Question Paper Code:U1021

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

M.B.B.S Phase-I Degree Examination FEBRUARY 2021

Time: 3 hours **Max Marks:100**

PHYSIOLOGY PAPER I

Your answer should be specific to the question asked

Draw neat and labeled diagrams wherever necessary

LONG ESSAY ***2 X 10 = 20 Marks***

1. Define blood pressure. Give the normal value. Explain the role of renin angiotensin aldosterone in the maintenance of blood pressure.(3+2+5)
2. With neat labeled diagram describe the hemoglobin oxygen dissociation curve. Explain the effect of exercise on it.(7+3)

SHORT ESSAY ***10 X 5 = 50 Marks***

3. Explain the basis of erythroblastosis foetalis. Give principle of prevention and treatment. (3+2)
4. Describe the origin & spread of cardiac impulse with a suitable diagram.(5)
5. Define GFR. Give the normal value and describe the regulation of GFR. (2+3)
6. List and describe the functions of liver.(2+3)
7. Explain role of lymphocytes in cellular immunity.(5)
8. Explain chemical regulation of respiration.(5)
9. List and describe the different types of movements of small intestine.(2+3)
10. Describe water reabsorption in the nephron.(5)
11. Draw a neat labeled diagram to explain ionic basis of Pacemaker potential(5)
12. Define Anaemia. Classify Anaemia in morphological basis giving suitable examples. (2+3)

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

13. List plasma proteins with their functions.
14. Define End diastolic volume. Mention its normal volume & give its significance.
15. List Difference between cortical & juxtamedullary Nephron.
16. List the functions of saliva.
17. Give the cause of Hemophilia .Explain why it is predominaltly found in males.
18. Define dead space, types & normal values
19. Classify Transport across across cell membrane with examples
20. List the functions of kidney.
21. Define & classify hypoxia.
22. Draw and label a normal ECG recorded from lead 2.

Question Paper Code:U1022

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Time:3 hours **Max Marks:100**

PHYSIOLOGY- PAPER 2

Your answer should be specific to the question asked
Draw neat and labeled diagrams wherever necessary

LONG ESSAY ***2 X 10 = 20 Marks***

1. Mention the functions of Basal Ganglia. Explain the cause, features and treatment of Parkinsonism.(5+1+2+2)
2. Describe the synthesis & regulation of thyroid hormones.(5+5)

SHORT ESSAY ***10 X 5 = 50 Marks***

3. With neat labelled diagrams explain the different refractive errors and their correction
4. Draw a neat labelled diagram of muscle spindle and explain its role in maintenance of tone. (2+3)
5. Give the cause & explain the basis of the features of Acromegaly.(2+3)
6. Draw a neat diagram of a neuromuscular junction. In a flow chart represent neuromuscular transmission.(2+3)
7. List 6 functions of cortisol. Describe the physiological basis of 2 features of Cushings syndrome.(3+2)
8. Mention five differences between REM and NREM sleep.
9. Describe the functions of testosterone
10. Draw a neat labeled diagram of Auditory pathway.
11. Explain differences between Diabetes Mellitus and Diabetes Insipidus.
12. Draw a neat labeled diagram of a neuron. Explain the conduction of impulse in myelinated nerves.(2+3)

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

13. Explain Phantom limb
14. List any 3 functions of hypothalamus.
15. Describe milk ejection reflex.
16. List three features of cerebellar dysfunction.
17. Explain the functions of aldosterone .
18. List the sensations carried by the dorsal column tract.
19. Name 3 temporary methods of contraception in females.
20. Explain refractory period.
21. List the hormones secreted by anterior pitutary gland
22. Draw a neat labelled diagram of reflex arc.

