optic pathway
 - c. Functions of middle ear
 - d. Mechanism of body temperature regulation

Section C (40 Marks)

4. Write in detail about biosynthesis, actions, regulation of secretion of insulin. Write about the insulin deficiency and their complications. (2+3+3+2=10)

5. Answer in short (any 5 out of 6)

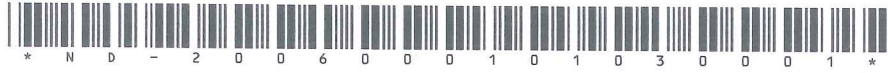
(5x3 = 15 marks)

- a. Second messenger
- b. Myxedoema
- c. ADH
- d. Functions of placenta
- e. Phases of lactation
- f. Basal metabolic rate

6. Short notes (any 3 out of 4)

(3x5 = 15 marks)

- a. Calcitriol
 - b. Ovulation
 - c. Suckling reflex
 - d. Cushing disease
-



ND-2006000101030001 Seat No. _____

First Year M. B. B. S. Examination

December - 2021

Biochemistry : Paper - I
(New CBME Pattern)

Time : Hours]

[Total Marks : 80

Instruction :

नीचे दृशवित्त निशानिवाणी विगतो उत्तरवही पर अवश्य लभवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
First Year M. B. B. S.

Name of the Subject :
Biochemistry : Paper - I

Subject Code No. : 2 0 0 6 0 0 0 1 0 1 0 3 0 0 0 1

Section No. (1, 2,.....): Nil

Seat No. :

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Student's Signature

Section B:

40 Marks

Instructions for section B & C:

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

2: Long Answer Questions (ANY TWO)

(2 x 10 = 20)

A. Describe the pathway of glycogenolysis along with its regulation.

Add a note on glycogen storage disorders. (6+4=10)

B. Enumerate ketone bodies. Describe formation and fate of ketone bodies.

Add a note on other fates of acetyl coA (1+6+3=10).

C. What are blood buffers? Describe in detail role of plasma buffers & renal mechanism in maintenance of acid-base balance. Add a short note on Metabolic Acidosis. (1+3+4+2)

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

(10 x 2 = 20)

a) Iron is double edged sword, justify.

ND-2006000101030001]

1

[Contd...

- b) HDL-Cholesterol has preventive role in atherosclerosis, justify.
- c) Why Fluoride is used as blood preservative for glucose estimation?
- d) Importance of glycemic index.
- e) Muscle glycogen doesn't contribute in maintaining plasma glucose level.
- f) Rancidity of fatty acid increase risk of atherosclerosis.
- g) Diarrhea causes normal anion gap acidosis.
- h) Factors affecting fluidity of cell membrane.
- i) Persons with Sickle cell trait are resistant to Malaria caused by Plasmodium falciparum
- j) Role of carnitine in beta oxidation.
- k) Oral rehydration solution contains glucose and sodium.

Section C:

40 Marks

4: Short answer questions (ANY FOUR) (4 x 5 = 20)

- a) Prostaglandins: synthesis, examples, functions, clinical significance.
- b) Glycosaminoglycans.
- c) Metabolic changes and complications of Diabetes mellitus.
- d) Outline doctor patient communication. Add a short answer on components of communication in medical encounters.
- e) Electron transport chain with its inhibitors.

5: Clinical Cases (ALL COMPULSORY) (2 x 10 = 20)

Case 1:

45 year old female with Body Mass Index (BMI) of 35 kg/m² and diagnosis of Diabetes mellitus (DM) for 7 years came to Medicine OPD for increased frequency of micturation, tingling and numbness in bilateral palm and soles, diarrhea and history of not taking any treatment for DM for last 3 months.

Biochemical laboratory test results were as below:

random plasma glucose =332 mg/dl, Serum Na⁺ =127 mmol/L, K⁺ was 2.88 mmol/L. Ketone bodies were found elevated.

- 1) Explain BMI. What is its relation with diabetes mellitus?
- 2) What is difference among random, fasting and post-prandial plasma glucose (give the normal range).

- 3) What is biochemical basis of elevated serum ketone bodies in diabetes mellitus?
- 4) What is biochemical explanation of tingling and numbness in this patient of diabetes mellitus?
- 5) What is glycated hemoglobin? Give the normal range and its clinical significance.

