Total No. = 03 pages

Q.P. Code: MBN101

M.B.B.S. 1st Prof.

(New Scheme w.e.f. 2019 admission onwards)

BF/2023/06

Anatomy – A

M.M. : 100 Time : 3 Hours(First30 Min. for MCQs)

Note: 1. **Use OMR Sheet to answer Multiple Choice Questions(MCQs).**
2. Attempt all questions. Illustrate your answers with suitable diagrams
3. **NO SUPPLEMENTARY SHEET SHALL BE ALLOWED/PROVIDED**
4. ***The student must write Q.P. Code in the space provided on OMR Sheet and the Title page of the Answer Book.***

Q.1 **MCQs** (Attempt on OMR sheet) [1x20]

1. A 3 year old child is admitted to the emergency department with a particularly severe attack of asthma. Which of the following is the most important factor in increasing the intrathoracic capacity in inspiration?
   a. "Pump handle movement" of the ribs-thereby increasing anterior-posterior dimensions of the thorax
   b. "Bucket handle movement" of the ribs- increasing the transverse diameter of the thorax
   c. Straightening of the forward curvature of the thoracic spine, thereby increasing the vertical dimensions of the thoracic cavity
   d. Descent of the diaphragm with protrusion of the abdominal wall thereby increasing vertical dimensions of the thoracic cavity

2. A 41 year old patient presents with a compliant of chronic nasal bleed. To control the severity of the nasal bleeding his physician decides to ligate the sphenoplatine artery. From which of the following arteries does the sphenopalatine artery arise?
   a. External carotid artery b. Facial artery
   c. Maxillary artery d. Ophthalmic artery

3. A young lady was brought to the burns casualty with 60% bourns. You as a duty doctor observe that both her upper limbs and lower limbs are involved in the burn injuries. What will you do to give a continuous venous infusion of fluids to save the patient?
   a. Try putting a cannula in the median cubital vein
   b. Try putting a cannula in cephalic venin
   c. Try putting a cannula in the external jugular vein
   d. Try a venous cut open of the great saphenous vein

4. A 29 year old visited ENT OPD with the chief compliant of facial asymmetry, not able to close his left eye and inability to chew food properly from his left side. He had a history of fever 10 days back. On examination the side of the face is motionless, wrinkles absent, tears flowing out and saliva dribbling from the left angle of the mouth. On the basis of your knowledge of anatomy, what can be the diagnosis?
   a. Injury to the facial nerve at stylomastoid foramen
   b. Injury at facial colliculus c. Supra-nuclear lesion of the facial nerve
   d. Injury to Pons

5. A patient has been severly injured in the back of the head during a mugging attempt and imaging studies reveal possible fracture of the skull along with the C1 (atlas) vertebra. The patient is also bleeding from the vertebral artery in this location and the attending surgeon will attempt to stop the bleeding by access through the suboccipital triangle. Which of the following muscles attaches from the transverse process of C1 to the occipital bone and forms the lateral border of the suboccipital triangle?
   a. Obliquus capitis inferior b. Obliquus capitis superior
   c. Rectus capitis posterior major d. Rectus capitis posterior minor

6. A 50 year old man came to the casualty complaining that while eating fish something got struct in his throat and that it was causing pain and discomfort. On physical examination of the throat, it was found that the fish bone was impacted in the piriform fossa. While removing the fishbone which nerve is likely to be injured?
   a. External laryngeal nerve
   b. Internal laryngeal nerve
   c. Ansa cervicalis
   d. Glossopharyngeal nerve

7. After the cadaveric dissection the proper mode of disposal is in _____bin.
   a. Blue
   b. Green
   c. Red
   d. Yellow

8. A new born baby with a tuft of hair in lower back region was examined by paediatrician, what is the possible condition suspected?
   a. Rachischisis
   b. Spina bifida occulta
   c. Sacrococcygeal teratoma
   d. Caudal dysgenesis

9. A 40 year old patient came with headache, fever and stiffness in neck and was diagnosed as a case of meningitis. The physician wanted to evaluate the biochemical analysis of cerebrospinal fluid (CSF). Which one of the following would be the choice of tapping the needle for withdrawal of CSF?
   a. T-12 and L-1
   b. L-1 and L-2
   c. L-2 and L-3
   d. L-3 and L-4

10. A 6 year old girl was having high grade fever for 5 days. One evening she complained of weakness in her left leg. On examination there was flaccid paralysis of lower limb. What could be a provisional diagnosis?
   a. Poliomyelitis
   b. Cerebral palsy
   c. Cerebellar palsy
   d. Lateral medullary syndrome

11. A 66 year old nulliparous woman presented in the surgical OPD with complaints of bloody discharge from her right nipple. On examination, the nipple was found to be retracted and skin around it had an 'orange peel appearance'. The most likely diagnosis for this condition is:
   a. Intraductal papilloma
   b. Krukenburg's tumor
   c. Gynecomastia
   d. Paget's disease of the breast

12. 60 year old diabetic lady complaints of intermittent attacks of pain in the thumb, index and 2nd finger of right hand. On examination, there is wasting of thenar eminence, she is unable to hold a paper with thumb and fingers. There was loss of opposition of thumb. Index and middle finger lag behind while making a fist. What could be the cause of such a condition?
   a. Compression of ulnar nerve in the forearm
   b. Compression of median nerve in the arem
   c. Compression of ulnar nerve at the carpal tunnel
   d. Compression of median nerve at carpal tunnel