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Max Marks : 80

Physiology Paper I

Time : 150 Minutes

Your answer should be specific to the question asked
Draw neat and labeled diagrams wherever necessary

Long Essay ***10 × 2 = 20 Marks***

1. Define hemostasis. Describe the cascade of events that take place during intrinsic mechanism of coagulation.
2. A 75-year-old man is brought to hospital with an episode of dizziness. He still feels dizzy 30 min after the onset. Since 6 months he has had some falls while standing from supine posture. On Examination his supine blood pressure is 126/78 mmHg and on standing his BP was 96/64 mmHg.
   1. State the possible diagnosis and mention the cause for fall in blood pressure upon standing. (1)
   2. Define Blood pressure. Calculate pulse pressure and Mean arterial pressure on standing. (2+1+1)
   3. Describe the short term regulatory responses to blood pressure on changing posture.(5)

Short Essay ***5 × 6 = 30 Marks***

3. Describe the theories of autoregulation.
4. Explain left ventricular pressure changes during cardiac cycle.
5. Classify hypoxia. Explain any two of them & explain the role of oxygen treatment in them.
6. List the different methods of artificial respiration and cardiopulmonary resuscitation and its principle.
7. Name 2 important defects associated with resection of ileum. Explain why it occurs.
8. Explain obligatory & facultative reabsorption of water.

Short Answer ***3 × 10 = 30 Marks***

9. Draw neat diagram of cystometrogram.
10. Name 3 Gastrointestinal hormones & give their major functions.
11. Explain how immunization helps in prevention of diseases.
12. Cyanosis is absent in a person suffering from anemia-Give reason.
13. Define lung compliance. Mention the factors affecting it.
14. Give reason for pancreas not being autodigested by the proteolytic enzymes secreted by pancreas.
15. Give the effect of composition of chyme on gastric emptying.
16. Even though size of albumin is small it will not appear in urine-give reason.
17. Describe the role of vasa recta in renal function.
18. Define secondary active transport. Mention the types.

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Time : 150 Minutes **Marks : 80**

Physiology P II

Your answer should be specific to the question asked
Draw neat and labeled diagrams wherever necessary

Long Essay ***10 × 2 = 20 Marks***

1. 50 Year old man comes with history of weakness, increased thirst, increased urination and increased appetite. He also complains of weight loss and poor wound healing. Investigation revealed fasting blood sugar-160mg/dl
   1. Mention the disorder in the above patient and the hormone responsible for it.(2)
   2. Give the physiological basis for increased thirst, increased urination and increased appetite . (4)
   3. Describe the physiological action of this hormone on skeletal muscle (4)
2. With neat labeled diagram describe the pain pathway. Explain the theories of referred pain (5+5).

Short Essay ***5 × 6 = 30 Marks***

3. Describe the consequences of sedentary lifestyle.
4. Explain the sequence of events of excitation contraction coupling in skeletal muscle.
5. Draw a neat labeled diagram of the optic pathway. Represent and name the lesion associated with a defect in the left optic tract.(3+2)
6. A 25 year old woman visited her doctor with complaints of missed periods. Her urine pregnancy test was positive.
   1. Mention the hormone that is the basis for pregnancy test. (1)
   2. Explain the immunological basis for the test for pregnancy. (4)
7. Describe the actions of oxytocin
8. Explain Parkinson's disease under the following headings:
   a. Site of lesion (1)
   b. Neurotransmitter/s involved (1)
   c. Mention four clinical features of Parkinson's disease. (2)
   d. Mention two treatments for this disorder (1)

Short Answer ***3 × 10 = 30 Marks***

9. List the differences between upper and lower motor neuron lesion.
10. Define Refractory period and give its importance
11. List clinical features of hyperthyroidism.
12. Name the centres that regulate feeding behavior and give the interrelationship.
13. Describe negative feedback in secretion of hormone with an example.
14. List the differences between cretin and dwarf.
15. Draw a neat labeled diagram of olfactory pathway.
16. Name the hormones that regulate calcium homeostasis
17. Describe the mechanism of heat stroke
18. Draw a neat labeled diagram of muscle spindle.