CASE-2:

A 3 year old female child was reported to pediatric OPD with complaints of growth retardation, loss of appetite, discoloration of skin & hair. Child also had frequent respiratory infections & diarrhea. Child was exclusively on breast feed up to 2 years of age and was now receiving diluted buffalo milk and rice. On examination child was edematous with hepatomegaly & distended abdomen, skin was rough and hairs was flaky. Biochemical investigations are as follows:

Investigations	Results	Reference Range
Hemoglobin	9.5 gm/dl	13 to 15 gm/dl
S. Total Protein	5.7 gm/dl	6.4 to 8.2 gm/dl
S. Albumin	2.0 gm/dl	3.4 to 5.0 gm/dl
S. Cortisol	0.4 µg/dl	0.5 to 1.5 µg/dl

- 1) Differentiate Kwashiorkor with Marasmus.
- 2) Give the reference range of total proteins, albumin and AG ratio in serum.
- 3) What is the biochemical basis for edema & hepatomegaly in this case?
- 4) Write the causes & treatment for such case.
- 5) Functions of albumin (any four)?



Date of issue :

Centre :

Sup. Sign. :

Seat No. :

ND-2006000101030001-O Seat No. _____

First Year M. B. B. S. Examination

December - 2021

Biochemistry : Paper - 1

(New CBME Pattern)

Time : Hours]

[Total Marks : 20

Instruction :

नीचे दृशदिवे निशानीवाणी विगतो उत्तरवही पर अवश्य लपवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
First Year M. B. B. S.

Name of the Subject :
Biochemistry : Paper - 1

Subject Code No. : 2 0 0 6 0 0 0 1 0 1 0 3 0 0 0 1

Section No. (1, 2,.....): Nil

Seat No. :

Student's Signature

Section A: MCQ

(20 marks)

Instructions:

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

- 1 Which of the following correctly describes the composition of the CSF
 - a. It has the same osmolarity as blood
 - b. It has the same pH as blood
 - c. It is more alkaline than blood
 - d. It contains higher glucose concentration than blood

- 2 All of the following are functions of kidney, *Except*:
- Detoxification of Alcohol
 - Formation of 1, 25 DHCC
 - Excretion of hydrogen ions
 - Stimulation of Erythropoiesis
- 3 Parathyroid Hormone (PTH) is involved in:
- Activation of Vitamin D
 - Increases the intestinal absorption of calcium
 - Decreases the intestinal absorption of calcium
 - Increases the synthesis of thyroid hormones
- 4 People with diabetes mellitus are prone to develop cataracts because their elevated blood glucose concentration:
- Inhibit gluconeogenesis
 - Increase glycosylate hemoglobin
 - Increase glycogen synthesis within the lens
 - Allow aldose reductase to reduce glucose to sorbitol
- 5 Facilitated diffusion transport molecules:
- Against concentration gradient
 - With the concentration gradient
 - Always use energy
 - Does not require carrier protein
- 6 Lactic acidosis is seen in the following cases, EXCEPT:
- Oxidative phosphorylation disorders (Mitochondrial)
 - Defective metabolism of pyruvate
 - Excessive ingestion of alcohol
 - Deficiency of glucose-6-phosphate dehydrogenase
- 7 In human, vitamin C is not synthesized, because:
- Absence of Xylitol reductase
 - Absence of L-gulonolactone oxidase
 - Absence of Glucose 6-phosphate dehydrogenase
 - Absence of Xylulose dehydrogenase

- 8 Fatty acid synthesis differs from beta oxidation in all, EXCEPT:
- Uses NADPH as reducing power
 - Requires coenzyme A
 - Catalyzed by multienzyme complex
 - Activated by insulin
- 9 The plasma sample of 35 years old man after overnight refrigeration showed a creamy layer on top and opalescence below. The condition which is excluded is:
- Diabetes mellitus
 - Alcoholism
 - Hypothyroidism
 - Familial hypercholesterolemia
- 10 All of the following fatty acid synthesized by humans EXCEPT
- Palmitoleate
 - Oleate
 - Arachidonate
 - Linoleate
- 11 Which of the following is rate limiting enzyme in HMP shunt?
- Transketolase
 - Phosphogluconate dehydrogenase
 - Ribulose 5 phosphate
 - Glucose 6 phosphate dehydrogenase
- 12 Which of the following stops respiratory chain?
- Unavailability of O₂
 - Unavailability of ADP
 - Unavailability of NADH
 - All of the above
- 13 Elevated levels of one of the following lipid parameter is associated with pancreatitis:
- Total cholesterol
 - LDL-cholesterol
 - HDL-cholesterol
 - Triacylglycerol