13. A 22 year old female kabaddi player suffered a wrist injury while she tried to touch the central line on her outstretched hand. The Orthopedician notices mild swelling at the anatomical snuff box with difficulty in ulnar deviation of hand. Which carpal bone is likely to be injured?
   a. Pisiform
   b. Trapezoid
   c. Trapezium
   d. Scaphoid

14. A woman comes to OPD with the complaint of difficulty to spread the fingers of her left hand. The nerve is likely to be involved:
   a. Ulnar
   b. Musculocutaneous
   c. Radial
   d. Median

15. A patient is stabbed in the neck. You suspect damage to the accessory nerve in the posterior triangle. You would test nerve function by asking the patient to
   a. Extend his neck against resistance
   b. Extend his neck without resistance
   c. Lift his shoulders against resistance
   d. Lift his shoulders without resistance

16. Examination of a patient indicates that he has a medially directed strabismus (squint). This could be due to damage to the:
   a. Oculomotor nerve
   b. Trochlear nerve
   c. Ophthalmic nerve
   d. Abducens nerve

17. The seventh cranial nerve supplies:
    a. Taste buds on the posterior third of the tongue
    b. Muscles of the soft palate
    c. The parotid salivary gland
    d. Muscles of the lower lip

18. A 13 year old child sustain an insect bite on his upper eyelid and an infection develops. You should be very concerned about spread of the infection to the dural venous sinuses. With which of the following dural venous sinuses does the superior ophthalmic vein communicate directly?
    a. Superior sagittal sinus
    b. Sigmoid sinus
    c. Straight sinus
    d. Cavernous sinus

19. One of the following is a paired dural venous sinus.
    a. Superior sagittal sinus
    b. Sigmoid sinus
    c. Inferior sagittal sinus
    d. Confluence of sinuses

20. Taste sensations from the tongue is carried by the following nerves:
    a. VII, VIII & IX
    b. V, VI, & XI
    c. VII, IX & X
    d. XI, X & XII

Q.2 . **Describe the larynx under following headings**: -
    a. Cartilages and ligaments
    b. Movements of vocal cords
    c. Clinical anatomy [4x3]

Q. 3. **Write short notes on:** [5x4]
    a. Illustrate microanatomy of mammary gland
    b. Types of cartilaginous joints
    c. Claw hand
    d. Describe microanatomy of compact bone

Q.4. **Explain:** [3x5]
    a. Clinical importance of median cubital vein
    b. Wry neck
    c. Neurobiotaxis with example
    d. Erb's palsy
    e. Haemmohrage after tonsillectomy

Q.5. **Write short notes on:** [6x3]
    a. Derivatives of first pharyngeal arch
    b. Transverse section through midbrain at the level of superior colliculus
    c. Cranial nerve nuclei of general visceral efferent column

Q.6. **Write short notes on:** [5x3]
    a. Lymphatic drainage of mammary gland
    b. Lower triangular space in scapular region
    c. Circle of Willis

Total No. = 03 pages

Q.P. Code: MBN102

M.B.B.S. 1st Prof.

(New Scheme w.e.f. 2019 admission onwards)

BF/2023/06

Anatomy – B

M.M. : 100 Time : 3 Hours(First30 Min. for MCQs)

Note: 1. **Use OMR Sheet to answer Multiple Choice Questions(MCQs).**
2. Attempt all questions. Illustrate your answers with suitable diagrams
3. **NO SUPPLEMENTARY SHEET SHALL BE ALLOWED/PROVIDED**
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Q.1 **MCQs** (Attempt on OMR sheet) [1x20]

1. Fascia of Denonvilliers -
   a. Membranous layer of fascia of the thigh
   b. Perirenal fascia
   c. Fascia between the rectal ampulla and the prostate and the seminal vesicles
   d. Posterior layer of perirenal fascia

2. A forty year old lady comes to OPD with complaint of difficulty to initiate dorsiflexion and inversion of leg. The muscle most likely affected is:
   a. Tibialis posterior b. Tibialis anterior
   c. Peroneus tertius d. Peroneus longus

3. Sickle cell anemia is the clinical manifestation of homozygous genes for an abnormal hemoglobin molecule. The event responsible for the mutation in the Beta chain is -
   a. Insertion b. deletion
   c. Non-disjunction d. Point mutation

4. An eight year child is brought to casualty with history of small beads inserteds into the nose accidentally. It will most likely to enter into-
   a. Apical segment of right Lower lobe b. Medial segment of right Middle lobe
   c. Basal segment of left Lung d. Posterior segment of right Lower lobe

5. Commonest among diseases with Mendelian inheritance is -
   a. Autosomal dominant b. Autosomal recessive
   c. X-linked recessive d. X-linked dominant

6. During surgery in the region of adductor canal, which of the following structures is not found ?
   a. Femoral artery b. Femoral vein
   c. Femoral nerve d. Saphenous nerve

