

M.B.B.S. 1st PROF. EXAMINATION, JULY- 2012
PHYSIOLOGY
PAPER – FIRST

[Time allotted: Three hours]

[Max Marks: 50]

Note: Attempt all Questions.
 Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given

(½ x 20 = 10)

Q. 2. Problem based question:

(2 x 5 = 10)

Shanti, a 27 year old school teacher, found it difficult to cope up with her daily activities, tiring very easily after a few hours of work at school. Since she was normally a very active and energetic person, she decided to meet her family doctor for her problem. After examining her and performing a quick hemoglobin estimation that revealed a hemoglobin value of 8.5 g/dL. Her family doctor arrived at a provisional diagnosis of anemia.

- Name the most common cause of nutritional anemia in India.
- List the common signs and symptoms of Anemia.
- Describe the most likely peripheral blood smear findings in this case.
- Briefly outline the treatment strategies for mild, moderated and severe forms of anemia.
- Name the methods of measuring hemoglobin levels in blood.

Q. 3. Explain the term plasmapheresis. List all the functions of plasma proteins and describe any one of them.

(2+ 5+ 3=10)

Q. 4. Write short notes on:

(3 x 4 = 12)

- Describe the process of phagocytosis. Which cells in the body have this function?
- Describe the deglutition reflex. Mention the disorders of lower esophageal sphincter.
- Give the clinical importance of **FEV1**.

Q. 5. Write in brief:

(4 x 2 = 8)

- Compensatory pause
- Pace maker Potential
- Juxta Glomerular apparatus
- Triad in sarcoplasm reticulum .

M.B.B.S. 1st PROF. EXAMINATION, JULY- 2012
PHYSIOLOGY
PAPER – FIRST (MCQ)

A

Q. No. 1. Select the most appropriate answer and encircle the alphabet against it.

(0.5 x 20 = 10)

1. Maintenance of a constant internal environmental is known as:
 - a. Hemostasis
 - b. Milieu exterior
 - c. Homeostasis
 - d. Negative feedback
2. The lipid bilayer has highest permeability to:
 - a. Amino acid
 - b. Steroid
 - c. Glucose
 - d. Ions
3. Absorption of glucose along with sodium in the proximal convoluted tubules of the kidney is an example of :
 - a. Primary active transport
 - b. Secondary active transport
 - c. Simple diffusion
 - d. Facilitated diffusion
4. The repolarization phase of the action potential in a neuron occurs due to increase in the permeability of membrane to:
 - a. Sodium
 - b. Potassium
 - c. Calcium
 - d. Chloride
5. Increase in the velocity of conduction through a nerve is directly proportional to:
 - a. Number of nodes of Ranvier
 - b. Diameter of the neuron
 - c. Length of the neuron
 - d. Sensation carried by the neuron
6. Contraction in a skeletal muscle is initiated on binding of calcium with:
 - a. Calmodulin
 - b. Troponin
 - c. Tropomyosin
 - d. Nebulin
7. The part of the circulatory system that is referred as 'resistance vessels' is:
 - a. Aorta
 - b. Venules
 - c. Arterioles
 - d. Capillaries
8. The 'preload' for cardiac contraction refers to:
 - a. Venous return
 - b. Blood volume
 - c. Aortic pressure
 - d. Stroke volume
9. The major determinant of diastolic blood pressure is:
 - a. Peripheral resistance
 - b. Cardiac output
 - c. Heart rate
 - d. Blood volume
10. Anti diuretic hormone increases the absorption of water from the:
 - a. Proximal convoluted tubule
 - b. Thin descending limb of loop of Henle
 - c. Thick ascending limb of loop of Henle
 - d. Medullary collecting duct
11. Clearance of inulin is used for estimating glomerular filtration rate because it is:
 - a. Secreted by the nephron
 - b. Freely filtered
 - c. Absorbed by the nephron
 - d. Produced naturally
12. Myocardial contractility:
 - a. Is a function of initial length of muscle fibres
 - b. Increases on parasympathetic stimulation
 - c. Last for about 1 second
 - d. Is independent of extracellular Ca^{++} concentration
13. The only mechanism for heat loss when the environmental temperature is higher than body temperature is:
 - a. Convection
 - b. Conduction
 - c. Radiation
 - d. Evaporation
14. Most of the iron in the body is in the form of:
 - a. Ferritin
 - b. Hemoglobin
 - c. Myoglobin
 - d. Free iron
15. Vitamin required for the synthesis of the many of the blood coagulation factors in the liver is:
 - a. A
 - b. D
 - c. E
 - d. K
16. Reabsorption of aminoacids in the glomerular filtrate occurs mainly in the:
 - a. Proximal convoluted tubule
 - b. Thin limb of loop of Henle
 - c. Thick limb of loop of Henle
 - d. Distal convoluted tubule
17. All of the following compounds are labeled as Ketone bodies EXCEPT:
 - a. Acetoacetic acid
 - b. β -hydroxybutyric acid
 - c. Acetone
 - d. Oxaloacetate
18. Enzymes required for the protein digestion are mainly secreted from:
 - a. Duodenum
 - b. Pancreas
 - c. Gall bladder
 - d. Salivary glands
19. In the gastro-intestinal tract, the frequency of basic electrical rhythm is highest in:
 - a. Stomach
 - b. Duodenum
 - c. Ileum
 - d. Colon
20. Coronary blood flow is maximum in:
 - a. Isometric contraction phase
 - b. Rapid ejection phase
 - c. Isometric relaxation phase
 - d. Slow ejection phase

Roll No.....

Paper Code ...136...

M.B.B.S. FIRST PROF.EXAMINATION, JULY-2012

PHYSIOLOGY

PAPER-SECOND

[Time allotted : Three hours]

[Max Marks :50]

Note : Attempt all questions

Draw suitable diagrams wherever necessary

Q. 1. Multiple choice questions – separate sheet given (5 x 20=10)

Q. 2. Problem based question: (1+2+3+3+1=10)

Mukesh, a 13 year old boy was taken to his family doctor as he was well over 6 feet tall and required new school uniforms every three months. He had grown over a foot in the past one year. His appearance was normal, and his entire body and face were well proportioned.

Preliminary routine tests revealed raised blood sugar levels. The family physician suggested that they see a specialist for further management.

Based on the given information, answer the following questions

- Name the disorder that Mukesh is most likely to be suffering from.
- Write the underlying cause of the disorder you have identified.
- Briefly explain the reason for Mukesh's raised blood sugar levels.
- Describe the presentation if Mukesh were afflicted with this disorder at the age of 25.
- Briefly mention the line of management of this disorder.

Q. 3. Structured question: (3+3+4 = 10)

With the help of a neatly labeled diagram outline the sequence of events and briefly explain the mechanism of transmission of nerve impulse across the neuromuscular junction.

Q. 4. Short notes: (3 x 4 = 12)

- With the help of a diagram, outline the pathway for pain sensation. Add a note on 'Phantom limb'.
- List the common errors of refraction. Explain their correction with appropriate line diagrams.
- Classify and explain the contraceptive methods in females.

Q. 5. Write in brief: (4 x 2 = 8)

- Oxygen debt
- Types of reflexes
- Tests for hearing
- Milk ejection reflex

M.B.B.S. FIRST PROF. EXAMINATION, JULY-2012**PHYSIOLOGY
PAPER-SECOND (MCQ)****Time allotted for MCQ – 20 minutes****C****Q. 1. Multiple Choice questions (Encircle the single best response)****(0.5 x 20 =10)**

1. Lower motor neuron lesion is characterized by all **EXCEPT**:
 - a. Usually a single muscle is involved
 - b. Flaccid paralysis
 - c. Muscles atrophy is not present
 - d. Deep reflexes are absent
2. Receptor for labyrinthine-righting reflexes are:
 - a. Muscle spindles
 - b. Otolith organs
 - c. Golgi tendon receptors
 - d. None of the above
3. In a normal person, air conduction is:
 - a. Better than bone conduction
 - b. Less than bone conduction
 - c. Same as bone conduction
 - d. Not possible
4. All of the following are functions of the middle ear **EXCEPT**:
 - a. Conducts and amplifies sound for onward transmission
 - b. Provides impedance matching
 - c. Equalizes pressure on either side of the tympanic membrane
 - d. Discriminates the pitch of sound
5. The sensation of taste is carried by the:
 - a. Chorda tympani nerve from posterior third of the tongue
 - b. A branch of the facial nerve from anterior two-thirds of the tongue
 - c. Vagus nerve from pharyngeal receptors
 - d. Glossopharyngeal nerve from posterior third of the tongue
6. Hormones that exert their effects adjacent cells are called:
 - a. Classical hormones
 - b. Neurohormones
 - c. Paracrine hormones
 - d. Autocrine hormones
7. Conn's syndrome occurs due to excess of:
 - a. Glucocorticoids
 - b. Mineralocorticoids
 - c. Sex hormones
 - d. Thyroxine
8. Receptors for thyroid hormones are located:
 - a. On the cell membrane
 - b. In the cytoplasm
 - c. In the nucleus
 - d. In the ribosome
9. Regulation of oxytocin secretion is an example of:
 - a. Positive feedback
 - b. Negative feedback
 - c. Biofeedback
 - d. Downregulation
10. Trousseau's sign helps in the detection of:
 - a. Tetanus
 - b. Tetany
 - c. Cushing's syndrome
 - d. Myxedema
11. The remains of the Graffian follicle after extrusion of the ovum is called:
 - a. Primordial follicle
 - b. Corona radiata
 - c. Cumulus oophorus
 - d. Corpus luteum
12. Capacitation of sperm occurs in:
 - a. Seminiferous tubule
 - b. Sertoli cells
 - c. Female genital tract
 - d. Epididymi
13. The action potential of skeletal muscle:
 - a. Has a prolonged plateau phase
 - b. Spreads inward to all parts of the muscle via the T tubules
 - c. Causes the immediate uptake of Ca^{++} into the lateral sacs of the sarcoplasmic reticulum
 - d. Is longer than the action potential of cardiac muscle
14. The motor unit is:
 - a. Muscle fiber and neurons supplying it
 - b. Ventral horn cells along with its motor nerve
 - c. Single motor neuron and all the muscle fibers it supplies
 - d. Single muscle fiber with its nerve
15. The cyclical flexion and extension motions of a leg during walking result from an activity at which level of the nervous system:
 - a. Cerebral cortex
 - b. Brain stem
 - c. Cerebellum
 - d. Spinal cord
16. Inverse stretch reflex:
 - a. Is a monosynaptic reflex
 - b. Explains lengthening reaction
 - c. Causes contraction of antagonistic muscle
 - d. Explains reciprocal inhibition
17. IPSP (inhibitory postsynaptic potential):
 - a. Causes hyperpolarization in post synaptic neuron
 - b. Is due to opening of K^{+} channels
 - c. Can be due to opening of Cl^{-} Channels
 - d. All of the above
18. Anterolateral spinothalamic tract transmits all the following sensations **EXCEPT**:
 - a. Proprioception
 - b. Pain
 - c. Temperature
 - d. Touch
19. Extrapyramidal tract includes all **EXCEPT**:
 - a. Rubrospinal tract
 - b. Tectospinal tract
 - c. Corticospinal tract
 - d. Medial longitudinal fasciculus
20. Lesion of pyramidal tract:
 - a. Leads to loss of all tendon reflexes
 - b. Causes Babinski's sign
 - c. Causes no change in muscle tone
 - d. All of the above

M.B.B.S. FIRST PROF. EXAMINATION, SEPTEMBER - 2012**PHYSIOLOGY****PAPER-FIRST****[Time allotted: Three hours]****[Max Marks: 50]**

Note: Attempt all questions

Draw suitable diagrams wherever necessary

Q. 1. Multiple choice questions – separate sheet given

(0.5 x 20=10)

Q. 2. Problem based question:

(2 x 5= 10)

A 25 year old female complains of weakness, pallor and giddiness. She is 8 months pregnant. Her Hb concentration is 5 gm%, based on above, answer the following questions.

- Which disease she is suffering from?
- What other investigations you suggest?
- What is classical form of this disease in India?
- What is the treatment you suggest?
- What is a Macrocyte?

Q. 3. Define cardiac cycle. What are the phases of Ventricular pressure & volume changes in cardiac cycle? Explain with the help of a labeled diagram

(2+6 +2 = 10)

Q. 4. Write short notes on:

(4 x 3 = 12)

- Oxygen haemoglobin dissociation curve
- Basal Electrical rhythm
- Define Inulin clearance and its significance.

Q. 5. Write in brief about:

(2 x 4 = 08)

- Respiratory minute volume
- Juxta medullary nephron
- Mass peristalsis
- Residual volume of lungs.

Roll No.....

Paper Code ...133...

M.B.B.S. FIRST PROF. EXAMINATION, SEPTEMBER - 2012

**PHYSIOLOGY
PAPER-FIRST (MCQ)**

Time allotted for MCQ – 20 minutes

Set- D

Q. 1. Multiple Choice questions (Encircle the single best response)

(0.5 x 20=10)

1. Destruction of pneumotoxic centre in pons causes:
 - a. Apnoea
 - b. Forceful respiration
 - c. Apneustic respirations
 - d. Accelerated respiration
2. Transport of substances across the renal tubules occur by way of:
 - a. Glomerular filtration
 - b. Renal tubular reabsorption
 - c. Renal tubular secretion
 - d. All of the above
3. Substance which is commonly used to measure GFR is:
 - a. Diodrast
 - b. Inulin
 - c. Insulin
 - d. PAH
4. A patient after gastrectomy often develops:
 - a. Megaloblastic anaemia
 - b. Iron deficiency anaemia
 - c. Pernicious anaemia
 - d. Aplastic anaemia
5. Concentration of which electrolyte is maximum in the pancreatic juice:
 - a. Chloride
 - b. Sodium
 - c. Bicarbonate
 - d. Potassium
6. Which hormone stimulates enzymatic secretion of pancreas:
 - a. Cholecystokinin
 - b. Secretin
 - c. Trypsin
 - d. Gastrin
7. Swallowing centre is situated in:
 - a. Midbrain
 - b. Pons
 - c. Cerebellum
 - d. Medulla
8. Ion channels in cell membrane are lined by:
 - a. Proteins
 - b. Carbohydrates
 - c. Lipids
 - d. Polysaccharides
9. Normal blood pH is:
 - a. 7.20
 - b. 7.30
 - c. 7.40
 - d. 7.50
10. Major function of albumin is:
 - a. Control of hydrostatic pressure
 - b. Transport of bilirubin
 - c. Transport of thyroxine
 - d. Helps in blood clotting
11. Adult haemoglobin has chains:
 - a. 2 α 2 γ
 - b. 2 α 2 β
 - c. 2 α 2 δ
 - d. 2 β 2 γ
12. Preload of heart is determined by:
 - a. End diastolic volume
 - b. Ejection systolic volume
 - c. End systolic volume
 - d. Systolic vascular resistance
13. What are the cardiovascular changes occurring during inspiration?
 - a. Decreased heart rate
 - b. Decreased right ventricular filling
 - c. Decreased right ventricular output
 - d. Increased venous return
14. Mean BP is calculated as:
 - a. Systolic BP + Diastolic BP/2
 - b. Systolic BP- Diastolic BP
 - c. Systolic BP+ 1/3rd of pulse pressure
 - d. Diastolic BP+ 1/3rd of pulse pressure
15. Fall in systolic BP is controlled by:
 - a. Baroreceptor reflex
 - b. Chemoreceptor reflex
 - c. CNS ischaemic response
 - d. All of the above
16. At 'J' point electrical potential of heart is:
 - a. Minimum
 - b. Maximum
 - c. Zero
 - d. a + b
17. Stokes Adams syndrome is loss of consciousness when there is:
 - a. Head injury
 - b. Complete heart block
 - c. Ventricular tachycardia
 - d. Ventricular fibrillation
18. Air breathed in and out is called as:
 - a. Tidal volume
 - b. Vital capacity
 - c. Alveolar ventilation
 - d. FEVI
19. Vital capacity provides useful information about:
 - a. Size and development of the chest wall
 - b. Strength of respiratory muscles
 - c. Patency of respiratory passage
 - d. Pulmonary ventilation
20. Shift to right in oxyhaemoglobin dissociation curve occurs in all of the following except:
 - a. Hyperapnoea
 - b. Acidaemia
 - c. Fever
 - d. In pulmonary capillaries

M.B.B.S. FIRST PROF. EXAMINATION, SEPTEMBER - 2012
PHYSIOLOGY
PAPER – SECOND

[Time allotted: Three hours]

[Max Marks: 50]

Note: Attempt all Questions.