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MBBS Phase-I February - 2021

Time : 30 Minutes **Marks : 20**

Physiology Paper I MCQ

1. In a normal adult 70 kg man ECF volume constitute what percentage of total body water a) 40
   b) 20
   c) 50
   d) 10
2. The most abundant protein in the blood is
   a) Albumin
   b) Globulin
   c) Fibrinogen
   d) Transferrin
3. Extrinsic pathway of clotting mechanism is triggered by
   a) Thrombin
   b) Factor XII
   c) Factor VII
   d) Tissue thromboplastin
4. Over the past 12 weeks, a 75-year-old man with a moderate aortic stenosis has developed shortness of breath and chest pains during exertion. He appears pale. Test of his stool for blood is positive. Laboratory studies show the following: hemoglobin 7.2 g/dl, and mean corpuscular volume 75fl. A blood Smear shows microcytic, hypochromic erythrocytes. Which of the following is the most likely diagnosis?
   a) Vitamin B12 deficiency
   b) Autoimmune hemolytic anemia
   c) Folate deficiency anemia
   d) iron deficiency anemia
5. A 45-year-old man presents to the emergency room with a 2-week history of diarrhea that has gotten progressively worse over the last several days. He has minimal urine output and is admitted to the hospital for dehydration. His stool specimen is positive for parasitic eggs. Which type of WBCs would have an elevated number?
   a) Eosinophils
   b) Neutrophils
   c) T lymphocytes
   d) B lymphocytes
6. The action potential in the SA node is mainly due to
   a) Na+ influx
   b) K+ influx
   c) ca2+ influx
   d) Na+ efflux

7. Which of the following is normally associated with an increased venous return of blood to the heart?
   a) Acute large vein dilation
   b) Decreased sympathetic tone
   c) Increased venous compliance
   d) Increased blood volume
8. The wheal in the triple response is due to:
   a) Contraction of precapillary sphincters
   b) Increased capillary permeability
   c) Axon reflex
   d) Decreased absorption of fluid
9. Which of the following structures will have the slowest rate of conduction of the cardiac action potential?
   a) Atrial muscle
   b) Anterior internodal pathway
   c) A-V bundle fibers
   d) Purkinje fibers
10. A 65-year-old man had an ECG recorded at a local emergency room following a bike accident. His weight was 80 kg and his aortic blood pressure was 160/90 mm Hg. The QRS voltage was 0.5 mv in lead I and 1.5 mv in lead III. What is the QRS voltage in lead II?
    a) 0.5 mv
    b) 1.0 mv
    c) 1.5 mv
    d) 2.0 mv
11. Ficks law of diffusion is dependent on all except
    a) Thickness of membrane barrier
    b) The molecular weight of the gas
    c) The molecular weight of the gas
    d) Solubility of the gas
12. Which one of the following definitions is incorrect
    a) The respiratory minute volume equals the amount of air inspired per minute
    b) Vital capacity is the maximal amount of air that can be expired after a normal inspiration
    c) Vital capacity is the maximal amount of air that can be expired after a normal inspiration
    d) Compliance is the change in lung volume per unit change in airway resistance
13. Small intestine peristalsis is controlled by
    a) Myentric plexus
    b) Meisners plexus
    c) Meisners plexus
    d) sympathetic system