7. The appendix of the testis develops from -
   a. Mesonephric duct b. Para-Mesonephric duct
   c. Both d. None
8. Umbilical cord has -
   a. 2 artery and 1 vein b. 1 artery and 2 veins
   c. 2 artery and 2 veins d. only one artery
9. In embryo the inner cell mass forms the -
   a. Embryonic disc b. Extra embryonic mesoderm
   c. Chorion d. Allantois

10. In a female child ovary are present in which stage-

a. Anaphase 2nd meoitic
b. Prophase 1 st meiotic
c. Oogony
d. Maturation

11. The ureter is lined by..... ephithelium -

a. Stratified squamous
b. Cuboidal
c. Cilliated columnar
d. Transitional

12. The upper half of the oesophagus in lined by -

a. Stratified cuboidal epithelium
b. Stratified columnar epithelium
c. Stratified squamous non keratinsed epithelium
d. Stratified squamous keratinised epithelium

13. Clara cells are present in -

a. Alveoli
b. Bronchus
c. Bronchioles
d. Trachea

14. A common structure in Hesselbach's triangle and femoral triangle is -

a. Conjoint tendon
b. inguinal ligament
c. Inferior epigastric artery
d. Rectus femoris

15. Perineal body is formed by all except -

a. Levator ani muscle
b. External anal sphincter muscle
c. Bulbocavernous muscle
d. Obturator internus muscle

16. All are parts of vulva except -

a. Labia minora
b. Labia majora
c. Perineal body
d. Clitoris

17. The following about prostate is true except -

a. Surrounds the neck of bladder
b. Has an anterior lobe which hypertrophies in old age
c. Has median lobe between urethra and ejaculatory ducts
d. Has a posterior lobe which is prone to carcinomatous change

18. In the region of knee all are true except-

a. The popliteal fossa is bounded above by tendons of the hamstring muscles and below by the two heads of the gastrocnemius muscle
b. The deepest structure in the popliteal fossa is the popliteal artery
c. The popliteal and femoral vessels are continuous through the adductor hiatus
d. The common peroneal nerve doesn't pass through the popliteal fossa

19. Neurovascular plane in anterior abdominal wall is -

a. Between external oblique and internal oblique
b. Between internal oblique and transversus abdominis
c. Below transverses abdominis
d. Above external oblique

20. Order of the uterine tube from lateral to medial is -

a. Ampulla- Infundibulum -Isthmus-Interstitial
b. Infundibulum-Ampulla-Isthmus-Interstitial
c. Isthmus-Infundibulum-Ampulla-Interstitial
d. Ampulla-Isthmus-Infundibulum-Interstitial

Q.2. **Describe 'Spleen' under the following headings:** [4+3+3+2]

a. Gross features
b. Relations
c. Blood supply and lymphatic drainage
d. Applied anatomy

Q.3. **Write short notes on:-** [5x4]

a. Femoral sheath
b. Bronchopulmonary segments
c. Lateral longitudinal arch of foot
d. Fertilisation

Q.4. **Explain the anatomical/embryological basis of:-** [3x5]

a. Tetralogy of fallot
b. Foot drop
c. Paracentesis thoracis
d. Intramuscular injections are given in the upper and lateral quadrant of gluteal region
e. Pain of ureteric colic referred from loin to groin

Q.5. **Discuss briefly the applied aspect of:-** [6x3]

a. Cervical rib
b. Autosomal dominant disorders
c. Atrial septal defects

Q.6. a. Draw well labelled diagram of Microanatomy of Pancreas. [5x3]

b. Draw well labelled diagram of Structures forming stomach bed
c. Discuss briefly about proper disposal of biomedical waste in dissection hall.

Total No. = 03 pages

Q.P. Code: MBN103

M.B.B.S. 1st Prof.

(New Scheme w.e.f. 2019 admission onwards)

BF/2023/06

Physiology – A

M.M. : 100 Time : 3 Hours(First30 Min. for MCQs)

Note: 1. **Use OMR Sheet to answer Multiple Choice Questions(MCQs).**
2. Attempt all questions. Illustrate your answers with suitable diagrams
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Q.1 **MCQs** (Attempt on OMR sheet) [1x20]

1. Massaging the skin or applying an irritating substance to the skin can suppress the transmission of pain signals from the corresponding area of the body by suppressing the sensory fibres that transmit the pain signal. Which statement describes best?
   a. Presynaptic and postsynaptic inhibition of serotonin C-type fibers.
   b. Lateral inhibition of allogenic fibers by tactile fibers from adjacent areas of the skin.
   c. Activation of neurons of the periaqueductal grey substance.
   d. Release of endorphin from local neurons in the spinal cord.
2. A 48-year-old man was undergoing a thorough neurological exam after falling from a construction platform. The test included an evaluation of his deep tender reflex. Considering entire reflex pathway is intact, which of the following structures CAN NOT trigger a muscle contraction when stimulated?
   a. Gamma motor neurons b. Loading of spindle.
   c. Primary (Group Ia) fiber d. Golgi tendon organ
3. A man falls into deep sleep with one arm under his head. After awakening the arm is paralyzed but tingling sensation and pain sensation persists. This loss of motor function without the loss of sensory function is because
   a. type A fibres are more susceptible to hypoxia that B
   b. type A fibres are more sensitive to pressure than C
   c. C fibres are more sensitive to pressure than A
   d. Sensory nerves are nearer bone and hence affected by pressure
4. 33-year-old man presents with headache for 4 weeks and a right-sided lower motor neuron facial weakness for 3 days. On the day of admission he had developed partial nerve deafness in his left ear. Which is correct finding after doing hearing test.
   a. Rinne's test is positive right ear and sound lateralized to left ear in weber's test.
   b. Rinne's test is negative in left ear and sound lateralized to right ear in weber's test.
   c. Rinne's test is positive in left ear and sound lateralized to right ear in weber's test .
   d. Sounds are not perceived.
5. A 69-year-old woman was admitted to hospital with complains of headache and blurring of vision and pain in both the eyes. On visual examination, she has a reduced ability to see objects in upper and lower quadrant of the left visual fields of both eye but vision is present in the central regions of the visual field. The diagnosis is
   a. Heteronymous hemianopia without macular sparing
   b. Heteronymous hemianopia with macular sparing
   c. Homonymous hemianopia without macular sparing
   d. Homonymous hemianopia with macular sparing