Draw suitable diagrams wherever necessary.

- Q. 1.** Multiple choice questions- separate sheet given (0.5 x 20 = 10)
- Q. 2.** Problem based question: (2 x 5 = 10)
 A female of 48 years started having irregularity in her menstrual cycles. She was undergoing flushes, mood variations and lethargic so much so that her day today work was getting affected. Her Gynecologist suggested that these signs and symptoms are related to approaching menopause and advised her to receive hormone replacement therapy.
- What is Menopause?
 - What is the hormonal basis of monthly menstrual cycle?
 - What are the functions of estrogen?
 - How gonadotropin helps in causng offspring?
 - Why in a 28 days menstrual cycle, first 11 days and last 11 days are regarded as 'safe-period'?
- Q. 3.** Draw a labeled diagram to show the various tracts of the spinal cord. Describe the pathway of touch sensation. (3 + 7 = 10)
- Q. 4.** Write short notes on: (3 x 4 = 12)
- Type II diabetes mellitus
 - Photopic and Scotopic vision.
 - Physiological actions of Anti diuretic hormone
- Q. 5.** Write in brief: (4 x 2 = 8)
- Pupillary light reflex.
 - List any 4 clinical features of cerebellar lesions
 - Define upper motor neuron and give one example.
 - Define ovulation and give any test for its detection.

M.B.B.S. FIRST PROF. EXAMINATION, SEPTEMBER - 2012

PHYSIOLOGY
PAPER-SECOND (MCQ)

Time allotted for MCQ – 20 minutes

Set- B

Q. 1. Multiple Choice questions (Encircle the single best response)

(0.5 x 20=10)

1. Delta waves in EEG are seen in:
 - (a) Deep sleep
 - (b) REM sleep
 - (c) Awake with eyes open
 - (d) Awake with eyes closed
2. Motor aphasia results from damage to:
 - (a) Broca's area
 - (b) The angular gyrus area
 - (c) The superior temporal cortex
 - (d) The prefrontal area
3. Most of the refraction in the eye occurs at the:
 - (a) Anterior surface of cornea
 - (b) Posterior surface of cornea
 - (c) Anterior surface of lens
 - (d) Posterior surface of lens
4. Red color blindness is called:
 - (a) Deuteranopia
 - (b) Proanopia
 - (c) Protanomaly
 - (d) Tritanopia
5. If a person can perceive sound information but fails to understand the meaning of sound, the lesion is most likely in:
 - (a) Primary auditory cortex
 - (b) Auditory association areas
 - (c) VIII nerve
 - (d) Inferior colliculus
6. Dysgeusia is:
 - (a) Disturbed sense of taste
 - (b) Diminished taste sensitivity
 - (c) Absence of the sense of taste
 - (d) Increase in taste threshold
7. Which of the following has slowest conduction?
 - (a) A alpha
 - (b) A gamma
 - (c) B fibres
 - (d) C fibres
8. The cross bridges of the sarcomere in skeletal muscle are components of:
 - (a) Actin
 - (b) Myosin
 - (c) Troponin
 - (d) Tropomyosin
9. The likely mechanism through which neostigmine acts in improving muscular weakness is:
 - (a) It blocks action of acetylcholine
 - (b) It interferes with action of mono-amine oxidase
 - (c) It enhances the action of catecholamines
 - (d) It blocks the action of acetyl choline esterase
10. The function of tropomyosin in skeletal muscle is:
 - (a) Sliding on actin to produce shortening
 - (b) Releasing Ca^{++} after initiation of contraction
 - (c) Binding to myosin during contraction
 - (d) Covering up the binding sites for myosin heads on actin filaments at rest
11. Epiphyseal closure is regulated by:
 - (a) Calcitonin
 - (b) Somatomedins
 - (c) 1, 25 dihydroxy cholecalciferol
 - (d) Thyroxine
12. Thyroid hormone stored in the lumen of follicles is in the form of:
 - (a) Free T_3
 - (b) Free T_4
 - (c) Attached to thyroglobulin
 - (d) Attached to thyroid binding globulin
13. Somatostatin:
 - (a) Stimulates glucagon release while inhibits insulin release
 - (b) Stimulates release of insulin and glucagon
 - (c) Inhibits release of insulin and glucagon
 - (d) Inhibits glucagon release while stimulates insulin release
14. The endocrine gland which contributes to setting the body's biological clock is:
 - (a) Pituitary gland
 - (b) Thymus gland
 - (c) Pineal gland
 - (d) Thyroid gland
15. Placental hormone structurally and functionally similar to LH is:
 - (a) Human chorionic gonadotropin (hCG)
 - (b) Human placental lactogen (hPL)
 - (c) Progesterone
 - (d) Estrogen
16. Blood-Testis Barrier is formed by:
 - (a) Interstitial cells
 - (b) Sertoli cells
 - (c) Spermatogonium
 - (d) Capillary endothelium
17. Nociceptive stimuli are transmitted by:
 - (a) Naked nerve ending
 - (b) Pacinian corpuscles
 - (c) Merkel's disc
 - (d) Ruffini end organ
18. Muscle spindle is:
 - (a) Receptor for a variety of multisynaptic reflex
 - (b) Receptor for stretch reflex
 - (c) Occurs only in antigravity muscles
 - (d) Excited by both stretch and contraction of the muscles in which it is located
19. Unconscious kinesthetic sensations are carried by:
 - (a) Anterior spinocerebellar tract
 - (b) Anterior spinothalamic tract
 - (c) Lateral spinothalamic tract
 - (d) Posterior columns
20. Brown Sequard syndrome is characterized by all **EXCEPT**:
 - (a) Pain and temperature loss on opposite side
 - (b) Loss of kinesthetic sensations on opposite side
 - (c) Motor paralysis on same side
 - (d) Fine touch preserved on same side

M.B.B.S. FIRST PROF. EXAMINATION, SEPTEMBER - 2013
PHYSIOLOGY
PAPER – FIRST

[Time allotted: Three hours]

[Max Marks: 50]

Note: Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given

(0.5 x 20 = 10)

Q. 2. Problem based question:

(2 x 5 = 10)

A 44 year old woman had been extremely ill with severe coronary artery disease, and she underwent cardiac transplantation. She recovered very well, and 1 month after surgery her cardiovascular function was normal.

- What is the normal coronary blood flow?
- Why SA node is the pacemaker of the heart, while the AV node and to some extent the entire conduction system of heart, also generate impulses spontaneously?
- Write normal heart rate in adults and children.
- What is Starling's Law of heart?
- Define stroke volume and give its normal value.

Q. 3. Define chemo receptors? Where are central chemoreceptor present? Describe chemical regulation of respiration. (2+2+6 = 10)

Q. 4. Write short notes on:

(4 x 3 = 12)

- Draw a schematic diagram to explain coagulation of blood in vivo.
- Explain Endocrine functions of kidney
- Give functions of macula densa and JGA.

Q. 5. Write in brief:

(2 x 4 = 8)

- Peristalsis
- Immune cells in blood.
- Functions of bile
- Pre hepatic jaundice

M.B.B.S. FIRST PROF. EXAMINATION, SEPTEMBER - 2013**PHYSIOLOGY****PAPER-FIRST (MCQ)****Time allotted for MCQ – 20 minutes****Set- B****Q. 1. Multiple Choice questions (Darken the single best response in the OMR sheet)****(0.5 x 20=10)**

1. O₂ dissociation curve shifts to the right when :
 - a. PCO₂ level of blood decreases
 - b. pH of blood is low
 - c. PO₂ level is low
 - d. Decrease 2,3 DPG level
2. Pulmonary oedema is caused by all of the following **except**:
 - a. Left heart failure
 - b. High altitude exposure
 - c. Respiratory distress syndrome
 - d. Right heart failure
3. Amount of CO₂ exhaled per minute by normal person is :
 - a. 100 ml
 - b. 250 ml
 - c. 200 ml
 - d. 150 ml
4. Maximum osmolar concentration of urine formed by normal kidney is :
 - a. 100 mosm/L
 - b. 1200 mosm/L
 - c. 1000 mosm/L
 - d. 300 mosm/L
5. For which of the following substances the rate of urinary excretion depends linearly on its plasma concentration:
 - a. Glucose
 - b. Inulin
 - c. PAH
 - d. Water
6. In artificial kidney the composition of dialyzing fluid is similar to that of plasma in all **except**:
 - a. Na⁺
 - b. K⁺
 - c. HCO₃
 - d. Urea
7. Regarding GFR, pick up the **false** statement:
 - a. Less in standing posture than in supine
 - b. Decreases when arterial BP falls below 60 mm/Hg
 - c. Increases during severe exercise
 - d. Decreases on exposure to heart stress
8. Main gastric glands are present in mucosa of :
 - a. Fundus of stomach
 - b. Pylorus of stomach
 - c. Both body and fundus of stomach
 - d. Incisura angularis
9. Gastric secretion is stimulated by all of the following **except**:
 - a. Distension of stomach
 - b. Vagal stimulation
 - c. Entrogastric reflex
 - d. Gastrin
10. Following are GIT hormones, **except**:
 - a. Cholecystokinin
 - b. Secretin
 - c. Chymotrypsin
 - d. Gastrin
11. Fat is maximally absorbed in:
 - a. Duodenum
 - b. Colon
 - c. Ileum
 - d. Jejunum
12. The last part of heart to be depolarized are **except**:
 - a. Posterobasal portion of left ventricle
 - b. Upper part of septum
 - c. Pulmonary conus
 - d. None of the above
13. One of the following does not dilate cutaneous blood vessels
 - a. Raised skin temperature
 - b. Histamine
 - c. P substance
 - d. Epinephrine
14. Nernst potential for Na⁺ is :
 - a. -94 mv
 - b. -60 mv
 - c. +61 mv
 - d. +45 mv
15. Functions of endoplasmic reticulum of cell is :
 - a. To produce energy
 - b. Store granules
 - c. Synthesis of proteins
 - d. None of the above
16. In vitro coagulation is initiated by clotting factor:
 - a. XII
 - b. X
 - c. VII
 - d. XI
17. Iron is stored in:
 - a. Hepatocyte
 - b. RBCs
 - c. Lymphocytes
 - d. Reticuloendothelial cells
18. By which method all types of hemoglobin is estimated :
 - a. Acid hematin method
 - b. Alkaline hematin method
 - c. Cyanmethemoglobin
 - d. Tallquist method
19. One of the following is not seen in acclimatization to high altitude:
 - a. Hyperventilation
 - b. Polycythemia
 - c. Decrease capillary density
 - d. Increase lung volume and capacity
20. Total lung capacity is :
 - a. 1.5 litres
 - b. 6 litres
 - c. 4.2 litres
 - d. 3 litres

M.B.B.S. FIRST PROF. EXAMINATION, SEPTEMBER - 2013**PHYSIOLOGY
PAPER – SECOND****[Time allotted: Three hours]****[Max Marks: 50]**

Note: Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given

(0.5 x 20 = 10)

Q. 2. Problem based question:

(2 x 5 = 10)

After falling down a flight of stairs, a young women is found to have a spinal cord injury in mid thoracic region. She has partial loss of voluntary movement on the right side of her body.

- What is the probable diagnosis of this clinical presentation?
- Partial loss of voluntary movement on the right side is due to upper motor neuron lesion. (True/ False).
- Which sensations will be lost on the same side?
- Which sensations will be lost on opposite side of the body?
- Define spinal shock

Q. 3. List the hormones of Anterior Pituitary Gland. Describe the clinical features of Acromegaly.

(3+7=10)

Q. 4. Write short notes on:

(4 x 3 = 12)

- Functions of middle ear
- Enumerate the properties of sensory receptors. Write a note on law of projection.
- Enumerate the physiological actions of Estrogens.