- 14 All the following statements regarding hexokinase and glucokinase are true, EXCEPT
- Hexokinase is Less specific than glucokinase
 - Glucokinase is induced by glucagon
 - Glucokinase is more in the liver
 - They differ in their K_m for the substrate
- 15 Liver can not utilized ketone bodies due to the lack of enzyme
- Thiolase
 - Thiophorase
 - HMG CoA lyase
 - Beta hydroxy butyrate dehydrogenase
- 16 Wilson disease occurs due to defect in which transport protein?
- ATP-7A
 - ATP-7B
 - ABC-A1
 - ABC-C2
- 17 Earliest indicator of iron deficiency anemia is
- S. Ferritin
 - S. TIBC
 - S. Iron
 - S. Transferrin
- 18 Which glucose transporter is under control of insulin?
- GLUT2
 - GLUT3
 - GLUT4
 - GLUT5
- 19 LDL receptor defect results in the following type of hyperlipidemia
- Type I
 - Type IIA
 - Type IIB
 - Type IV
- 20 Cancer cell derive nutrition from:
- Glycolysis
 - Oxidative phosphorylation
 - Glycogenolysis
 - From a fast food



Date of issue :

Centre :

Sup. Sign. :

Seat No. :

ND-2006000101030002-O Seat No. _____

First Year M. B. B. S. Examination

December - 2021

Biochemistry : Paper - II

(New CBME Pattern)

Time : Hours]

[Total Marks : 80

Instruction :

नीचे दशांशव निशा-नीवाणी विगतो उत्तरपुकी पर अवश्य लभवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :

Name of the Subject :

Subject Code No. : Section No. (1, 2,.....) :

Seat No.:

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Section A: MCQ

(20 marks)

Instructions:

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

1 Michaelis constant (K_m) of an enzyme is

- a. Dependent upon the enzyme concentration
- b. Numerically equal to $\frac{1}{2} V_{max}$
- c. Independent of pH
- d. Numerically equal to substrate concentration at $\frac{1}{2} V_{max}$

- 2 Creatine kinase level in serum is increased in:
- Myocardial infarction
 - Infective hepatitis
 - Prostate cancer
 - Intravascular hemolysis
- 3 Which enzyme is used for preparing recombinant DNA molecules?
- Restriction endonuclease
 - DNA Polymerase
 - RNA Polymerase
 - Topoisomerase
- 4 Southern blotting analysis is used for all, except:
- Detecting the presence of a mutant gene
 - Studying a microarray
 - Visualizing DNA profile
 - Detecting Restriction fragment length polymorphism
- 5 Deficiency of thyroxine results in:
- | | |
|-------------------|----------------------|
| a. Graves disease | b. Cushings syndrome |
| c. Myxedema | d. Thyrotoxicosis |
- 6 Heme biosynthesis does not occur in
- | | |
|---------------|------------------------------|
| a. Osteocytes | b. Liver |
| c. RBC | d. Erythroid cells of marrow |
- 7 Which vitamin is required for carboxylation of clotting factors
- | | |
|--------------|--------------|
| a. Vitamin A | b. Vitamin D |
| c. Vitamin E | d. Vitamin K |
- 8 Mitochondrial DNA is
- | | |
|--------------------|--------------------|
| a. Closed circular | b. Nicked circular |
| c. Linear | d. Open circular |
- 9 Northern blot is for
- | | |
|------------|----------------------------|
| a. DNA | b. RNA |
| c. Protein | d. DNA protein interaction |

- 10 All are regulatory sequences on DNA, EXCEPT:
- Attenuator sequences
 - Enhancer sequences
 - Consensus sequences
 - Promoter sequences
- 11 Tumor suppressor genes are sometimes called:
- Antioncogenes
 - Proto Oncogenes
 - Oncogenes
 - Proximate Carcinogens
- 12 Conversion of allopurinol to alloxanthine is an example of:
- Competitive inhibition
 - Uncompetitive inhibition
 - Non-competitive inhibition
 - Suicide Inhibition
- 13 Radioisotopes used for treatment of thyroid cancer is
- I^{131}
 - Au^{198}
 - Cs^{139}
 - Ta^{182}
- 14 Chaperon proteins play a role in
- Protein folding
 - Protein misfolding
 - Denaturation
 - All the above
- 15 During denaturation, all the levels of a protein structure are disrupted, Except:
- Primary Structure
 - Secondary Structure
 - Tertiary Structure
 - Quaternary Structure
- 16 Catabolite gene activator protein along with cyclic AMP (CAP - cAMP) is associated with the function of
- Lac operon
 - Tryptophan operon
 - Both of the above
 - None of the above
- 17 Corona virus is positive stranded RNA virus having lipid bilayer with M spike protein in it. Which of the following nitrogen base is absent in genome of this virus?
- Guanine
 - Cytosine
 - Thymine
 - Adenine