6. A 48-year-old man was undergoing a thorough neurological exam after falling from a construction platform. The test included an evaluation of his knee jerk reflex and considering entire reflex pathway is intact, which of the following is true regarding reflexes
   a. The reaction time for stretch reflex is between 19-24 ms.
   b. The spinal nerve involved in the testing of knee jerk reflex S1 spinal nerve
   c. Spindles are located in muscle tendons.
   d. Muscle spindle fibres are innervated by Ib type.
7. An ophthalmologist explains to a patient that he is a protanope these patients have difficulty in identifying which of the following colour
   a. Red b. Green
   c. Blue d. Black
8. An MD/PhD candidate was studying the role of the hypothalamus in appetite control. In particular, he made a lesion on the ventromedial nucleus of the hypothalamus in order to investigate the effects of this area on appetite. A lesion of this area in the hypothalamus causes to:
   a. Decrease eating ,hyperactivity and weight loss
   b. Excessive eating and weight gain c. Decreased eating and no change in weight
   d. Satiety and weight gain
9. An MD/Ph.D. candidate was studying the role of various areas of the brain on the induction of sleep. In particular, he stimulated numerous areas of the brain and brain stem in order to investigate the effects of these areas on Sleep. Which of the following brain regions induces sleep when stimulated?
   a. Facilitating reticular formation b. Raphe nuclei
   c. Hippocampus d. Substantia nigra
10. A 20-year-old women who was Administered a gonadotroph- stimulating drug responded with an increase in plasma luteinizing hormone levels but follicles stimulating hormone levels remain low. Level of which of the following hormones would also be expected to remain unaffected by such a drug
   a. Oestradiol b. Progesterone
   c. Androstenedione d. Testosterone
11. Blood tests on a 34-year-old man identified high levels of circulating adrenocorticotropic hormone (ACTH). Levels of which of the following adrenal cortex hormones would be least likely to be affected by high ACTH ?
   a. Dehydroepiandrosterone sulfate b. Cortisol
   c. Corticosterone d. Aldosterone.
12. A young woman loses sensation on the left side below the mid-thoracic region after falling down a flight of stairs. A CT scan of her spine revealed a lesion in her dorsal column. All of the following ascending sensory pathways are located in the dorsal column except
   a. pain b. touch
   c. pressure d. vibration
13. A 25- year -old Olympic weightlifter tries to lift a weight .The length of skeletal muscle at which he can develop maximal active tension is called:
   a. Initial length b. Resting length
   c. Maximum length d. Active length
14. A young woman lost sensation on the left side below the mid-thoracic region after falling down a flight of stairs. A CT scan of her spine revealed a lesion in her anterolateral spinal cord segment. A lesion in the anterolateral segment of the spinal cord is associated with
   a. Contralateral loss of pain b. Ipsilateral loss of temperature
   c. Contralateral loss of pressure d. Contralateral vibration loss
15. A 14-year-old boy with an autoimmune disease that destroyed his pancreatic β cell is most likely to exhibit which of the following signs and symptoms?
   a. Hyperglycaemia and diuresis b. Hyperkalaemia
   c. Enhanced protein storage in muscle d. Enhance glucose uptake by deposit.

16. After falling down a flight of stairs a young woman has partial loss of voluntary movement on the right side of her body and loss of pain and temperature sensation on the left side. It is probable that she has a lesion damaging the right half of the spinal cord. All are characteristic features of this lesion except
    a. Fine touch, vibration preserved on same side
    b. Motor paralysis on the same side
    c. Loss of pain and temperature on opposite side
    d. Loss of kinaesthetic sensation on opposite side
17. A 60-year-old man with Parkinson's disease has been able to continue to work and help with routine jobs around the house but now he has tremors and rigidity that interfere with these activities. The characteristics of these tremors could be all except
    a. It consists of regular rhythmic alternate contraction of antagonist and agonist muscle
    b. Common side being the face muscles
    c. Present at rest but disappear during activity
    d. Occur at rate of 6-8 times per second
18. A 35-year-old woman reports muscle weakness in the extraocular eye muscles and muscles of the extremities. She feels fine in the morning, but the weakness begins soon after she becomes active. The weakness is improved by rest. The physician treats her with an anticholinesterase inhibitor. Her physician diagnoses her with
    a. Lambert–Eaton syndrome.
    b. Myasthenia Gravis.
    c. Multiple Sclerosis.
    d. Parkinson Disease.
19. An MD/Ph.D. student studied sleep patterns in full-term infants. Paradoxical sleep occupies about 80% of total rest. Paradoxical sleep consists of
    a. REM sharp wave and fast rhythm
    b. REM spike and slow wave
    c. NREM Delta wave
    d. NREM high spikes theta wave
20. Which hormone from the list below is produced by Sertoli cells and stimulates GnRH (gonadotropin-releasing hormone) and FSH (follicle- stimulating hormone) secretion?
    a. Luteinizing hormone (LH)
    b. Activin
    c. Androgen-binding protein (ABP)
    d. Testosterone