Q. 5. Write in brief :

(2 x 4 = 8)

- Fovea centralis
- Ovulation
- Sarcomere
- Babinski Sign

M.B.B.S. FIRST PROF. EXAMINATION, SEPTEMBER - 2013

PHYSIOLOGY

PAPER-SECOND (MCQ)

Time allotted for MCQ – 20 minutes

Set- B

Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)

(0.5 x 20=10)

1. Most important constituent of endolymph is:
 - a. Sodium
 - b. Potassium
 - c. Calcium
 - d. Chloride
2. Green color blindness is called:
 - a. Deuteranopia
 - b. Protonopia
 - c. Protanomaly
 - d. Tritanopia
3. All are the findings in Cushing syndrome EXCEPT:
 - a. Truncal obesity
 - b. Hypoglycemia
 - c. Moon faced appearance
 - d. Poor wound healing
4. Which of the following hormone is **not** secreted by anterior pituitary?
 - a. Thyroid-stimulating hormone
 - b. Leuteinizing hormone
 - c. Corticotrophin-releasing hormone
 - d. Prolactin
5. Following are the features of active thyroid, EXCEPT:
 - a. Follicles are large
 - b. Blood flow to the gland is more
 - c. Presence of reabsorption lacunae in the colloid next to the cell
 - d. Cells lining the follicles are columnar or cuboid
6. Calcitonin is secreted by:
 - a. Thyroid gland
 - b. Parathyroid gland
 - c. Pituitary
 - d. Bone osteoclast cells
7. Blood-Testis Barrier is formed by:
 - a. Interstitial cells
 - b. Sertoli cells
 - c. Spermatogonium
 - d. Capillary endothelium
8. Testosterone secretion from Leydig cells is predominantly under the control of:
 - a. FSH
 - b. LH
 - c. Androgen
 - d. Oestrogen
9. The action potential of skeletal muscle:
 - a. Has a prolonged plateau phase
 - b. Spreads inward to all parts of the muscle via the T tubules
 - c. Causes the immediate uptake of Ca^{++} into the lateral sacs of the sarcoplasmic reticulum
 - d. Is longer than the action potential of cardiac muscle
10. The motor unit is:
 - a. Muscle fiber and neurons supplying it
 - b. Ventral horn cells along with its motor nerve
 - c. Single motor neuron and all the muscle fibers it supplies
 - d. Single muscle with its nerve
11. The cyclical flexion and extension motions of a leg during walking results from an activity at which level of the nervous system:
 - a. Cerebral cortex
 - b. Brain stem
 - c. Cerebellum
 - d. Spinal cord
12. All of the following are the examples of mechanoreceptors EXCEPT:
 - a. Free nerve endings
 - b. Pacinian corpuscles
 - c. Ruffini's endings
 - d. Carotid bodies
13. In the spinal cord, the fact that dorsal roots are sensory and the ventral roots are motor is known as:
 - a. Muller's law
 - b. Bell-Magendie law
 - c. Sherrington's law
 - d. Starling's law
14. Anterolateral spinothalamic tract transmits all the following sensations EXCEPT:
 - a. Proprioception
 - b. Pain
 - c. Temperature
 - d. Touch
15. Extrapyrmidal tract includes all EXCEPT:
 - a. Rubrospinal tract
 - b. Tectospinal tract
 - c. Corticospinal tract
 - d. Medial longitudinal fasciculus
16. Lesion of pyramidal tract:
 - a. Leads to loss of all tendon reflexes
 - b. Causes Babinski's sign
 - c. Causes no change in muscle tone
 - d. All of the above
17. Lower motor neuron lesion is characterized by all EXCEPT:
 - a. Usually a single muscle is involved
 - b. Flaccid paralysis
 - c. Absence of Muscles atrophy.
 - d. Deep reflexes are absent
18. Receptor for labyrinthine-righting reflexes are:
 - a. Muscle spindles
 - b. Otolith organs
 - c. Golgi tendon receptors
 - d. None of the above
19. Myopia can be corrected by:
 - a. Using glasses with convex lenses
 - b. Using glasses with biconcave lenses
 - c. Cylindrical lenses placed in such a way that they equalize the refraction in all meridians
 - d. No correction is needed because the eye itself can accommodate
20. Na^{+} channels in the outer segment of rods are:
 - a. Voltage gated
 - b. cAMP gated
 - c. cGMP gated
 - d. 5'-GMP gated

M.B.B.S. FIRST PROF. EXAMINATION, SEPTEMBER - 2013
PHYSIOLOGY
PAPER – FIRST

[Time allotted: Three hours]

[Max Marks: 50]

Note: Attempt all Questions.

Draw suitable diagrams wherever necessary.

- Q. 1.** Multiple choice questions- separate sheet given (0.5 x 20 = 10)
- Q. 2.** Problem based question: (2 x 5 = 10)
A 44 year old woman had been extremely ill with severe coronary artery disease, and she underwent cardiac transplantation. She recovered very well, and 1 month after surgery her cardiovascular function was normal.
- a. What is the normal coronary blood flow?
 - b. Why SA node is the pacemaker of the heart, while the AV node and to some extent the entire conduction system of heart, also generate impulses spontaneously?
 - c. Write normal heart rate in adults and children.
 - d. What is Starling's Law of heart?
 - e. Define stroke volume and give its normal value.
- Q. 3.** Define chemo receptors? Where are central chemoreceptor present? Describe chemical regulation of respiration. (2+2+6 = 10)
- Q. 4.** Write short notes on: (4 x 3 = 12)
- a. Draw a schematic diagram to explain coagulation of blood in vivo.
 - b. Explain Endocrine functions of kidney
 - c. Give functions of macula densa and JGA.
- Q. 5.** Write in brief: (2 x 4 = 8)
- a. Peristalsis
 - b. Immune cells in blood.
 - c. Functions of bile
 - d. Pre hepatic jaundice

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY - 2014**PHYSIOLOGY****PAPER – FIRST****[Time allotted: Three hours]****[Max Marks: 50]****Note:** Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given**(½ x 20 = 10)****Q. 2. Give Reasons:****(1 x 5 = 05)**

- The usual symptom of hyperventilation on rapid ascent to high altitude fades, away after a few days.
- Why do patients with cirrhosis, suffer from blood clotting abnormalities?
- Explain why the absorption of sodium is better in presence of glucose.
- Why does hyperventilation not occur in mild anemia?
- Why does respiratory rate remains increased for sometime, even after exercise is over?

Q. 3. Problem based question:**(1 x 5 = 05)**

A girl named Rita had gone during spring season to meet her grandmother to village, where she had earlier spent her childhood. While roaming with her friends in the fields, she had sudden episode of episodic cough, followed by fainting. She was immediately taken to a hospital, her B/P is 80/60, and her extremities are warm and cyanosed.

- What is the probable diagnosis?
- What is the cause of fainting?
- Why are her extremities warm?
- What is the cause of spastic cough?
- What mode of treatment would be beneficial in such a condition?

Q. 4. Write in brief about:**(3 x 4 = 12)**

- Describe voiding reflex and draw cystometrogram.
- Draw a graph showing changes in intrapleural, intralveolar pressure and air flow with each breath.
- Draw a diagram of enteric nervous system and describe it.
- Describe the juxta glomerular apparatus.

Q. 5. Structured Questions:**(i).** Describe properties of cardiac muscle.**(05)****(ii).** Explain pace maker potential and describe its genesis.**(2+3= 05)****Q. 6. Write short notes on:****(2 x 4 = 08)**

- Requirements for counter current system in kidney.
- Mechanism of secretion of gastric acid secretion.
- Mechanism of humoral immunity.
- Hering Breuer inflation reflex.

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY - 2014

PHYSIOLOGY

PAPER - FIRST (MCQ)

Time allotted for MCQ - 20 minutes

SET - A

Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)

(0.5 x 20 = 10)

1. In infants, defecation often follows a meal. The cause of colonic contractions in this situation is:
 - a. The gastroileal reflex
 - b. Increased circulating levels of CCK
 - c. The gastrocolic reflex
 - d. Increased circulating levels of somatostatin
2. Which of the following has the highest pH?
 - a. Gastric juice
 - b. Bile in the gallbladder
 - c. Pancreatic juice
 - d. Saliva
3. After complete hepatectomy, a rise would be expected in the blood level of:
 - a. Glucose
 - b. Fibrinogen
 - c. 25-hydroxycholecalciferol
 - d. Conjugated bilirubin
4. Which of the following is not primarily a function of blood plasma?
 - a. Transport of hormones
 - b. Maintenance of red cell size
 - c. Transport of chylomicrons
 - d. Transport of antibodies
5. In normal human blood:
 - a. The eosinophil is the most common type of white blood cell
 - b. There are more lymphocytes than neutrophils
 - c. The iron is mostly in hemoglobin
 - d. There are more white cells than red cells
6. Lymphocytes:
 - a. All originate from the bone marrow after birth
 - b. Are unaffected by hormones
 - c. Convert to monocytes in response to antigens
 - d. Interact with eosinophils to produce platelets
7. In which of the following diseases is the structure of the hemoglobins normal, but their amount reduced?
 - a. Chronic blood loss
 - b. Sickle cell anemia
 - c. Hemolytic anemia
 - d. Thalassemia
8. The dicrotic notch on the aortic pressure curve is caused by:
 - a. Closure of the mitral valve
 - b. Closure of the tricuspid valve
 - c. Closure of the aortic valve
 - d. Closure of the pulmonary valve
9. Starling's law of the heart:
 - a. Does not operate in the failing heart
 - b. Does not operate during exercise
 - c. Explains the increase in cardiac output that occurs when venous return is increased
 - d. Explains the increase in cardiac output when the sympathetic nerves supplying the heart are stimulated
10. Lymph flow from the foot is:
 - a. Increased when an individual rises from the supine to the standing position
 - b. Increased by massaging the foot.
 - c. Increased when capillary permeability is decreased
 - d. Decreased when the valves of the leg veins are incompetent
11. Which of the following does not occur as blood passes through the systemic capillaries?
 - a. Its hematocrit increases
 - b. Its hemoglobin dissociation curve shifts to the left
 - c. Its protein content increases
 - d. Its pH decreases
12. When the viscosity of the blood is increased which of the following is increased?
 - a. Mean blood pressure
 - b. Radius of the resistance vessels
 - c. Radius of the capacitance vessels
 - d. Central venous pressure
13. Which of the following has the greatest effect on the ability of blood to transport oxygen?
 - a. Capacity of the blood to dissolve oxygen
 - b. Amount of hemoglobin in the blood
 - c. pH of plasma
 - d. CO₂ content of red blood
14. The main respiratory control neurons:
 - a. Send out regular bursts of impulses to expiratory muscles during quiet respiration
 - b. Are unaffected by stimulation of pain receptors
 - c. Are located in the pons
 - d. Send out regular bursts of impulses to inspiratory muscles during quiet respiration
15. Injection of a drug that stimulates the carotid bodies would be expected to cause:
 - a. A decrease in the pH of arterial blood
 - b. A decrease in the PCO₂ of arterial blood
 - c. An increase in urinary Na⁺ excretion
 - d. An increase in plasma Cl⁻
16. Which of the following is not a manifestation of oxygen toxicity?
 - a. Irritation of the respiratory tract
 - b. Difficulty in seeing because of retrolental fibroplasias
 - c. Convulsions
 - d. Lung cysts in infants
17. Glucose reabsorption occurs mainly in the:
 - a. Proximal tubule
 - b. Loop of Henle
 - c. Distal tubule
 - d. Cortical collecting duct
18. On which of the following does aldosterone exert its greatest effect?
 - a. Proximal tubule
 - b. Thin portion of the loop of Henle
 - c. Thick portion of the loop of Henle
 - d. Cortical collecting duct
19. The T_m for glucose:
 - a. Is 100mg/min
 - b. Is 130mg/min
 - c. Is 320mg/min
 - d. Is 290mg/min
20. Fibrinogen is converted into fibrin fibers by:
 - a. Prothrombin
 - b. Thrombin
 - c. Thromboplastin
 - d. None of the above

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY - 2014

PHYSIOLOGY
PAPER - SECOND

[Time allotted: Three hours]

[Max Marks: 50]

Note: Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given

(½ x 20 = 10)

Q. 2. Give Reasons:

(1 x 5 = 05)

- Hydrophobic nature of the cell membrane.
- Why increased sympathetic nerve activity causes contraction of smooth muscle & relaxation of the others
- For increased TSH in cases of hypothyroidism
- Amenorrhea in lactating females nursing the babies.
- Ability to hear is reduced during an episode of common cold.

Q. 3. Problem based question:

(1 x 5 = 05)

A 35 year old woman developed weight loss gradually. Later on, she complained of palpitation and bulging of eyes. Based on the above description answer the following questions:

- Name the condition the woman is suffering from.
- What is the reason for weight loss?
- Give any two symptoms she may complain.
- Can this be treated by drugs? If no, mention other method of management.
- If yes, give mechanism of action of any one of them.

Q. 4. Write in brief about:

(3 x 4 = 12)

- Descending inhibition
- Spermatozoa
- Cushing's syndrome
- Dark adaptation

Q. 5. Structured Questions:

(i). Draw & explain the endogenous pain inhibiting pathway.

(2+3=05)

(ii). Name the tracts of dorsal columns of the spinal cord & describe their functions.

(2+3=05)

Q. 6. Write short notes on:

(2 x 4 = 08)

- Occlusion.
- Functions of Hair cells in internal ear.
- Leydig cell.
- Zona glomerulosa.

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY - 2014**PHYSIOLOGY****PAPER – SECOND (MCQ)****Time allotted for MCQ – 20 minutes****SET - D****Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)****(0.5 x 20=10)**

1. The hormone responsible for increased body temperature after ovulation is:
 - a. Luteinizing hormone
 - b. Progesterone
 - c. Oestrogen
 - d. Androgen
2. Insulin increases the entry of glucose predominantly into:
 - a. All tissue
 - b. Renal tubular cells
 - c. Small intestine
 - d. Skeletal muscles
3. Testosterone secretion from leydig cell is under the control of:
 - a. FSH
 - b. LH
 - c. Androgen
 - d. Oestrogen
4. Full development and function of the seminiferous tubules requires:
 - a. Somatostatin
 - b. LH
 - c. FSH
 - d. Androgen and FSH
5. Reduced eye concept has a spherical lens of power (Dioptre D):
 - a. 60 D
 - b. 50 D
 - c. 40 D
 - d. 59 D
6. The contractile response in skeletal muscle:
 - a. Starts after action potential is over.
 - b. Does not last as long as action potential.
 - c. Produces more tension during isometric than isotonic muscle contraction.
 - d. Decreases in magnitude by repeated stimulation..
7. All or none response in a nerve is applicable to:
 - a. A mixed nerve
 - b. Only sensory nerves
 - c. A single nerve fibre
 - d. Only motor nerve
8. Which of the following is a propagated potential?
 - a. Synaptic potential
 - b. Generator potential
 - c. Electrotonic potential
 - d. Action potential
9. Which of the following sensations is most subject to facilitation and inhibition in the central nervous system?
 - a. Touch
 - b. Warmth
 - c. Pain
 - d. Hearing
10. One or more interneurons are involved in all of the following EXCEPT:
 - a. Withdrawal reflex
 - b. Stretch reflex
 - c. Inverse stretch reflex
 - d. Reciprocal inhibition
11. A somatotopic representation of the body can be observed in each of the following EXCEPT:
 - a. Somatosensory cortex
 - b. Primary motor cortex
 - c. Ventral lateral nucleus of thalamus
 - d. Cerebellum
12. Post-synaptic inhibition in the spinal cord during the course of an IPSP is called:
 - a. Direct inhibition
 - b. Indirect inhibition
 - c. Renshaw cell inhibition
 - d. Negative feedback inhibition
13. Pain receptors are:
 - a. Meissner's corpuscles
 - b. Pacinian corpuscles
 - c. Free nerve ending
 - d. Merkel's Disc.
14. The frequency of beta waves in EEG is:
 - a. 1-4 Hz
 - b. 4-7 Hz
 - c. 8-12 Hz
 - d. 14-30 Hz
15. The receptors in the semicircular canal detect:
 - a. Linear acceleration in horizontal direction
 - b. Change in head position
 - c. Linear acceleration in vertical direction
 - d. Rotational acceleration
16. The accommodation reflex includes which of the following:
 - a. Relaxation of ciliary muscles
 - b. Dilatation of pupil
 - c. Convergence of visual axis
 - d. Diplopia
17. Bitemporal hemianopia is seen in lesions of:
 - a. Optic nerve
 - b. Optic chiasma
 - c. Optic tracts
 - d. Occipital lobe
18. The scala vestibuli and the scala tympani communicate with each other by:
 - a. Modiolus
 - b. Helicotrema
 - c. Round window
 - d. Reticular lamina
19. Which of the following hormone is not secreted by anterior pituitary?
 - a. Thyroid stimulating hormone
 - b. Leuteinizing hormone
 - c. Corticotrophin releasing hormone
 - d. Prolactin
20. All are the findings in Cushing syndrome EXCEPT:
 - a. Truncal obesity
 - b. Hypoglycemia
 - c. Moon faced appearance
 - d. Poor wound healing

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, AUGUST - 2015**PHYSIOLOGY
PAPER – FIRST****[Time allotted: Three hours]****[Max Marks: 50]****Note:** Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given**(½ x 20 = 10)****Q. 2. Give Reasons:****(1 x 5 = 05)**

- Neck veins are collapsed above the clavicle.
- FRC cannot be measured by a spirometer.
- RBC increases after whole body physical exercise.
- Normally tissues of pancreas are not digested by proteolytic enzymes secreted by exocrine pancreas.
- The volume of urine produced is more when ECF volume is high.