- 18 The receptor of the following hormone has intrinsic tyrosine kinase activity
- a. Insulin
 - b. ADH
 - c. Steroids
 - d. Glucagon
- 19 Positive nitrogen balance is seen in
- a. Starvation
 - b. Wasting diseases
 - c. Growing age
 - d. Intestinal malabsorption
- 20 Transmethylation of guanidoacetate gives
- a. Creatine
 - b. Creatinine
 - c. Choline
 - d. n-methyl nicotinamide
-



ND-2006000101030002 Seat No. _____

First Year M. B. B. S. Examination

December - 2021

Biochemistry : Paper - II

(New CBME Pattern)

Time : Hours]

[Total Marks : 80

Instructions : (1)

नीचे दशांश के निशानीवाणी विगतो उत्तरपत्री पर अवश्य लभवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
First Year M. B. B. S.

Name of the Subject :
Biochemistry : Paper - II

Subject Code No. : 2 0 0 6 0 0 0 1 0 1 0 3 0 0 0 2

Section No. (1, 2,.....): Nil

Seat No.:

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Student's Signature

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

Section B:

(40 Marks)

2: Long Answer Questions (ANY TWO)

(2 x 10 = 20)

- a) Describe mutations. Explain various types of DNA repair processes with suitable diagram (4+6=10).
- b) How phenylalanine is converted to tyrosine? Describe biologically important substances synthesized from tyrosine. Describe phenylketonuria in detail (2+5+3=10)
- c) Describe coenzymes and isoenzymes. Write diagnostic and therapeutic applications of enzymes (2+2+4+2=10).

3: Write Brief Answer / Justifications / Biochemical basis (ANY TEN) (10 x 2 = 20).

- a) Restriction endonuclease.
- b) Nutritional classification of amino acids.
- c) Vitamin D is a pro-hormone, explain.
- d) Telomerase is essential for dividing cells.
- e) IUB classification of enzymes with one example each.
- f) Lead poisoning causes anemia.

- g) Ammonia is toxic to brain.
- h) Phenylalanine has sparing action on tyrosine
- i) Glycine is a neurotransmitter
- j) Inhibitors of protein synthesis and their action.
- k) Brown adipose tissue keeps body warm.

Section C:

(40 Marks)

4: Short answer questions (ANY FOUR)

(4 x 5 = 20)

- a) Describe the polymerase chain reaction with its applications.
- b) Describe salvage pathway of purine nucleotide synthesis with associated disorders.
- c) What is the clinical significance of 2, 3 -BPG? Add a note on effect of 2, 3-BPG on oxygen dissociation curve.
- d) Metabolism and biochemical functions of vitamin D.
- e) Biologically important peptides.

5: Clinical Cases (ALL COMPULSORY)

(2 x 10 = 20)

Case 1:

A newborn baby was brought with yellowish discoloration of skin and conjunctiva 5 days after birth. Serum unconjugated bilirubin was high. Treatment with phototherapy and oral phenobarbitone was started.

- a) What is the diagnosis and cause of the above condition?
- b) What is basis of phototherapy in treatment of this disorder?
- c) What is basis of phenobarbitone in treatment of this disorder?
- d) What are serious consequences, if treatment is delayed in this patient?
- e) Write Normal range of serum total, conjugated and unconjugated bilirubin?

Case 2:

43-year-old male working in a shipping company visited Dental OPD with complain of bleeding gums and hemorrhagic patches on the skin. He was taking frozen food throughout his sailing time. The dentist diagnosed him as a case of scurvy.

- a) Write any four sources of vitamin C.
- b) Name the enzymes requires vitamin C as co-factor.
- c) Vitamin C deficiency may be associated with iron deficiency, explain.
- d) Human cannot synthesis vitamin C, justify.
- e) RDA of vitamin-C.