Q.2. Enumerate the components of basal ganglia. What is Parkinson's disease? Discuss the features and rationale of treatment of Parkinson's disease. [1.5+1.5+7+2]

Q.3. **Write short notes on:-** [5x4]
    a. Role of cAMP as second messenger in signal amplification
    b. Molecular basis of skeletal muscle contraction
    c. Enumerate the hormones regulating the calcium homeostasis. Explain the role of any of them
    d. Differentiate between non REM sleep and REM sleep

Q.4. **Explain why/reason: -** [3x5]
    a. Why neuron is refractory to subswqeuent stimuli during action potential?
    b. Why patients with amputated limb may complain of pain and proprioceptive sensations in the absent limb?
    c. Why damage to ossicles in middle ear results in hearing loss?
    d. Why stretching of tendon results in muscle contraction?
    e. Why is a person entering a dark room from a day light takes time to see the objects?

Q.5. **Short notes on(applied aspect):-** [6x3]
    a. Explain the consequences of adrenal hyperplasia involving outermost cortical layer.
    b. Explain the feedback regulation of ovarian hormones and physiological basis of oral contraceptive pills in prevention of pregnancy.
    c. Explain the feeding behavior abnormalities in lesion of certain areas of hypothalamus.

Q.6. **Short notes:-** [5x3]
    a. Explain spermatogenesis and its regulation.
    b. Explain the cardiovascular and metabolic effects of thyroid hormones.
    c. Explain the physician's role and responsibility to society and the community.

Total No. = 03 pages

Q.P. Code: MBN104

M.B.B.S. 1st Prof.

(New Scheme w.e.f. 2019 admission onwards)

BF/2023/06

Physiology – B

M.M. : 100 Time : 3 Hours(First30 Min. for MCQs)

Note: 1. **Use OMR Sheet to answer Multiple Choice Questions(MCQs).**

2. Attempt all questions. Illustrate your answers with suitable diagrams
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Q.1 **MCQs** (Attempt on OMR sheet) [1x20]

Q1 Multiple choice questions

1 Maximum contraction of gall bladder is seen with
a. CCK b. Secretin
c. Gastrin d. Enterogastrone

2. The PR interval is
a. The beginning of the P wave and the beginning of R wave
b. The beginning of the P wave and the beginning of QRS complex
c. The end of the P wave and the beginning of QRS complex
d. The end of the P wave and the end of QRS complex

3. Which of the following is *NOT* a hypovolemic shock?
a. Hemorrhage b. Burn
c. Diarrhea d. Heart failure

4. The most common cause of anemia in developing country is
a. Malignancy b. Infection
c. Nutritional deficiency
d. Drugs causing bone marrow suppression

5. Which is the first and immediate event in hemostasis
a. Platelet adhesion b. Platelet aggregation
c. Vasoconstriction d. Platelet activation

6. Which of the following intestinal movement is for mixing and grinding of intestinal content
a. Peristalsis b. Segmentation
c. Villus contraction d. Migrating myoelectric complex

7. Blood pressure is defined as the product of
a. Systolic pressure x pulse rate b. Diastolic pressure x pulse rate
c. Pulse pressure x pulse rate d. Cardiac output x peripheral resistance

8. Neutrophil count is high
a. During acute bacterial infection b. Typhoid fever
c. In pernicious anemia d. Drugs depressing bone marrow

9. Stimulation of parasympathetic nerve to salivary gland causes
   a. Increased secretion rich in organic constituents
   b. Decreased secretion
   c. Increased watery secretion rich in enzyme and mucin
   d. Secretion is unaffected
10. Baroreceptor stimulation produces
   a. Decreased heart rate and blood pressure
   b. Increased heart rate and blood pressure
   c. Increased cardiac contractility
   d. Baroreceptor adaptation

11. Exercise causes which of the following?
   a. Increased blood flow to the muscles after half minute
   b. Increase in cerebral blood flow due to increase in systolic blood pressure
   c. Increased body temperature
   d. Decreased O_2 consumption

12. GFR is precisely measured by
   a. Inulin
   b. Creatinine
   c. Hippuric acid
   d. PAH

13. Which of the following is NOT absorbed in proximal convoluted tubule
   a. Na^+
   b. Phosphate
   c. HCO_3^-
   d. H^+
14. Countercurrent mechanism in the kidney is responsible for
   a. Maintenances of blood flow
   b. Absorption of Glucose
   c. Osmotic gradient of medulla
   d. Secretion of uric acid
15. The first physiological response to high environmental temperature is
   a. Sweating
   b. Vasodilation
   c. Decreased heat production
   d. Decreased non-shivering thermogenesis