Q. 3. Problem based question:**(1 x 5 = 05)**

A patient aged 65, complained of pain in chest on the left side .He was obese and gave the history of hypertension for last 15 yrs. He was taken to hospital. There was no history of dyspnea or wheezing. Based on the above history, answer the following questions

- What is the probable diagnosis?
- What is the first investigation you will advise to be done?
- What is the physiological basis of the first line of management?
- Mention any one complication of this condition.
- Mention any other 2 associated symptoms.

Q. 4. Write short notes on:**(2.5 x 4 = 10)**

- Facilitated diffusion
- Nerst potential
- Residual volume
- Ejection fraction

Q. 5. Structured Questions:**(i)** Define cardiac output. Describe its regulation.**(05)****(ii)** Describe Bohr's effect. Give its physiological importance.**(05)****Q. 6. Write in brief:****(2.5 x 4 = 10)**

- Draw a labeled diagram of cardiac action potential
- Homeostasis
- Urea transporters.
- MMC in intestine.

PHYSIOLOGY
PAPER – FIRST (MCQ)

Time allotted for MCQ – 20 minutes

SET - A

(0.5 x 20 = 10)

Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)

1. Tissue macrophages are derived from:
 - a. Neutrophils
 - b. Eosinophils
 - c. Basophils
 - d. Monocytes
2. The conversion of fibrinogen into fibrin occurs by:
 - a. Prothrombin
 - b. Thrombin
 - c. Thromboplastin
 - d. Platelets
3. Which of the following is not a vitamin K dependent clotting factor?
 - a. VII
 - b. IX
 - c. V
 - d. X
4. The intracellular digestive system refers to:
 - a. Golgi apparatus
 - b. Mitochondria
 - c. Lysosomes
 - d. Endoplasmic reticulum
5. Viscosity of blood is increased with rise in ----- levels:
 - a. Albumin
 - b. Globulin
 - c. Fibrinogen
 - d. Prothrombin
6. The normal range of Sodium in ECF (m eq/ litre):
 - a. 138- 146
 - b. 115-175
 - c. 100- 110
 - d. 103- 112.
7. Potassium is maximum in:
 - a. Cell
 - b. Plasma
 - c. Interstitial fluid
 - d. Blood
8. Equilibrium potential for Chloride in a neuron is:
 - a. +70 mV
 - b. -70 mV
 - c. +90 mv
 - d. -90 mV
9. Preload of heart is determined by:
 - a. End systolic volume
 - b. End diastolic volume
 - c. Pressure in the aorta
 - d. Ejection fraction.
10. QRS complex indicates:
 - a. Atrial depolarization
 - b. Ventricular depolarization
 - c. Atrial repolarisation
 - d. Ventricular repolarisation
11. The coronary blood flow at rest in human is about:
 - a. 5% of the cardiac output
 - b. 10% of the cardiac output
 - c. 15% of the cardiac output
 - d. 20% of the cardiac output
12. All the signs and symptoms mentioned below are not of cardiac failure:
 - a. Dyspnoea on exertion
 - b. Dyspnoea which is associated with seasons
 - c. Dyspnoea on lying down
 - d. Edema feet
13. Creatinine clearance represents:
 - a. Glomerular filtration rate
 - b. Renal plasma flow
 - c. Renal blood flow
 - d. Filtration fraction.
14. Glucose reabsorption occurs predominantly in the:
 - a. Proximal tubule
 - b. Loop of Henle
 - c. Distal tubule
 - d. Cortical collecting duct.
15. Presence of ADH in high concentration causes all except one:
 - a. Reduced GFR
 - b. Increased absorption of water in CT
 - c. Increased transport of urea
 - d. Reduced volume of urine
16. Surfactant is secreted by:
 - a. Pulmonary alveolar macrophages
 - b. APUD cells
 - c. Type I epithelial cells
 - d. Type II epithelial cells
17. Which of the following would not favour the unloading of oxygen from hemoglobin in tissues?
 - a. Increase in tissue Ph
 - b. Increase in 2,3-DPG levels
 - c. Increase in tissue Pco₂
 - d. Increase in temperature
18. In infants, defecation often follows a meal. The cause of colonic contractions in this situation is:
 - a. The gastroileal reflex
 - b. The gastrocolic reflex
 - c. Increased circulating levels of CCK
 - d. The enterogastric reflex
19. Which hormone stimulates bicarbonate rich pancreatic secretion?
 - a. Somatostatin
 - b. Secretin
 - c. CCK
 - d. Gastrin
20. Transaxation of brainstem between medulla and spinal: cord in an animal results in:
 - a. Cessation of breathing
 - b. Apneustic breathing
 - c. Irregular breathing with gasping
 - d. Periodic breathing

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, AUGUST - 2015
PHYSIOLOGY
PAPER – SECOND

[Max Marks: 50]

[Time allotted: Three hours]

Note: Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given

(½ x 20 = 10)

Q. 2. Give Reasons:

(1 x 5 = 05)

- Conduction of impulses is faster in myelinated nerve fibres.
- In chemical synapses there is synaptic delay present.
- In cretinism there is mental retardation.
- At the time of ovulation there is rise in body temperature.
- People with conduction deafness often speak quietly while people with sensorineural deafness tend to speak louder than normal.

Q. 3. Problem based question:

(1 x 5 = 05)

A 60 years old man came to the doctor and complained that his movements were slow and he had tremors in hand at rest. On examination there was muscular rigidity and pill rolling movements in fingers. His speech was slurred and monotonous. There was no sensory loss and his stretch reflexes were normal.

- What is your diagnosis?
- What part of CNS is affected?
- What is the neurotransmitter affected?
- Indicate the line of treatment.
- What is the basis of muscular rigidity?

Q. 4. Write short notes on:

(2.5 x 4 = 10)

- Differences between action potential and graded potential.
- Differences between fast pain and slow pain.
- Functions of middle ear.
- Functions of insulin.

Q. 5. Structured Questions:

(i) Describe the steps involved in thyroid hormone synthesis.

(05)

(ii) Enumerate the different phases of menstrual cycle. Correlate the endometrial changes with hormonal changes during menstrual cycles.

(05)

Q. 6. Write in brief:

(2.5 x 4 = 10)

- Flow chart of events occurring at neuromuscular junction.
- Functions of cerebellum.
- Draw taste pathway.
- Regulation of cortisol secretion.

Regn. No.DD

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, AUGUST - 2015**PHYSIOLOGY****PAPER - SECOND (MCQ)****SET - A****Time allotted for MCQ – 20 minutes****(0.5 x 20=10)****Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)**

1. Propagation of impulse in one direction along axon to its termination is called:
 - a. Antidromic conduction
 - b. Antegrade conduction
 - c. Orthodromic conduction
 - d. Saltatory conduction
2. All or None law in a nerve is applicable to:
 - a. A mixed nerve
 - b. Only a sensory nerve
 - c. Only motor nerve
 - d. A single nerve fibre
3. The primary function of basal ganglia is:
 - a. Sensory integration
 - b. Planning motor movements
 - c. Short term memory
 - d. REM sleep
4. Spinothalamic tracts transmits all the following sensations except:
 - a. Proprioception
 - b. Pain
 - c. Temperature
 - d. Touch
5. Dysidiadochokinesis is associated with lesion of:
 - a. Motor cortex
 - b. Substantia nigra
 - c. Lenticular nucleus
 - d. Cerebellum
6. Stretch of a muscle causes increased firing rate in:
 - a. Alpha motor neuron
 - b. Gamma motor neuron
 - c. Group Ia fibres
 - d. Group II fibres
7. The intensity of sensory stimulus is determined by the:
 - a. Amplitude of action potential
 - b. Duration of action potential
 - c. Frequency of action potential
 - d. Amplitude of generator potential
8. Withdrawal reflexes are:
 - a. Stretch reflex
 - b. Not flexor reflex
 - c. Monosynaptic reflex
 - d. Initiated by nociceptive stimuli
9. Delta waves of EEG are seen in:
 - a. REM Sleep
 - b. Wakeful state
 - c. NREM SLEEP
 - d. Light sleep
10. The part of the body that has maximum representation on cerebral cortex:
 - a. Finger
 - b. Leg
 - c. Trunk
 - d. Face
11. The function of flocculonodular lobe of cerebellum is:
 - a. Equilibrium
 - b. Coordination
 - c. Planning of a movements
 - d. Visceral reflexes
12. Astigmatism is corrected by:
 - a. Biconvex spherical lens
 - b. Biconcave spherical lens
 - c. Concave or convex cylindrical lenses
 - d. Lens with 0 D power
13. In Argyll Robertson pupil one of the following reflexes are lost:
 - a. Accommodation reflex
 - b. Near reflex
 - c. Light reflex
 - d. Corneal reflex
14. Conduction deafness develops in:
 - a. Disorder of organ of corti
 - b. Disorder in middle ear
 - c. Lesion in auditory cortex
 - d. Lesion in superior olivary nucleus
15. The action of PTH is mediated through:
 - a. Cyclic AMP
 - b. Cyclic GMP
 - c. IP3
 - d. DAG
16. ADRENOGENITAL syndrome in females develops due to:
 - a. Excess secretion of androgen
 - b. Excess secretion of cortisol
 - c. Excess secretion of estrogen
 - d. Excess secretion of progesterone
17. Cushing syndrome is characterised by all except:
 - a. Hyponatraemia
 - b. Hypertension
 - c. Negative nitrogen balance
 - d. Hypokalemia
18. Melatonin is formed from amino acid:
 - a. Tryptophan
 - b. Glycine
 - c. Tyrosine
 - d. Leucine
19. Prolactin inhibitory hormone is:
 - a. Noradrenaline
 - b. Oxytocin
 - c. Dopamine
 - d. Estrogen
20. The main source for testosterone is:
 - a. Leydig cell
 - b. Sertoli cell
 - c. Seminiferous tubules
 - d. Epididymis

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, OCTOBER - 2015**PHYSIOLOGY****PAPER – FIRST****[Time allotted: Three hours]****[Max Marks: 50]****Note:** Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given**(½ x 20 = 10)****Q. 2. Give Reasons:****(1 x 5 = 05)**

- Oedma in malnutrition.
- The limit of the gradient in counter current multiplier system is 200mosm/l.
- Color of skin become blue, on exposure to cold.
- Infants often defecate immediately after taking a meal.
- The partial pressure of oxygen in systemic arteries is about 2mmHg lower than that of blood equilibrated with alveolar air.

Q. 3. Problem based question:**(1 x 5 = 05)**

A patient is brought to the emergency department after a road traffic accident. The on-duty doctor examined him immediately. He is bleeding profusely from the wounded area. He has cold, clammy extremities, weak thready pulse, discoloration of skin, is thirsty and restless. His blood pressure is 80/60mmHg.

- What is your diagnosis?
- Why are the extremities cold?
- Why is the pulse weak and thready?
- What is the cause of hypotension?
- Why is the patient thirsty and restless?

Q. 4. Write short notes on:**(2.5 x 4 = 10)**

- Function of plasma protein
- Surfactant
- Endocytosis and its types
- Pressure natriuresis

Q. 5. Structured Questions:**(i).** Give mechanism of generation of new bicarbonate by the kidney.**(05)****(ii).** Discuss pancreatic secretion and its regulation.**(05)****Q. 6. Write in brief about:****(2.5 x 4 = 10)**

- Water reabsorption by ADH in the kidney and its mechanism with a diagram.
- Define GFR. Enumerate factors affecting it.
- Peristalsis.
- Sodium –Potassium pump

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, OCTOBER - 2015

PHYSIOLOGY
PAPER – FIRST (MCQ)

Time allotted for MCQ – 20 minutes

SET - A

(0.5 x 20 = 10)

Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)

1. The lifespan of RBC:
 - a. Can be determined by injecting RBC of one individual to another
 - b. Is about two months
 - c. Can be found out by injecting RBC tagged with radioactive iron
 - d. Is increased when exposed to hypoxia
2. Heparin acts as anticoagulant mainly because it:
 - a. Blocks conversion of fibrinogen to fibrin
 - b. Blocks conversion of prothrombin to thrombin
 - c. Chelates calcium ions
 - d. Involves none of the above
3. The lifespan of leukocytes is:
 - a. 5-14 hrs.
 - b. 120 days
 - c. 100 days
 - d. None of the above
4. Fetal Hb is able to hold O_2 molecules:
 - a. Equal to adult Hb
 - b. More than adult Hb.
 - c. Less than adult Hb.
 - d. None
5. The term agranulocytosis generally means:
 - a. Increase in number of granulocytes
 - b. Absence of granulocytes from the blood.
 - c. Increased number of agranulocytes
 - d. Granulocytes remain same but agranulocytes increase
6. One of the most lethal effects of transfusion reaction is:
 - a. Acute kidney shutdown
 - b. Anemia
 - c. Cardiac failure
 - d. Increased urinary output
7. Iron is stored in the form of:
 - a. Transferring factor I
 - b. Hemosiderin
 - c. Apoferritin
 - d. Ferritin and hemosiderin
8. Hemophilia C is:
 - a. Common in male
 - b. Due to deficiency of factor XI
 - c. An autoimmune disorder
 - d. Associated with prolonged bleeding time
9. Secretin acts on the pancreatic ducts to cause copious secretion which are HCO_3^- rich, this effect is due to:
 - a. IP_3
 - b. DAG
 - c. $5'AMP$
 - d. cAMP
10. Cholagogics are substances which:
 - a. Increase gallbladder contraction
 - b. Increase bile secretion
 - c. Decrease gallbladder contraction
 - d. Dissolve bile stones
11. The pH of duodenal content that inhibits stomach emptying via secretion of cholecystokinin is:
 - a. 7-8
 - b. 5-8
 - c. 3-4
 - d. 1-2
12. Intestinal absorption of glucose in diabetes is:
 - a. Normal
 - b. Decreased
 - c. Increased
 - d. Depending on insulin receptors
13. The rhythmic contraction in GI tract is highest in:
 - a. Stomach
 - b. Duodenum
 - c. Ileum
 - d. Colon
14. Saliva has a very high content of:
 - a. Sodium
 - b. Potassium
 - c. Chloride
 - d. Bicarbonate
15. Filtrate chloride ions are reabsorbed by the process of secondary active transport in
 - a. Ascending limb of loop of henle
 - b. Proximal tubules
 - c. Distal tubules
 - d. Collecting ducts
16. Early part of DCT is referred to as diluting segment because:
 - a. It is impermeable to $Na^+ K^+$ and Cl^-
 - b. It is permeable to urea and water
 - c. Both are correct
 - d. None of the above
17. Inulin is used to measure:
 - a. Renal blood flow
 - b. Renal plasma flow
 - c. Urinary volume
 - d. Glomerular filtration rate
18. Atonic bladder:
 - a. Is seen in tabes dorsalis
 - b. Occurs when afferents to urinary bladder are cut
 - c. Causes overflow dribbling
 - d. All of the above
19. Substance which is easily filtered by glomeruli and actively secreted by renal tubule is:
 - a. Inulin
 - b. Glucose
 - c. Phosphate
 - d. PAH
20. Dilute urine:
 - a. Is formed when no ADH is released
 - b. Has specific gravity of 1.040
 - c. Is formed when osmolar concentration of extracellular fluid become high
 - d. Can have osmolar concentration as low as 20mOsm/liter

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, OCTOBER - 2015
PHYSIOLOGY
PAPER – SECOND

[Time allotted: Three hours]**[Max Marks: 50]****Note:** Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given**(½ x 20 = 10)****Q. 2. Give Reasons:****(1 x 5 = 05)**

- a. Weakness of skeletal muscles in patients of Myasthenia Gravis
- b. People with infection of middle ear have hearing difficulty.
- c. In some cases of diabetes mellitus glucose is not utilized by body inspite of high insulin levels in the blood.
- d. Exophthalmos in patient's of Grave's disease.
- e. Upper part of face is spared in UMN lesion of facial nerve.

Q. 3. Problem based question:**(1 x 5 = 05)**

An adult person walked in OPD with the history of rapid growth during last few years. His height was 6.5 ft, had massive body structure and some problems of vision.

- a. What is the probable diagnosis?
- b. Which investigation will you perform for his vision?
- c. What do you expect to find from this investigation & Why?
- d. What is the mechanism of action of the associated hormone?
- e. Name the endocrine gland which secretes this hormone.

Q. 4. Write short notes on:**(2.5 x 4 = 10)**

- a. Lower Motor Neuron.
- b. Stretch reflex.
- c. Pupillary light reflex.
- d. Ovulation.

Q. 5. Structured Questions:

(i). Draw a diagram to show the pathway of Antero lateral tracts. How many order neurons are there in the pathway? List the sensations carried by these tracts. **(2+1+2=05)**

(ii). Describe the hormonal changes occurring during menstrual cycle. Explain with the help of a diagram. **(3+2=05)**

Q. 6. Write in brief about:**(2.5 x 4 = 10)**

- a. Renshaw cells
- b. Metabolic functions of thyroid hormone (T3 & T4)
- c. Subliminal Fringe
- d. Organ of corti

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, OCTOBER - 2015**PHYSIOLOGY****PAPER – SECOND (MCQ)****Time allotted for MCQ – 20 minutes****SET - A****Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)****(0.5 x 20=10)**

1. Which of the following is a propagated potential?
 - a. Synaptic potential
 - b. Generator potential
 - c. Electrotonic potential
 - d. Action potential
2. Oligodendrogliaocytes:
 - a. Forms the myelin in the CNS
 - b. Forms the myelin between two nodes of Ranvier on a single neuron
 - c. Sends off multiple processes that form myelin on many neighboring axons
 - d. Both 'a' and 'c' are correct
3. Paccinian corpuscle is
 - a. A type of temperature receptor
 - b. Pain receptors
 - c. Rapidly adapting touch receptors
 - d. Slowly adapting touch receptors
4. Which of the following sensations is most subject to facilitation and inhibition in the central nervous system?
 - a. Touch
 - b. Warmth
 - c. Pain
 - d. Hearing
5. One or more interneurons are involved in all of the following EXCEPT:
 - a. Withdrawal reflex
 - b. Stretch reflex
 - c. Inverse stretch reflex
 - d. Reciprocal inhibition
6. Which of the following hormone is not secreted by anterior pituitary?
 - a. Thyroid stimulating hormone
 - b. Leuteinizing hormone
 - c. Corticotrophin releasing hormone
 - d. Prolactin
7. All are the findings in Cushing syndrome EXCEPT:
 - a. Truncal obesity
 - b. Hypoglycemia
 - c. Moon faced appearance
 - d. Poor wound healing
8. Testosterone secretion from Leydig cell is under the control of:
 - a. FSH
 - b. LH
 - c. Androgen
 - d. Oestrogen
9. Which of the following is the most active thyroid hormone?
 - a. Thyroxine
 - b. Triiodothyronine
 - c. Reverse triiodothyronine
 - d. Diiodotyrosine
10. Most of the refraction in the eye occurs at the:
 - a. Anterior surface of cornea
 - b. Posterior surface of cornea
 - c. Anterior surface of lens
 - d. Posterior surface of lens.
11. The scala vestibuli and the scala tympani communicate with each other by:
 - a. Modiolous
 - b. Helicotrema
 - c. Round window
 - d. Reticular lamina.
12. Na⁺ channels in the outer segment of rods are:
 - a. Voltage gated
 - b. cAMP gated
 - c. cGMP gated
 - d. 5'- GMP gated
13. Sympathetic postganglionic fibers to sweat glands and piloerector muscle secrete:
 - a. Epinephrine
 - b. Norepinephrine
 - c. Acetylcholine
 - d. Serotonin
14. Anterolateral spinothalamic tract transmits all the following sensations EXCEPT:
 - a. Proprioception
 - b. Pain
 - c. Temperature
 - d. Touch
15. Which of the following is not a feature of sertoli cells?
 - a. Provide blood testis barrier
 - b. Secrete inhibin
 - c. Nourish sperms and control their release
 - d. Secrete testosterone.
16. The hormone responsible for increased body temperature after ovulation is:
 - a. Luteinizing hormone
 - b. Progesterone
 - c. Oestrogen
 - d. Androgen
17. A transection of the pituitary stalk decreases the secretion of all of the following hormones EXCEPT:
 - a. Thyroxine
 - b. Cortisol
 - c. Growth hormone
 - d. Prolactin
18. Milk ejection reflex is mediated by:
 - a. Oxytocin
 - b. Vasopressin
 - c. Prolactin
 - d. Oestrogen
19. The frequency of beta waves in EEG is:
 - a. 1-4 Hz
 - b. 4-7 Hz
 - c. 8-12 Hz
 - d. 14-30 Hz
20. Bitemporal hemianopia occurs in lesions of-
 - a. Optic nerve
 - b. Optic chaisma
 - c. Optic tracts
 - d. Optic cortex.

PHYSIOLOGY
PAPER – FIRST

[Time allotted: Three hours]

[Max Marks: 50]

Note: Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given

(½ x 20 = 10)

Q. 2. Give Reasons:

(1 x 5 = 05)

- a. RBCs are able to live without mitochondria & nucleus.
- b. There is negativity inside and positivity outside the membrane at rest.
- c. Hypoproteinemia leads to oedema.
- d. Cardiac muscle does not fatigue.
- e. Myoglobin acts as temporary oxygen storehouse.

Q. 3. Problem based question:

(1 x 5 = 05)

A 70 years old lady came to medicine OPD with complaint of generalised oedema, weakness and decreased urine output since 1 year. She told the doctor that she had diabetes and high blood pressure since 15 years and that she is not on regular treatment for the diseases. The doctor examined the patient and advised some routine blood and urine investigations. The reports showed:

- | | | |
|---------------------------------------|--------------------------|-------------------------|
| a) Blood urea- 65mg% | b) S. Creatinine- 6.5mg% | c) S. Potassium- 6meq/l |
| d) Blood sugar—340mg% | e) Hb—8gm% | f) RBC—4 million/cumm |
| g) Urine albumin- albuminuria present | h) Urine sugar- ++. | |

On seeing the reports the doctor advised the lady for admission in hospital for dialysis. Consider the case history above and answer the following questions:

- a. What is your probable diagnosis?
- b. What may be the cause of it?
- c. What is the physiological basis of anaemia in this patient?
- d. What is the physiological basis of albuminuria in this patient?
- e. What is the physical principle of dialysis?

(2.5 x 4 = 10)

Q. 4. Write short notes on:

- a. Erythroblastosis fetalis
- b. Gastrin
- c. Baroreceptor
- d. Periodic breathing

Q. 5. Structured Questions:

(i). Draw a labelled diagram of pacemaker potential. Describe its ionic basis.

(2+3 = 05)

(ii). List the dynamic function test of lungs. Give clinical significance of FEV₁.

(05)

(2.5 x 4 = 10)

Q. 6. Write in brief about:

- a. Innate immunity
- b. Sodium potassium pump
- c. Cortical and juxtramedullary nephrons
- d. Peristalsis

Regn. No. DD

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY/AUGUST - 2016

PHYSIOLOGY
PAPER - FIRST (MCQ)

SET - B

Time allotted for MCQ - 20 minutes

(0.5 x 20 = 10)

Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)

1. The exocytosis requires which ion?
 - a. Na^+
 - b. Ca^{++}
 - c. K^+
 - d. Mg^{++}
2. Dense granules in platelets do not contain:
 - a. clotting factors
 - b. 5-HT
 - c. ADP
 - d. ATP
3. Platelet derived growth factor(PDGF):
 - a. Also called platelet factor 3 and 4
 - b. Stimulate wound healing
 - c. Inhibit mitosis in vascular wall
 - d. Help in clot retraction
4. Eosinophilia occurs in all EXCEPT:
 - a. Stress
 - b. Urticaria
 - c. Allergic rhinitis
 - d. Ascariasis infestation
5. A person working in 20 metre deep in sea water is exposed to pressure of:
 - a. 1 atmosphere
 - b. 2 atmosphere
 - c. 3 atmosphere
 - d. 4 atmosphere
6. In deep sea diving, the main danger is from:
 - a. O_2 and N_2
 - b. CO_2 and N_2
 - c. CO_2 and O_2
 - d. O_2 , CO_2 and N_2
7. Cyanosis is a common finding in patient of:
 - a. Anaemia
 - b. Polycythemia
 - c. Leukaemias
 - d. Jaundice
8. Cyanide poisoning causes death due to:
 - a. Respiratory depression
 - b. Brainstem depression
 - c. Destruction of cytochrome oxidase
 - d. Circulatory collapse.
9. Current of injury is responsible for changes in:
 - a. P wave
 - b. T wave
 - c. QRS complex
 - d. ST segment
10. Isometric ventricular relaxation phase lasts for---- sec:
 - a. 0.04
 - b. 0.08
 - c. 0.12
 - d. 0.16
11. Ventricular muscles receive impulses directly from the:
 - a. Purkinje system
 - b. Bundle of His
 - c. Right and Left branches
 - d. AV node
12. "a" wave of jugular venous pulse is caused by:
 - a. Atrial systole
 - b. Ventricular systole
 - c. Atrial diastole
 - d. Ventricular diastole
13. Turbulent blood flow is produced by:
 - a. Decreased velocity of circulation
 - b. Decreased diameter of blood vessel
 - c. Decreased haematocrit
 - d. Increased density of blood
14. Endothelial cells synthesises all EXCEPT:
 - a. Nitric oxide
 - b. Prostaglandins
 - c. Vascular endothelium growth factor
 - d. Factor X
15. Rate of filtration at any point along a capillary is determined by:
 - a. Mean capillary pressure
 - b. Starling forces
 - c. Colloidal osmotic pressure
 - d. Capillary filtration pressure
16. Hydrostatic and colloidal pressure in Glomerular capillaries respectively is:
 - a. 45 and 25 mmHg
 - b. 25 and 45mmHg
 - c. 10 and 25mmHg
 - d. 25 and 10 mmHg
17. Normal renal filtration fraction is -----%:
 - a. 12
 - b. 20
 - c. 25
 - d. 30
18. Which hormone stimulates bicarbonate rich pancreatic secretion?
 - a. Somatostatin
 - b. Secretin
 - c. CCK
 - d. Gastrin
19. For sodium- potassium pump the coupling ratio is:
 - a. 1:1
 - b. 2:3
 - c. 3:2
 - d. 1:4
20. Approximately 90% osmolality of plasma is contributed by:
 - a. Plasma proteins
 - b. Glucose
 - c. Sodium and its anions
 - d. Urea

Regn. No.DD

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY/AUGUST - 2016**PHYSIOLOGY
PAPER – FIRST (MCQ)****SET - C****Time allotted for MCQ – 20 minutes****(0.5 x 20 = 10)****Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)**

1. Cyanosis is a common finding in patient of:
 - a. Anaemia
 - b. Polycythemia
 - c. Leukaemias
 - d. Jaundice
2. Cyanide poisoning causes death due to:
 - a. Respiratory depression
 - b. Brainstem depression
 - c. Destruction of cytochrome oxidase
 - d. Circulatory collapse.
3. Current of injury is responsible for changes in:
 - a. P wave
 - b. T wave
 - c. QRS complex
 - d. ST segment
4. Isometric ventricular relaxation phase lasts for---- sec:
 - a. 0.04
 - b. 0.08
 - c. 0.12
 - d. 0.16
5. Ventricular muscles receive impulses directly from the:
 - a. Purkinje system
 - b. Bundle of His
 - c. Right and Left branches
 - d. AV node
6. "a" wave of jugular venous pulse is caused by:
 - a. Atrial systole
 - b. Ventricular systole
 - c. Atrial diastole
 - d. Ventricular diastole
7. Turbulent blood flow is produced by:
 - a. Decreased velocity of circulation
 - b. Decreased diameter of blood vessel
 - c. Decreased haematocrit
 - d. Increased density of blood
8. Endothelial cells synthesises all EXCEPT:
 - a. Nitric oxide
 - b. Prostaglandins
 - c. Vascular endothelium growth factor
 - d. Factor X
9. Rate of filtration at any point along a capillary is determined by:
 - a. Mean capillary pressure
 - b. Starling forces
 - c. Colloidal osmotic pressure
 - d. Capillary filtration pressure
10. Hydrostatic and colloidal pressure in Glomerular capillaries respectively is:
 - a. 45 and 25 mmHg
 - b. 25 and 45mmHg
 - c. 10 and 25mmHg
 - d. 25 and 10 mmHg
11. Normal renal filtration fraction is -----%:
 - a. 12
 - b. 20
 - c. 25
 - d. 30
12. Which hormone stimulates bicarbonate rich pancreatic secretion?
 - a. Somatostatin
 - b. Secretin
 - c. CCK
 - d. Gastrin
13. For sodium- potassium pump the coupling ratio is:
 - a. 1:1
 - b. 2:3
 - c. 3:2
 - d. 1:4
14. Approximately 90% osmolality of plasma is contributed by:
 - a. Plasma proteins
 - b. Glucose
 - c. Sodium and its anions
 - d. Urea
15. The exocytosis requires which ion?
 - a. Na⁺
 - b. Ca⁺⁺
 - c. K⁺
 - d. Mg⁺⁺
16. Dense granules in platelets do not contain:
 - a. clotting factors
 - b. 5-HT
 - c. ADP
 - d. ATP
17. Platelet derived growth factor(PDGF):
 - a. Also called platelet factor 3 and 4
 - b. Stimulate wound healing
 - c. Inhibit mitosis in vascular wall
 - d. Help in clot retraction
18. Eosinophilia occurs in all EXCEPT:
 - a. Stress
 - b. Urticaria
 - c. Allergic rhinitis
 - d. Ascariasis infestation
19. A person working in 20 metre deep in sea water is exposed to pressure of:
 - a. 1 atmosphere
 - b. 2 atmosphere
 - c. 3 atmosphere
 - d. 4 atmosphere
20. In deep sea diving , the main danger is from:
 - a. O₂ and N₂
 - b. CO₂ and N₂
 - c. CO₂ and O₂
 - d. O₂, CO₂ and N₂