16. Which of the following does not stimulate peripheral chemoreceptors?
   a. Hypoxic hypoxia
   b. Stagnant hypoxia
   c. Anemic hypoxia
   d. Histotoxic hypoxia
17. Timed vital capacity (FEV_1) is less than 70% in
   a. Bronchial asthma
   b. Bronchitis
   c. Pulmonary fibrosis
   d. Lung collapse

18. Which of the following is seen in high altitude climates?
   a. Decreased density of systemic capillaries
   b. Hypertension
   c. Bradycardia
   d. Increase in pulmonary ventilation
19. Activation of sympathetic fibers caused all *EXCEPT*
   a. Increased heart rate
   b. Increased conduction velocity
   c. Decreased coronary blood flow
   d. Increased myocardial contractility

20. Carbon monoxide poisoning is a type of
   a. Anemic hypoxia
   b. Histotoxic hypoxia
   c. Hypoxic hypoxia
   d. Stagnant hypoxia

Q.2. With the help of a neat diagram explain the volume and pressure changes in the cardiac cycle. Enumerate the heart sounds. Explain the mechanism of the third heart sound. [8+2+2]

Q.3. **Write short notes on:-** [5x4]

a. Explain mechanism of tubulo-glomerular feedback in kidney
b. Discuss mechanism of gastric acid secretion
c. Explain Bohr's effect in oxy-heamoglobin dissociation curve in detail
d. Discuss role of T helper cells in immunity

Q.4. **Explain why:-** [3x5]

a. Inulin is used to calculate renal clearance
b. ORS is the best treatment for dehydration
c. Vitamin K is administrated to newborns
d. A patient in circulatory shock feels thirsty
e. Normal intra-pleural pressure is negative

Q.5. **Short notes on(applied aspect):-** [6x3]

a. Define hypoxia. Discuss hypoxic hypoxia in detail.
b. Discuss dialysis in detail
c. Define and classify anemias. Discuss laboratory findings of iron deficiency anemia in detail.

Q.6. **Short notes on:-** [5x3]

a. Discuss rights and responsibilities of a patient.
b. Discuss nitrogen narcosis
c. Explain peristalsis in detail

Total No. = 03 pages

Q.P. Code: MBN105

M.B.B.S. 1st Prof.

(New Scheme w.e.f. 2019 admission onwards)

BF/2023/06

Biochemistry – A

M.M. : 100 Time : 3 Hours(First30 Min. for MCQs)

Note: 1. **Use OMR Sheet to answer Multiple Choice Questions(MCQs).**

2. Attempt all questions. Illustrate your answers with suitable diagrams
3. **NO SUPPLEMENTARY SHEET SHALL BE ALLOWED/PROVIDED**
4. ***The student must write Q.P. Code in the space provided on OMR Sheet and the Title page of the Answer Book.***

Q.1 **MCQs** (Attempt on OMR sheet) [1x20]

1. A 45 year old man was admitted to hospital suffering from general fatigue, headache and stiff shoulder. He was diagnosed as hypertensive after his blood pressure was found to be 170/96 mm/Hg. Inhibitor of the following enzyme will help control the elevated blood pressure.
   a. Renin b. Beta-hydroxbutyrate dehydrogenase
   c. Lipase d. Angiotensin converting enzyme (ACE)

2. A 45 year old farmer was spraying an insecticide in fields. Suddenly he developed eye pain, headache and tightness in chest. He was taken to hospital where diagnosis of fluorophosphates (FP) poisoning was made. Biochemical basis of toxicity of FP is:
   a. Irreversible inhibitor of an enzyme
   b. Competitive inhibitor of acetylcholinesterase
   c. Non-competitive inhibitor of acetylcholinesterase
   d. Interference in electron transport chain

A 15 year old boy, who is having type-1 diabetes was brought to hospital in an unconscious state. He was on insulin therapy. A characteristic offensive smell was noticed in his breath. Blood glucose was elevated (428 mg/dl)

3. What is your most probable diagnosis
   a. Respiratory acidosis b. Lactic acidosis
   c. Metabolic alkalosis d. Diabetic ketoacidosis

4. The offensive smell in breath is due to
   a. Acetone b. Acetoacetate
   c. Beta-hydroxy butyrate d. Lactate

A 26 year old man experienced severe pain in his right side and back. Subsequent investigations indicated a kidney stone. Increased urinary excretion of cystine, arginine and lysine in the urine was reported.

5. What is your most probable diagnosis
   a. Cystinosis b. Cystinuria
   c. Homocysteinaemia d. Phenylketonuria

6. Cause of the above disorder is
   a. Transport defect b. Enzymatic defect
   c. Hormonal defect d. Immuno-compromised state

7. True statement related to the above amino acid is
   a. Cystine is an essential amino acid b. Arginine is a semi-essential amino acid
   c. Lysine is a non-essential amino acid d. All three amino acids are glucogenic

A 14 year old boy with type 1 diabetes lost consciousness on racing track, while he was playing with his friends. He had received his normal insulin injection in the morning but continued playing forgetting his breakfast and lunch. He was given glucagon injection from the emergency kit his mother carried and recovered within minutes

8. The boy lost consciousness due to
   a. Hyperglycaemia
   b. Ketone bodies
   c. Hyperlipidaemia
   d. Hypoglycaemia

9. The tissue/organ which is most severely affected in the above condition is
   a. Skeletal system
   b. Haemopoietic system
   c. Nervous system
   d. Vascular system

10. The following compounds foms a link between Kreb cycle and Urea cycle
   a. Fumarate
   b. Succinate
   c. Oxaloacetate
   d. Malate

11. Rate and direction of glucose and glycogen metabolism in liver is controlled by
   a. Estradiol
   b. Glucagon
   c. Aldosterone
   d. Estrone

12. Near complete absence of the high density lipoproteins leads to the following disease:
   a. Tangier disease
   b. Fabry disease
   c. Familial hypercholesterolaemia
   d. Familial combined hyerlipidaemia

13. The term abetalipoproteinaemia refers to near complete absence of all of the following EXCEPT.
   a. LDL
   b. VLDL
   c. Chylomicrons
   d. HDL

14. GluTs promote entry of glucose into cells along a concentration gradient. This is an example of
   a. Simple diffusion
   b. Faciliated diffusion
   c. Primary active transport
   d. Secondary active transport

15. Hypoglycaemia compromises brain functions and is fatal when severe (blood glucose below 2.5 mmol/Liter). Severe hypoglycaemia may occur in:
   a. Insulinoma
   b. Fasting
   c. Cigarette smoking
   d. Cushing syndrome

16. When a person gets up in the morning 12 hours after dinner, the main source of his blood glucose is
   a. Liver glycogenolysis
   b. Gluconeogenesis
   c. Muscle glycogen
   d. Dietary glucose

17. Brain is an avid eater of glucose. During prolonged fasting its energy needs are covered from
   a. Oxidation of muscle glycogen
   b. Hepatic glycogenolysis
   c. Anaerobic glycolysis
   d. Oxidation of ketone bodies

18. All of the following are essential amino acids EXCEPT
   a. Lysine
   b. Leucine
   c. Glycine
   d. Phenylalanine

19. Competitive inhibitors bind with active site of an enzyme and cause
   a. Increase in Vmax
   b. Increase in Km
   c. Decrease in Km
   d. Decrease in Vmax

20. All of the following are correct statements related to doctor patient communication EXCEPT:
    a. One of the goals of effective doctor patient communication is facilitating exchange of information
    b. Lesser doctor patient ratio is one of the reasons for bad doctor patient communication
    c. Use of medical jargons is allowed while breaking bad news to the patient or patient's family
    d. Building rapport is one of the tools to improve doctor patient communication

Q.2. A new born baby developed jaundice on 3rd day after the birth. Blood test revealed unconjugated hyperbilirubinemia. [3+4+3+2]
    a. What is the diagnosis?
    b. What are the probable causes of developing this condition?
    c. How is such a case managed?
    d. Give two causes of conjugated hyperbilirubinemia.

Q.3. **Write short notes on:-** [5x4]
    a. Glutathione
    b. Glycosides
    c. Micelles
    d. Glycated hemoglobin

Q.4. **Explain why:-** [3x5]
    a. Trans fatty acids are harmful.
    b. Curd is advised in patients with lactose intolerance.
    c. Phenylketonuric infants are fair.
    d. Exercise intolerance is observed in McArdle disease.
    e. Dietary fibers are beneficial for health.

Q.5. **Write short notes on:-** [6x3]
    a. Role of enzymes in diagnostic.
    b. Biochemical basis of toxicity of hyperammonemia.
    c. Biochemical role of vitamin A.

Q.6. **Write short notes:-** [5x3]
    a. Discuss the types of doctor-patient relationship.
    b. Discuss the causes and consequences of alcoholics.
    c. Discuss the regulation of ketone body metabolism.

Total No. = 03 pages

Q.P. Code: MBN106

M.B.B.S. 1st Prof.

(New Scheme w.e.f. 2019 admission onwards)

BF/2023/06

Biochemistry – B

M.M. : 100 Time : 3 Hours(First30 Min. for MCQs)

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Q.1 **MCQs** (Attempt on OMR sheet) [1x20]

Tick the most appropriate answer:

1. A 3 year old boy has a tendency to bite himself often to the point of bleeding. The boy's fingers show scarring and several scabs. His lips are swollen and bruised. He also has poor coordination, weak muscle tone and significantly delayed speech. The urine is orange in colour. Which of the following is the most likely diagnosis?
   a. Tay-Sachs disease b. Phenylketonuria
   c. Lesch-Nyhan syndrome d. Cerebral palsy

2. A 10 year old body develops severe diarrhea while traveling to India. The laboratory investigation revealed the following results:
   Arterial blood pH = 7.25
   Partial Pressure of carbon dioxide = 26 mmHg
   Bicarbonate = 11 mEq/L with normal anion gap
   What is the most probable diagnosis?
   a. Metabolic acidosis b. Metabolic alkalosis
   c. Respiratory acidosis d. Respiratory alkalosis

3. A 10 year old boy complained of abdominal pain and was admitted in a hospital. He was weak and tried and had a history of seizures. The examination revealed an enlarged liver, Kayser-Fleishner ring in the cornea and low serum ceruloplasmin level. What is the most probable diagnosis?
   a. Wilson's disease b. Keshan's disease
   c. Tetany d. Hartnup's disease