Regn. No.DD

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY/AUGUST - 2016

PHYSIOLOGY
PAPER – FIRST (MCQ)

SET - D

Time allotted for MCQ – 20 minutes

(0.5 x 20 = 10)

Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)

1. Turbulent blood flow is produced by:
 - a. Decreased velocity of circulation
 - b. Decreased diameter of blood vessel
 - c. Decreased haematocrit
 - d. Increased density of blood
2. Endothelial cells synthesises all EXCEPT:
 - a. Nitric oxide
 - b. Prostaglandins
 - c. Vascular endothelium growth factor
 - d. Factor X
3. Rate of filtration at any point along a capillary is determined by:
 - a. Mean capillary pressure
 - b. Starling forces
 - c. Colloidal osmotic pressure
 - d. Capillary filtration pressure
4. Hydrostatic and colloidal pressure in Glomerular capillaries respectively is:
 - a. 45 and 25 mmHg
 - b. 25 and 45mmHg
 - c. 10 and 25mmHg
 - d. 25 and 10 mmHg
5. Normal renal filtration fraction is -----%:
 - a. 12
 - b. 20
 - c. 25
 - d. 30
6. Which hormone stimulates bicarbonate rich pancreatic secretion?
 - a. Somatostatin
 - b. Secretin
 - c. CCK
 - d. Gastrin
7. For sodium- potassium pump the coupling ratio is:
 - a. 1:1
 - b. 2:3
 - c. 3:2
 - d. 1:4
8. Approximately 90% osmolality of plasma is contributed by:
 - a. Plasma proteins
 - b. Glucose
 - c. Sodium and its anions
 - d. Urea
9. The exocytosis requires which ion?
 - a. Na⁺
 - b. Ca⁺⁺
 - c. K⁺
 - d. Mg⁺⁺
10. Dense granules in platelets do not contain:
 - a. clotting factors
 - b. 5-HT
 - c. ADP
 - d. ATP
11. Platelet derived growth factor(PDGF):
 - a. Also called platelet factor 3 and 4
 - b. Stimulate wound healing
 - c. Inhibit mitosis in vascular wall
 - d. Help in clot retraction
12. Eosinophilia occurs in all EXCEPT:
 - a. Stress
 - b. Urticaria
 - c. Allergic rhinitis
 - d. Ascariasis infestation
13. A person working in 20 metre deep in sea water is exposed to pressure of:
 - a. 1 atmosphere
 - b. 2 atmosphere
 - c. 3 atmosphere
 - d. 4 atmosphere
14. In deep sea diving, the main danger is from:
 - a. O₂ and N₂
 - b. CO₂ and N₂
 - c. CO₂ and O₂
 - d. O₂, CO₂ and N₂
15. Cyanosis is a common finding in patient of:
 - a. Anaemia
 - b. Polycythemia
 - c. Leukaemias
 - d. Jaundice
16. Cyanide poisoning causes death due to:
 - a. Respiratory depression
 - b. Brainstem depression
 - c. Destruction of cytochrome oxidase
 - d. Circulatory collapse.
17. Current of injury is responsible for changes in:
 - a. P wave
 - b. T wave
 - c. QRS complex
 - d. ST segment
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 - a. Purkinje system
 - b. Bundle of His
 - c. Right and Left branches
 - d. AV node
20. "a" wave of jugular venous pulse is caused by:
 - a. Atrial systole
 - b. Ventricular systole
 - c. Atrial diastole
 - d. Ventricular diastole

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY/AUGUST - 2016
PHYSIOLOGY
PAPER - SECOND

[Max Marks: 50]

[Time allotted: Three hours]

Note: Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given

(½ x 20 = 10)

Q. 2. Give Reasons:

(1 x 5 = 05)

- a. Exophthalmos in a patient of Grave's disease.
- b. Pituitary dwarfs with deficiency of GH are often infertile.
- c. Amenorrhea in a lactating mother.
- d. Occipital lesions often affect peripheral field of vision only.
- e. Myxedema is a disease that can be diagnosed on phone.

(5 x 1 = 05)

Q. 3. Problem based question:

A 9 year old child is suffering from frequent headache and is facing difficulty in reading from the blackboard. He is fond of watching TV and playing video games most of the time. His mother decides to seek medical advice.

- a. What is your diagnosis?
- b. Draw a ray diagram, to explain the above defect.
- c. Which simple tests should be advised to diagnose the defect?
- d. Explain the physiological basis of use the above tests in OPD.
- e. What is the physiological basis of causation of above defect in this case?

(2.5 x 4 = 10)

Q. 4. Write short notes on:

- a. Brown Sequard syndrome
- b. Aphasias
- c. Tonic neck reflexes
- d. Signs and symptoms in Cerebellar lesion

Q. 5. Structured Questions:

(i). Give physiological basis of signs and symptoms in Parkinsonism.

(05)

(ii). Describe functions of thyroid hormones.

(05)

Q. 6. Write in brief about:

(2.5 x 4 = 10)

- a. Latch mechanism
- b. Sertoli cells
- c. Travelling wave theory
- d. Organ of Corti

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY/AUGUST - 2016

PHYSIOLOGY

PAPER - SECOND (MCQ)

SET - A

Time allotted for MCQ - 20 minutes

(0.5 x 20=10)

- Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)**
- Which of the following hormones does not stimulate adenylate cyclase in its target cells?
 - FSH
 - ACTH
 - Parathyroid hormone (PTH)
 - Insulin
 - Laron dwarf is:
 - Growth hormone deficiency syndrome
 - Low affinity of growth hormone receptor syndrome
 - Thyroid hormone deficient
 - Normal dwarf
 - Which one of the following is not a characteristic of biological control systems?
 - Both the internal and external environments supply afferent information to homeostatic systems
 - The controlled variable fluctuates over a range of values rather than being maintained at a fixed value
 - Negative feedback is the most common control mechanism in the body
 - The brain is the only known integrator in the body
 - Milk synthesis is very low during pregnancy because:
 - The high levels of estrogen during pregnancy tend to inhibit milk synthesis
 - The placental somatomamotrophin inhibits milk synthesis
 - There is no prolactin present during pregnancy
 - The maternal plasma level of calcium is too low to support milk synthesis
 - Prolactin secretion during lactation:
 - Is stimulated by a neuroendocrine reflex whereby suckling inhibits PIF and thereby allows greater prolactin secretion.
 - Is stimulated because sucking causes a release of oxytocin which stimulates prolactin release
 - Is not necessary for continued lactation once lactation is initiated
 - Is the only hormone needed for normal milk synthesis.
 - Which one of the following features is not seen in hypothyroidism?
 - Cold intolerance
 - Deafness
 - Pericardial effusion
 - Pretibial myxedema
 - Stimulation of the adrenal medulla:
 - Is identified to the effects of sympathetic nerves since both release the same transmitter, epinephrine
 - Occurs via postganglionic fibers from the celiac ganglion
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 - Monkey
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 - Preoptic area
 - Lateral nucleus

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY/AUGUST - 2016

PHYSIOLOGY

PAPER - SECOND (MCQ)

SET - B

Time allotted for MCQ - 20 minutes

(0.5 x 20=10)

Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)

1. Stimulation of the adrenal medulla:
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 - c. Prefrontal cortex
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12. Kluver bucy syndrome in animals, is not characterized by:
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17. Which one of the following is not a characteristic of biological control systems?
 - a. Both the internal and external environments supply afferent information to homeostatic systems
 - b. The controlled variable fluctuates over a range of values rather than being maintained at a fixed value
 - c. Negative feedback is the most common control mechanism in the body
 - d. The brain is the only known integrator in the body
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 - a. The high levels of estrogen during pregnancy tend to inhibit milk synthesis
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 - c. There is no prolactin present during pregnancy
 - d. The maternal plasma level of calcium is too low to support milk synthesis
19. Prolactin secretion during lactation:
 - a. Is stimulated by a neuroendocrine reflex whereby suckling inhibits PIF and thereby allows greater prolactin secretion.
 - b. Is stimulated because sucking causes a release of oxytocin which stimulates prolactin release
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20. Which one of the following features is not seen in hypothyroidism?
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 - c. Pericardial effusion
 - d. Pretibial myxedema

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY/AUGUST - 2016

PHYSIOLOGY
PAPER - SECOND (MCQ)

SET - C

Time allotted for MCQ - 20 minutes

(0.5 x 20=10)

Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)

1. Follicle stimulating hormone in females:
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M.B.B.S. FIRST PROFESSIONAL EXAMINATION, JULY/AUGUST - 2016

PHYSIOLOGY
PAPER - SECOND (MCQ)

Time allotted for MCQ - 20 minutes

SET - D

Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)

(0.5 x 20=10)

1. Higher intellectual functions are linked to:
 - a. Limbic system
 - b. Parietal cortex
 - c. Prefrontal cortex
 - d. Motor cortex
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M.B.B.S. FIRST PROFESSIONAL EXAMINATION, OCTOBER - 2016
PHYSIOLOGY
PAPER – FIRST

[Time allotted: Three hours]**[Max Marks: 50]****Note:** Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given**(½ x 20 = 10)****Q. 2. Give Reasons:****(1 x 5 = 05)**

- a. Voluntary hyperventilation for two minutes by a normal person results in apnoea.
- b. Veins are also known as capacitance vessels.
- c. Patients with cirrhosis suffer from blood clotting abnormalities.
- d. The blood pressure is elevated during act of straining like coughing.
- e. The depolarization phase of action potential is an example of positive feedback reaction.

Q. 3. Problem based question:**(1 x 5 = 05)**

A 22 year male medical student presented to the medical OPD with chief complaints of yellow discoloration of eyes (sclera) and urine with difficulty in digesting fatty food for past few days. Some of his investigations were:

S. Bilirubin - 3.5 mg/dl, Albumin/Globulin- 0.6, Van den Bergh test- direct positive.

Based on above history, answer the following questions:

- a. What is the most probable diagnosis?
- b. Give the normal value of serum bilirubin in young adult.
- c. Enumerate the types of bilirubin. Which one is lipid soluble?
- d. Why Van den berg test is direct positive in this patient?
- e. Explain why there is difficulty in digestion of fat.

Q. 4. Write short notes on:**(2.5 x 4 = 10)**

- a. Gastrin
- b. Cystometrogram
- c. Laplace Law
- d. Anaphylactic shock

Q. 5. Structured Questions:**(i).** Classify hypoxia and describe any one of them.**(2+3 = 05)****(ii).** Describe the factors helping the venous return to the heart**(05)****Q. 6. Write in brief about:****(2.5 x 4 = 10)**

- a. Acidification of urine
- b. Short term control of blood pressure
- c. A well-labelled diagram of oxygen-haemoglobin dissociation curve and effect of 2, 3 DPG and H⁺ ions on it.
- d. Mechanism of HCL secretion by stomach and its regulation.

PHYSIOLOGY
PAPER – FIRST (MCQ)

Time allotted for MCQ – 20 minutes

SET - B

Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet) (0.5 x 20 = 10)

1. Which of the following has the highest cross-sectional area in the body?
 - a. Arterioles
 - b. Capillaries
 - c. Venules
 - d. Veins
2. Which of the following organs has greatest blood flow per 100gm of tissue?
 - a. Skin
 - b. Liver
 - c. Kidneys
 - d. Brain
3. On the summit of Mt. Everest, where the barometric pressure is about 250 mm Hg, the partial pressure of oxygen is about _____ mm Hg.
 - a. 0.5
 - b. 5
 - c. 50
 - d. 100
4. Most of the CO₂ transported in blood is in form of _____.
 - a. Bicarbonate
 - b. Dissolved in plasma
 - c. Carbamino compounds of plasma proteins
 - d. Carbamino compounds of hemoglobin
5. In the absence of vasopressin, the greatest fraction of filtered water is absorbed in the _____.
 - a. Proximal tubule
 - b. Loop of Henle
 - c. Cortical collecting duct
 - d. Medullary collecting duct
6. Dehydration increases the plasma concentration of ALL EXCEPT
 - a. Aldosterone
 - b. Atrial natriuretic peptide
 - c. Vasopressin
 - d. Norepinephrine
7. The limiting pH of urine is _____.
 - a. 9.0
 - b. 6.8
 - c. 7.4
 - d. 4.5
8. Glucose reabsorption occurs mainly in the _____.
 - a. Proximal tubule
 - b. Distal tubule
 - c. Loop of Henle
 - d. Collecting duct
9. In chronic hypertension, the _____ reflex mechanism is reset to maintain an elevated blood pressure.
 - a. Chemoreceptor
 - b. Baroreceptor
 - c. Neural
 - d. Humoral
10. The _____ is forceful expiration against a closed glottis.
 - a. Hering Breuer inflation reflex
 - b. Hering Breuer deflation reflex
 - c. Coronary chemoreflex
 - d. Valsalva maneuver
11. The low pressure system include ALL EXCEPT:
 - a. Left ventricle
 - b. Left atrium
 - c. Systemic veins
 - d. Pulmonary circulation
12. The transport of sodium and glucose from the intestinal lumen into mucosal cells is an example of _____.
 - a. Uniport
 - b. Symport
 - c. Antiport
 - d. Passive transport
13. Cardiac output is defined as volume of blood:
 - a. Ejected by both ventricle per min
 - b. Ejected by both ventricle per stroke
 - c. Ejected by each ventricle per stroke
 - d. Ejected by each ventricle per min
14. ALL of the following conditions are associated with increased renin secretion EXCEPT:
 - a. Potassium depletion
 - b. Diuretics
 - c. Hypotension
 - d. Cardiac failure
15. The plateau phase in cardiac muscle action potential is due to prolonged opening of voltage gated _____ channels.
 - a. Sodium
 - b. Potassium
 - c. Calcium
 - d. Chloride
16. In infants, defecation often follows a meal. The cause of colonic contractions in this situation is:
 - a. The gastroileal reflex
 - b. Increased circulating levels of CCK
 - c. The gastrocolic reflex
 - d. Increased circulating levels of somatostatin
17. The rise in systemic arterial pressure secondary to increased intracranial tension is referred to as _____.
 - a. Coronary chemoreflex
 - b. Cushing reflex
 - c. Somato sympathetic reflex
 - d. Pulmonary chemoreflex
18. The hypoxia characterized by normal PO₂ but reduced blood flow to tissues is
 - a. Anemic
 - b. Hypoxic
 - c. Stagnant
 - d. Histotoxic
19. The bronchodilation is mainly mediated by _____ receptors.
 - a. β_1 adrenergic
 - b. β_2 adrenergic
 - c. Cholinergic
 - d. α_2 adrenergic
20. The neurotransmitter involved in axon reflex is mainly _____.
 - a. Substance P
 - b. NO
 - c. Histamine
 - d. Prostacyclin

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, OCTOBER - 2016**PHYSIOLOGY
PAPER – SECOND****[Time allotted: Three hours]****[Max Marks: 50]****Note:** Attempt all Questions.