4. Lead poisoning lead to increase in the accumulation and urinary excretion of coproporphyrin III and ALA in the urine. Which of the following enzymes are inhibited by lead metal?
   a. ALA synthase and protoporphyrin oxidase
   b. ALA synthase and coproporphyrin oxidase
   c. ALA dehydratase and protoporphyrin oxidase
   d. ALA dehydratase and ferrochelatase

5. Which of incorrect in xeroderma pigmentosum?
   a. It is an autosomal recessive condition
   b. Defect is in the repair mechanism of DNA
   c. Sensitivity to UV light is the major manifestation
   d. Cells are unable to synthesize vitamin-D even in the presence of sunlight

6. The enzyme used in the complementary DNA synthesis is
   a. Restriction endonuclease
   b. Taq DNA polymerase
   c. Reverse trascriptase
   d. Ligase

7. Lac operon is active when
   a. Only glucose is available in medium
   b. Only lactose is available
   c. cAMP is low
   d. Both lactose and glucose are available

8. A 3 year old girl was brought to the pediatric OPD with complaints of mild generalized swelling all over the body, loss of appetite, low grade fever and distended abdomen. She belonged to low socioeconomic group. Weight and height were lower as compared for her age group. What is the most probable diagnosis?
   a. Kwashiorkar
   b. Marasmus
   c. Irritable bowel syndrome
   d. Ulcerative colitis

9. Vitamin K activates the following clotting factor except:
   a. Prothrombin
   b. Factor VII
   c. Factor V
   d. Factor IX

10. Marfan's syndrome is caused by the following defective protein:
   a. Fibrinogen
   b. Fibronectin
   c. Fibrillin
   d. Collagen

11. An increase in serum unconjugated bilirubin occurs in:
   a. Hemolytic jaundice
   b. Obstructive jaundice
   c. Defects in intestinal absorption
   d. Glomerulonephritis

12. The urine of the patient with obstructive jaundice will give a positive test for:
   a. Fouchet's test
   b. Benzidine test
   c. Sodium nitroprusside test
   d. Precipitation test

13. What is a nucleosome?
   a. Synonym of nucleolus
   b. DNA-RNA complex present in nucleus
   c. mRNA attached with snRNA
   d. DNA wrapped around histones

14. In primary hypothyroidism, the lab findings are
   a. Decreased TSH
   b. Increased TSH
   c. Increased T3
   d. Increased T4

15. A technician notices that an undiscarded urine has become black on long standing. This may be due to the presence of which substance in the urine?
   a. Homogentisic acid
   b. Phenylalanine
   c. Homocystine
   d. Tyrosine

16. A CSF glucose of 15mg/dL, WBC count of 5000, 90% neutrophilis and protein of 81 mg/dl suggests
   a. Fungal meningitis
   b. Viral meningitis
   c. Tubercular meningitis
   d. Bacterial meningitis

17. A 70 year old male was brought to the emergency with great difficulty in passing urine. There had been significant loss in weight in last 3 months. Investigations were sent for the probable diagnosis of carcinoma prostate. Which of the following marker will support the diagnosis?
   a. Alkaline phosphatase
   b. Tissue specific antigen
   c. Prostate specific antigen
   d. CA125

18. The following is NOT a proto oncogene:
    a. c-myc
    b. Tyrosine kinase gene
    c. p53
    d. cycline

19. A 50 year old man developed an excruciating pain in the first toe with swelling and redness. On investigation, serum uric acid was 12 mg/dl. Synovial fluid examination revealed needle shaped birefringent crystals. What is the most probable diagnosis?
    a. Gout
    b. Scurvy
    c. Osteomalacia
    d. Phenylketonuria

20. The inhibitor of iron absorption is
    a. Phytate
    b. Lysine
    c. Vitamin C
    d. Gastric HCL

Q.2. An obese (BMI 32 kg/m2) 45 year old male presented to the emergency with acute chest pain radiating to left arm. His ECG showed changes typical of an acute myocardial infarction. [2+5+2+3]
    a. Name the biomarkers having specificity for myocardial infarction.
    b. Draw a graph to show the time of onset of cardiac biomarker elevations in acute myocardial infarction.
    c. How is BMI calculated?
    d. What is atherosclerosis?

Q.3. **Write short notes on:-** [5x4]
    a. Messenger RNA
    b. Restriction enzymes
    c. Initiation of protein synthesis
    d. Role of non-verbal gestures in doctor-patient communication

Q.4. **Explain why:-** [3x5]
    a. Creatinine is a better assessor of kidney function than urea.
    b. Hyper ammonemia occurs in urea cycle defects.
    c. Antigen presenting cells have a major role in cellular immunity.
    d. Pedigree chart is important tool in prenatal diagnosis of thallasemias.
    e. Monoclonal antibodies are required in laboratory for diagnosis of some disease.

Q.5. **Write short notes on:-** [6x3]
    a. Tumor markers
    b. Vitamin A
    c. Thyroid function tests

Q.6. **Write short notes:-** [5x3]
    a. Post transcriptional modifications
    b. Nutritional anaemias
    c. Fatty acid synthesis