Draw suitable diagrams wherever necessary.

Q. 1. Multiple choice questions- separate sheet given ($\frac{1}{2} \times 20 = 10$)**Q. 2. Give Reasons:** (1 x 5 = 05)

- a. No external work is done in isometric contraction.
- b. ADH is also called vasopressin.
- c. Non pitting oedema develops in myxoedema.
- d. Pacinian corpuscle is selected for electrical events of receptors.
- e. Discrimination power is greater on the thumb than on the back.

Q. 3. Problem based question: (1 x 5 = 05)

A 35 year old young lady resident of Chamba has been suffering from Rheumatoid arthritis since 10 years. She is on corticosteroids since 10 years. She has been putting on weight. There is deposition of fat in abdomen area but extremities are thin. Every time she exercises or does physical work she complains of weakness. Finally she visited a doctor. On clinical examination the doctor found purple striae over skin of abdomen, moon-face, pendulous abdomen, poor muscle development and hypertension. Blood investigation showed polycythaemia (Hb-17 gm%), hyperglycemia (240 mg%) and hyperlipidemia (300 mg%). Looking at above case history answer the following questions:

- a. What is your diagnosis? What may be the cause?
- b. What is the physiological basis of striae over skin of abdomen?
- c. Why are steroid given in treatment of rheumatoid arthritis?
- d. List two important application of cortisol.
- e. What is the physiological basis of hyperglycemia in this patient?

Q. 4. Write short notes on: (2.5 x 4 = 10)

- a. Ovulation
- b. Impedance matching
- c. Pituitary dwarf
- d. Functions of aldosterone

Q. 5. Structured Questions:

(i). Draw a labelled diagram of structure of synapses. Describe the ionic basis of EPSP & IPSP.

(2+3=05)

(ii). Draw a labelled diagram of visual pathways. Write a note on lateral geniculate body.

(3+2=05)**Q. 6. Write in brief about:**

- a. Receptor potential
- b. Functions of cerebellum
- c. Testosterone
- d. Sliding filament theory for skeletal muscle contraction.

(2.5 x 4 = 10)

Q. 1. Multiple Choice questions (Darken the single best response in OMR sheet)

(0.5 x 20=10)

1. Epinephrine predominantly causes:
 - a. Glycogenolysis
 - b. Gluconeogenesis
 - c. Glycolysis
 - d. Glycogen storage.
2. Sertoli cells secrete following EXCEPT:
 - a. Mullerian inhibiting factor
 - b. Somatomedins
 - c. Inhibin
 - d. Androgen binding proteins
3. Acrosome of the sperm is formed by:
 - a. Nucleus
 - b. Ribosomes
 - c. Golgi bodies
 - d. Mitochondria
4. Opening of chloride channels causes:
 - a. Stimulation of post synaptic neurons
 - b. Inhibition of post synaptic neurons
 - c. Stimulation of pre-synaptic neurons
 - d. Inhibition of pre synaptic neurons
5. Weber fechner law deals with:
 - a. Frequency discrimination
 - b. Receptive field organisation
 - c. Intensity discrimination
 - d. Two point discrimination
6. All are monosynaptic reflexes EXCEPT:
 - a. Knee reflex
 - b. Biceps reflex
 - c. Ankle reflex
 - d. Abdominal reflex
7. Kinesthetic receptors are:
 - a. Free nerve endings
 - b. Pacinian corpuscles
 - c. Ruffini corpuscles
 - d. Cortical cells
8. Medial geniculate body is concerned with:
 - a. Hearing
 - b. Vision
 - c. Smell
 - d. Taste
9. Bitemporal hemianopia is seen in lesion of:
 - a. Optic tract
 - b. Optic chiasma
 - c. Optic nerve
 - d. Occipital lobe
10. Basal ganglia lesion causes all EXCEPT:
 - a. Spasticity
 - b. Resting tremors
 - c. Akinesia
 - d. Dysmetria
11. Head rotation is detected by:
 - a. Utricle
 - b. Saccule
 - c. Crista ampullaris
 - d. Organ of corti
12. Hormone secreted by hypothalamus:
 - a. GHIH
 - b. GH
 - c. LH
 - d. FSH
13. Deficiency of somatomedins is seen in:
 - a. Laron dwarf
 - b. African pygmies
 - c. Pituitary dwarf
 - d. Hypothyroid dwarf
14. In myxedema, not true is:
 - a. Low serum T3 and T4
 - b. High serum TSH
 - c. Low serum cholesterol
 - d. Low blood sugar
15. Renal calculi is seen in:
 - a. Hyperthyroidism
 - b. Hyper parathyroidism
 - c. Cushing disease
 - d. Addisons disease
16. Not seen in cushing's syndrome:
 - a. Eosinopenia
 - b. Lymphopenia
 - c. Anemia
 - d. Neutrophilia
17. At neuromuscular junction the following transmitter is released:
 - a. Acetylcholine
 - b. Bradykinin
 - c. Histamine
 - d. Serotonin
18. Rmp of skeletal muscle fibre:
 - a. -60 mV
 - b. -70 mV
 - c. -80 mV
 - d. -90 mV
19. The end plate potential is characterised by:
 - a. Depolarization
 - b. Repolarization
 - c. Hyperpolarization
 - d. After- depolarization
20. In myasthenia gravis:
 - a. Formation of circulating antibodies to nicotinic ach receptors:
 - b. Sustained contraction of muscles
 - c. Most commonly affected muscles are of the limbs
 - d. Formation of antibodies against Ca^{++} channels

PHYSIOLOGY PAPER - FIRST

Note: Attempt all questions.
Draw suitable diagrams (wherever necessary)

Q. 2. Give reasons why:

(1 x 5 = 05)

- a. Hypoproteinemia produces oedema.
- b. Venous return increases during inspiration.
- c. Intra-pleural pressure is negative.
- d. Mean arterial pressure is close to the diastolic blood pressure.
- e. Gastric mucosa is resistant to auto-digestion.

Q. 3. Problem based question:

(1 x 5 = 05)

After a road accident, a 35 year old motorcyclist was admitted to casualty with heavy bleeding. On examination, his blood pressure was found to be 60/50 mmHg and pulse was rapid and thready. Based on above history answer the following questions.

- a. What is your diagnosis?
- b. What is the cause of it?
- c. What is the cause for rapid and thready pulse?
- d. What rapid compensatory mechanisms will occur?
- e. What immediate treatment you will advise?

Q. 4. Write short notes on:

(2.5 x 4 = 10)

- a. Mechanism of secretion of HCl and its regulation.
- b. Structure and function of enteric nervous system.
- c. Ionic basis of action potential in cardiac muscles.
- d. Factors regulating cardiac output.

Q. 5. Structured questions:

(i) Describe the transport of oxygen in blood.

(05)

(ii) Describe the forces involved in glomerular filtration. Explain how these factors determine GFR in health and disease.

(05)

Q. 6. Write in brief about:

(2.5 x 4 = 10)

- a. Schematic diagram of clotting mechanism
- b. Stages of erythropoiesis
- c. Functions of lysosomes
- d. Non-excretory functions of kidney

PHYSIOLOGY

PAPER - FIRST

[Time allotted: Three hours]

SET - C

[Max Marks: 50]

Q. 1. Multiple choice questions (attempt all MCQs in the allotted first 20 minutes in the OMR sheet) ($\frac{1}{2} \times 20 = 10$)

1. There is no change during isotonic exercise in one of the following:
 - a. Respiratory rate
 - b. Heart rate
 - c. Total peripheral resistance
 - d. Systolic blood pressure
2. One of the following has highest total cross sectional area in the body:
 - a. Arteries
 - b. Capillaries
 - c. Veins
 - d. Arterioles
3. Surfactant lining the alveolar membrane is responsible for:
 - a. Preventing alveoli collapse
 - b. Preventing pulmonary oedema
 - c. Less work done during breathing
 - d. All the above
4. Dyspnoea develops in a person when the dyspnoeic index falls below:
 - a. 70%
 - b. 90%
 - c. 60%
 - d. 80%
5. One of the following cannot be measured by spirometry:
 - a. Vital capacity
 - b. Tidal volume
 - c. Residual volume
 - d. Maximum ventilator volume
6. The defect in histotoxic hypoxia is:
 - a. Failure of tissue to utilise oxygen
 - b. Inadequate PO_2 in the atmospheric air
 - c. Inadequate blood flow
 - d. Inadequate Hb in blood
7. Glucose reabsorption occurs in:
 - a. PCT
 - b. Loop of Henle
 - c. Distal tubule
 - d. Cortical collecting duct
8. Renal blood flow in one minute under resting condition is:
 - a. 10% of CO
 - b. 25% of CO
 - c. 5% of CO
 - d. 2% of CO
9. The hormone required to produce a concentrated urine is:
 - a. Oxytocin
 - b. Aldosterone
 - c. Adrenaline
 - d. ADH
10. The part of nephron impermeable to water is:
 - a. PCT
 - b. Descending limb of loop of Henle
 - c. Ascending limb of loop of Henle
 - d. Collecting duct
11. Histamine in the gastric mucosa is secreted by:
 - a. Chief cells
 - b. G cells
 - c. Surface epithelial cells
 - d. ECL cells
12. The best stimulus for secretion of pancreatic enzymes is:
 - a. Secretin
 - b. Gastrin
 - c. CCK-PZ
 - d. Somatostatin
13. Depolarisation current of nerve fibre is brought about by:
 - a. K^+ efflux
 - b. Na^+ influx
 - c. Na^+ efflux
 - d. K^+ influx
14. Lysosomes of a cell are concerned with all of the following except:
 - a. Protein digestion
 - b. Intracellular digestion
 - c. Autolysis of cell
 - d. Inflammation
15. Reticulocyte count is index for:
 - a. Bone marrow activity
 - b. Leucocyte production
 - c. Antibody production
 - d. Thrombocyte production
16. ABO system agglutinins belong to which class of immunoglobulins?
 - a. IgM
 - b. IgA
 - c. IgG
 - d. IgE
17. Second heart sound is produced due to:
 - a. Closure of AV valves
 - b. Closure of semilunar valves
 - c. Opening of AV valves
 - d. Opening of semilunar valves
18. In resting state the main energy substrate for myocardium is:
 - a. Glucose
 - b. Fatty acid
 - c. Lactate
 - d. Amino acids
19. PR interval of ECG represents:
 - a. Atrial depolarisation and conduction through AV node
 - b. Ventricular depolarisation and atrial repolarisation
 - c. Ventricular depolarisation and ventricular repolarisation
 - d. Ventricular repolarisation
20. Hypovolaemic shock results in all the following except:
 - a. Myocardial infarction
 - b. Haemorrhage
 - c. Severe dehydration
 - d. Burns

PHYSIOLOGY PAPER- SECOND

Note: Attempt all questions.
Draw suitable diagrams (wherever necessary)

Q. 2. Give reasons why:

(1 x 5 = 05)

- a. Amputees may feel pain and other sensations in a limb that is no longer there.
- b. Otosclerosis causes deafness.
- c. Pituitary dwarfs are infertile.
- d. Non pitting type of edema is seen in hypothyroidism.
- e. Corticosteroid dosage should always be tapered.

Q. 3. Problem based question:

(1 x 5 = 05)

A young girl 14 yrs old, known case of type I diabetes mellitus, had gone attend her friend's birthday party, and had forgotten to take her usual dose of insulin. After coming back home, she had been urinating excessively and was breathless. She later became unconscious was brought in a state of coma to the hospital.

- a. What is the probable diagnosis?
- b. What is the cause of increased urine volumes?
- c. Why is the patient breathless and what is this symptom called?
- d. What is the cause of coma in the above patient?
- e. What investigations should be done to confirm the diagnosis?

Q. 4. Write short notes on:

(2.5 x 4 = 10)

- a. Alteration of pain sensation by opioid peptides
- b. Peculiarities of olfactory sensation
- c. Endocochlear potential
- d. Dark adaptation

Q. 5. Structured questions:

(i) Describe in detail the physiological changes during pregnancy.

(05)

(ii) Describe in brief the properties of sensory receptors.

(05)

Q. 6. Write in brief about:

(2.5 x 4 = 10)

- a. Differences between upper motor neuron and lower motor neuron lesion.
- b. List the pathways to and from the cerebellum. Draw a diagram to explain it.
- c. Temperature regulating mechanisms in the body and their control at hypothalamic level.
- d. Sequence of events at neuromuscular junction during impulse transmission.

PHYSIOLOGY
PAPER - SECOND

[Time allotted: Three hours]

SET - C

[Max Marks: 50]

Q. 1. Multiple choice questions (attempt all MCQs in the allotted first 20 minutes in the OMR sheet)**(½ x 20 = 10)**

1. The distance by which two touch stimuli must be separated to be perceived as two separate stimuli is greatest on the:
 - a. Lips
 - b. Palm of the hand
 - c. Back of the scapula
 - d. Dorsum of the hand
2. An anterolateral cordotomy is performed that produces relief of pain in the right leg. It is effective because it interrupts the:
 - a. Left dorsal column
 - b. Left ventral spino-thalamic tract
 - c. Right ventral spino-thalamic tract
 - d. Left lateral spino-thalamic tract
3. Visual accommodation involves:
 - a. Increased tension on the lens ligaments
 - b. A decrease in the curvature of the lens
 - c. Relaxation of the sphincter muscle of the iris
 - d. Increased intraocular pressure
4. Sound intensity is measured in:
 - a. Diopters
 - b. Daltons
 - c. Torrs
 - d. Decibels
5. In the utricle, tip links in hair cells are involved in:
 - a. Formation of perilymph
 - b. Depolarization of the striavascularis
 - c. Movements of the basement membrane
 - d. Regulation of distortion activated ion channels
6. Impulses generated in the taste buds of the tongue reach the cerebral cortex via the:
 - a. Thalamus
 - b. Internal capsule
 - c. Dorsal roots of the first cervical spinal nerves
 - d. Trochlear nerve
7. The coupling of mono-iodotyrosine and di-iodotyrosine and the iodination of thyroglobulin is blocked by:
 - a. Divalent cations
 - b. Thiourylenes such as methimazole
 - c. Monovalent anions such as perchlorate
 - d. TRH
8. Insulin increases the entry of glucose into:
 - a. All tissues
 - b. Skeletal muscle
 - c. Renal tubular cells
 - d. Most neurons in the cerebral cortex
9. Mole for mole, which of the following has the greatest effect on Na⁺ excretion?
 - a. Progesterone
 - b. Cortisol
 - c. Vasopressin
 - d. Aldosterone
10. In its action in cells, aldosterone:
 - a. Increases transport of ENaCs the cytoplasm to the cell membrane
 - b. Does not act on the cell membrane
 - c. Binds to a receptor in the nucleus
 - d. May activate a heat shock protein
11. 1,25-Dihydroxycholecalciferol affects intestinal Ca²⁺ absorption through a mechanism that:
 - a. Includes alterations in the activity of genes
 - b. Activates adenyl cyclase
 - c. Decreases cell turnover
 - d. Changes gastric acid secretion
12. Full development and function of the seminiferous tubules require:
 - a. Somatostatin
 - b. LH
 - c. Oxytocin
 - d. Androgens and FSH
13. Castration cells are found in the:
 - a. Anterior pituitary
 - b. Uterus
 - c. Prostate
 - d. Placenta
14. The functions of tropomyosin in skeletal muscle include:
 - a. Sliding on actin to produce shortening
 - b. Releasing Ca²⁺ after initiation of contraction shortening
 - c. Binding to myosin during contraction
 - d. Acting as a "relaxing protein" at rest by covering up the sites where myosin binds to actin
15. The contractile response in skeletal muscle:
 - a. Starts after the action potential is over
 - b. Does not last as long as the action potential
 - c. Produces more tension when the muscle contracts isometrically than when the muscle contracts isotonicly
 - d. Produces more work when the muscle contracts isometrically than when the muscle contracts isotonicly
16. Pacinian corpuscles are:
 - a. A type of temperature receptor
 - b. Usually innervated by A nerve fibers
 - c. Rapidly adapting touch receptors
 - d. Slowly adapting touch receptors
17. Adaptation to a sensory stimulus produces:
 - a. A diminished sensation when other types of sensory stimuli are withdrawn
 - b. A more intense sensation when a given stimulus is applied repeatedly
 - c. A sensation localized to the hand when the nerves of the brachial plexus are stimulated
 - d. A diminished sensation when a given stimulus is applied repeatedly over time
18. The inverse stretch reflex:
 - a. Has a lower threshold than the stretch reflex
 - b. Is a monosynaptic reflex
 - c. Is a disynaptic reflex with a single interneuron inserted between the afferent and efferent limbs
 - d. Is a polysynaptic reflex with many interneurons inserted between the afferent and efferent limbs
19. Which of the following is not characteristic of a reflex action?
 - a. Modification by impulses from various parts of the central nervous system
 - b. May involve simultaneous contraction of some muscles and relaxation of others
 - c. May involve either somatic or visceral responses but never both simultaneously
 - d. Always involves transmission across at least one synapse
20. Withdrawal reflexes:
 - a. Initiated by nociceptive stimuli
 - b. Pre-potent
 - c. Prolonged if the stimulus is strong
 - d. Affected by transaction of the spinal cord

PHYSIOLOGY PAPER- FIRST

Note: Attempt all questions.
Draw suitable diagrams (wherever necessary)

Q. 2. Give reasons:

(1 x 5 = 05)

- a. Post prandial alkaline tide in the blood.
- b. Intrapleural pressure is negative.
- c. Coronary arteries are perfused during diastole.
- d. Hyper-osmolarity of renal medullary interstitium.
- e. Lung alveoli are kept dry normally.

Q. 3. Problem based question:

(1+1+2+1 = 05)

Mr. Sabarwal, 38 yrs, an executive in a multinational software company, comes to the hospital with headache off and on and uneasiness in the body for the last 15 days. There is no complaint of fever, cough or cold. His father died of stroke and mother is a known cardiac patient. On examination his blood pressure is 140/100 mmHg. His haematological investigations are normal. Based on above history answer the following questions-

- a. What problem/disease can you identify in Mr. Sabarwal and why?
- b. What are the risk factors operating in this patient, which has caused this problem?
- c. What is baroreceptor reflex?
- d. Enumerate the rapidly acting blood pressure control measures.

Q. 4. Write short notes on:

(2.5 x 4 = 10)

- a. Define tubulo-glomerular feedback and glomerulo-tubular balance.
- b. T Helper cells
- c. Enumerate static and dynamic lung volumes and capacities.
- d. What are resistance and capacitance vessels?

Q. 5. (i) Give a review of the mechanisms that regulate respiration. Draw and describe the neural control of respiration. What are the Hering-Breuer reflexes?

(05)

(ii) Describe the blood coagulation. Write a note on anticoagulants.

(3+2 = 05)

Q. 6. Write in brief about:

(2.5 x 4 = 10)

- a. Outline the events occurring during digestion and absorption of fats.
- b. Micturition reflex
- c. Deglutition
- d. Differences between diffusion and facilitated diffusion

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, NOVEMBER - 2017**PHYSIOLOGY****PAPER - FIRST****SET - B****[Max Marks: 50]****[Time allotted: Three hours]****Q. 1. Multiple choice questions (attempt all MCQs in the allotted first 20 minutes in the OMR sheet) ($\frac{1}{2} \times 20 = 10$)**

1. Normal duration of the Cardiac Cycle at a Heart Rate 75/min is:
 - a. 0.8 sec
 - b. 4 sec
 - c. 0.05 sec
 - d. 0.08 sec
2. The cyclic variation in resting membrane potential of the visceral smooth muscle in the GI tract is called the:
 - a. Basal electrical rhythm
 - b. Fast wave
 - c. Basic potential
 - d. Receptor rhythm
3. Aspirin inhibits:
 - a. Platelet activating factor
 - b. Prostacyclin synthesis
 - c. Thromboxane A₂
 - d. Phospholipase A₂
4. The commonest site of haemopoiesis in a 3 month old foetus is:
 - a. Liver
 - b. Spleen
 - c. Bone marrow
 - d. Gut
5. Which of the following would cause a decrease in the binding affinity of haemoglobin for oxygen?
 - a. Increased pH of the blood
 - b. Increased temperature of the blood
 - c. Decreased DPG levels in erythrocytes
 - d. Decreased temperature of the blood
6. Normal swallowing is dependant on the integrity of the:
 - a. 9th and 10th cranial nerves
 - b. Pyramidal tract
 - c. Trigeminal nerve
 - d. Appetite center of hypothalamus
7. If I am dehydrated, my body will increase:
 - a. ATP
 - b. ADP
 - c. Diluted urine
 - d. ADH
8. Resting nerve membrane is more permeable to K⁺ than to Na⁺ by:
 - a. 1-5 times
 - b. 20-50 times
 - c. 50-100 times
 - d. 200-500 times
9. The PR interval of ECG corresponds to:
 - a. Ventricular repolarization
 - b. Ventricular depolarization
 - c. Atrial depolarization and conduction through AV node
 - d. Repolarization of AV node and bundle of His
10. Which of the following is **not** increased during exercise?
 - a. Stroke volume
 - b. Total peripheral resistance
 - c. Systolic BP
 - d. Heart rate
11. Iron deficiency anaemia is:
 - a. Normocytic normochromic
 - b. Normocytic hypochromic
 - c. Microcytic hypochromic
 - d. Macrocytic hypochromic
12. Secretion of intrinsic factor occurs in:
 - a. Parietal cells of stomach
 - b. Chief cells of stomach
 - c. Upper abdomen
 - d. Alpha cells of pancreas
13. During the cardiac cycle:
 - a. The volume of blood leaving the right side of the heart is greater than that leaving the left side
 - b. Mechanical events are followed by electrical events
 - c. The duration of systole is greater than that of diastole
 - d. The duration of diastole is greater than that of systole
14. Inulin is used to measure:
 - a. Renal blood flow
 - b. Renal plasma flow
 - c. Urinary volume
 - d. Glomerular filtration rate
15. In order for the lungs to function normally, the intra-pleural pressure must:
 - a. Be lower than atmospheric pressure
 - b. Be between +5 and +10 mmHg above atmospheric pressure
 - c. Alternate between being less than and greater than atmospheric pressure
 - d. Change as the respiratory demands of the body change
16. Which hormone stimulates bicarbonate rich pancreatic secretion?
 - a. Somatostatin
 - b. Secretin
 - c. CCK
 - d. Gastrin
17. The second heart sound is caused by:
 - a. Closure of the aortic and pulmonary valves
 - b. Vibrations in the ventricular wall during systole
 - c. Ventricular filling
 - d. Closure of the mitral and tricuspid valves
18. Glucose reabsorption occurs in the:
 - a. Proximal tubule
 - b. Loop of Henle
 - c. Distal tubule
 - d. Cortical collecting duct
19. GFR is about:
 - a. 125 ml/min
 - b. 200 ml/min
 - c. 250 ml/min
 - d. 180 ml/min
20. Each gram of haemoglobin contains----- ml of O₂:
 - a. 3.39
 - b. 2.39
 - c. 1.39
 - d. 0.69

PHYSIOLOGY PAPER- SECOND

Note: Attempt all questions.

Draw suitable diagrams (wherever necessary)

Q. 2. Give reasons why:

(1 x 5 = 05)

- a. Glucocorticoids have mineral corticoids activity.
- b. Regular mild to moderate exercise is beneficial for diabetic person.
- c. Hormones secreted in blood act only at specific sites
- d. Amenorrhea is seen in lactating females nursing the babies.
- e. Zero decibel does not mean absence of sound.

Q. 3. Problem based question:

(1 x 5 = 05)

A 56 years old woman noticed that over a period of few years her movements were slowed and that her hand shook even on rest. Her physician noticed a pin rolling tremor of hand and slow initiation and execution of movements. Her face was non expressive. The elbow joints were stiff of passive bending but gave way just be repeated as bending progressed.

- a. What is the probable clinical condition (disease)?
- b. Which structure of CNS is most likely to be affected?
- c. Name the type of rigidity involved?
- d. Why are drugs like levadopa effective in treating the illness?
- e. Explain briefly the pathogenesis for the above clinical condition.

Q. 4. Write short notes on:

(2.5 x 4= 10)

- a. Differences between EPSP and IPSP
- b. Somatomedins
- c. Spermatogenesis
- d. Latch phenomena

Q. 5. Structured questions:

- (i). Draw a labelled diagram of taste pathway. Enumerate the taste sensations and mechanism of signal transduction. (2+3=05)

- (ii). Describe in brief the physiological actions of thyroid hormone. (05)

Q. 6. Write in brief about:

(2.5 x 4= 10)

- a. Muller's Law of specific nerve energies
- b. Suckling reflex
- c. Difference between REM and NREM sleep
- d. Medullary component of postural reflexes

M.B.B.S. FIRST PROFESSIONAL EXAMINATION, NOVEMBER - 2017**PHYSIOLOGY****PAPER - SECOND****SET - B****[Time allotted: Three hours]****[Max Marks: 50]****Q. 1. Multiple choice questions (attempt all MCQs in the allotted first 20 minutes in the OMR sheet) ($\frac{1}{2} \times 20 = 10$)**

1. Hormones to be released in posterior pituitary are stored as:
 - a. Nissels granules
 - b. Herring bodies
 - c. Large vesicles
 - d. Small clear vesicles
2. Type of nerve fibres susceptible to hypoxia are in order of:
 - a. $a > c > b$
 - b. $b > a > c$
 - c. $b > c > a$
 - d. $a > b > c$
3. Hexagonal arrangement of actin and myosin chain has:
 - a. 6 actin for 6 myosin
 - b. 1 actin for 3 myosin
 - c. 3 actin for 1 myosin
 - d. 3 actin for 3 myosin
4. Thyroid hormone in excess causes all **except**:
 - a. Increased cardiac rate
 - b. Increased myosin HC β
 - c. Increase myosin HC α
 - d. Increase cardiac output
5. Which of them is not outside the blood-brain barrier?
 - a. Posterior pituitary
 - b. Organ vasculosum
 - c. Sub-fornical organ
 - d. Hypothalamus
6. Reduced eye concept has a spherical lens of power (Diopter D):
 - a. 60 D
 - b. 50 D
 - c. 40 D
 - d. 59 D
7. Saccadic movements of the eye is regulated by:
 - a. Inferior colliculi
 - b. Tectum
 - c. Superior colliculi
 - d. Lateral geniculate body
8. Erection of penis is due to all **except**:
 - a. NANC fibers
 - b. Nervi erigentes
 - c. Descending psychologic stimuli
 - d. Sympathetic efferent's
9. Spermatogenesis in humans takes an average of:
 - a. 0 days
 - b. 74 days
 - c. 7 days
 - d. 48 hrs
10. Descending motor fibres arise from all **except**:
 - a. Frontal cortex
 - b. Pre-motor cortex
 - c. Somato sensory cortex
 - d. Broadman area 4
11. Which of the following is called as vestibular organ?
 - a. Otolith organ
 - b. Renssler's membrane
 - c. Organ of Corti
 - d. Cochlea
12. In electroencephalogram records, following waves are characteristic of stage II of NREM sleep:
 - a. Alpha
 - b. Gamma oscillations
 - c. Sleep spindles
 - d. Alpha block
13. Knee reflex has a reaction time of 0.6 to 0.9 ms. So it could have:
 - a. Two synapse
 - b. One synapse
 - c. Poly-synapse
 - d. Bi-synapse
14. Sarcomere refers to the portion of myofibril between:
 - a. A and H band
 - b. Z line and A band
 - c. Two Z lines
 - d. A and I band
15. Chemical synapse differs from electrical synapse in all **except**:
 - a. Seen in most of the synaptic junctions
 - b. Synaptic cleft is present
 - c. Insensitive to O_2 deficiency
 - d. Synaptic delay is present
16. Acromegaly is due to:
 - a. Hyper secretion of corticosteroids
 - b. Hyper secretion of growth hormone in child
 - c. Hyper secretion of growth hormone in adult
 - d. Hyper secretion of androgens
17. Glucocorticoid secretions are **not** affected by:
 - a. High potassium intake
 - b. Surgery
 - c. Physical trauma
 - d. Anxiety
18. Counter regulatory hormones for hyoglycemia are all **except**:
 - a. Catecholamines
 - b. Thyroid hormone
 - c. Glucagon
 - d. Somatostatin
19. Parasympathetic division of ANS has cranial outflow cranial nerve:
 - a. Oculomotor
 - b. Trigeminal
 - c. Vestibulocochlear
 - d. Olfactory
20. Which of these is **not** a deep nuclei of cerebellar cortex?
 - a. Globus pallidus
 - b. Dentate
 - c. Emboliform
 - d. Fastigial