14. Renin is secreted by the
    a) Macula densa
    b) Juxtaglomerular cells
    c) Juxtaglomerular cells
    d) Malphigian corpuscle
15. Tachypnoea means
    a) normal breathing at rest
    b) stoppage of breathing
    c) difficulty in breathing
    d) rapid shallow breathing
16. Which of the following concerning average lung volumes and capacities of a person at rest is TRUE?
    a) TLC>VC>TV>FRC
    b) TLC>FRC>VC>TV
    c) TLC>VC>FRC>TV
    d) TLC>FRC>TV>VC
17. Steatorrhoea may be caused by all factors except
    a) pancreatectomy
    b) gastrin secreting hormone
    c) resection of distal ileum
    d) hemolytic jaundice
18. Defective parietal cells would result in malabsorption of which vitamin
    a) Vitamin B1
    b) Vitamin B2
    c) Niacin
    d) Vitamin B12
19. Blood pressure in the glomerulus is high because
    a) Low oncotic pressure .
    b) High capsular hydrostatic pressure .
    c) Afferent arterioles have larger diameters than efferent arterioles .
    d) Thick basement membrane .
20. Which of the following is caused by ADH
    a) Distal part of nephron will be permeable to water.
    b) Urea reabsorption in PCT.
    c) Increase reabsorption of water in all parts of nephron.
    d) Increase NaCl reabsorption in thin descending limb of Henle

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MBBS Phase – I February 2021

Time: 30 Minutes **Marks : 20**

Physiology P II MCQ

1 Proprioception is transmitted up the spinal cord by
   a) Anterior Spinothalamic tract
   b) Lateral spinothalamic tract
   c) Dorsal column Tract
   d) Spino olivary tract

2. Calcitonin is secreted from the
   a) Thyroid gland
   b) Parathyroid gland
   c) Pancreas
   d) Anterior Pitutary gland

3. Cushing's syndrome is associated with the following EXCEPT
   a. Moon face
   b. purple striae
   c. Buffalo hump
   d. Exophthalmos

4. In controlling aldosterone secretion, angiotensin II acts on which of the following structures?
   a. Zona glomerulosa
   b. Zona fasciculata
   c. Zona reticularis
   d. Adrenal medulla

5. Damage to the Broca's area results in
   a) Spastic paralysis of the contralateral hand
   b) Paralysis of the muscles of the larynx and pharynx
   c) Inability to use the two hands to grasp an object
   d) Inability to speak whole words correctly

6. Night blindness due to prevention of formation of an adequate quantity of retinal is due to deficiency of
   a) Vitamin A
   b) Vitamin C
   c) Vitamin D
   d) Vitamin E

7. At environmental temperature of 36C most important mechanism of heat loss is by
   a. Sweating
   b. Radiation
   c. Conduction
   d. insensible perspiration

8. Tachycardia at the onset of exercise is due to stimulation of
    a. Chemoreceptors
    b. Baroreceptors
    c. Stretch receptors
    d. Joint receptors
9. Brain death can be assessed by all EXCEPT
    a. Loss of corneal reflex
    b. Loss of oculovestibular reflex
    c. Loss of superficial reflexes
    d. Loss of gag reflex
10. Tetanic contraction of a skeletal muscle fiber results from a cumulative increase in the intracellular concentration of
    a. ATP
    b. Ca ++
    c. K+
    d. Na +
11. Weightlifting can result in a dramatic increase in skeletal muscle mass. This increase in muscle mass is primarily attributable to
    a. Fusion of SAQrcomeres between adjacent myofibrils
    b. Hypertrophy of individual muscle fibers
    c. Increase in skeletal muscle blood supply
    d. Increase in the number of motor neurons
12. A 27-years old patient displays ataxia when asked to walk across the examination room. When asked to stand still with his eyes closed marked back and forth swaying is noted, which stops when he opens his eyes. Vibration sense is abnormal on all four limbs. Ataxia in this patient is most likely due to damage of
    a. Production of generator potential at the receptor membrane
    b. Propagation of action potential along the peripheral nerve
    c. Potentiation of the process at the spinal cord
    d. Perception at the cerebral cortex
13. Myopia is usually corrected by
    a. Compound lens
    b. Convex lens
    c. Spherical lens
    d. Concave lens
14. The fovea of the eye
    a. has the lowest light threshold
    b. is the region of highest visual acuity
    c. contains only red and green cones
    d. contains only rods

15. As menstruation ends estrogen levels in the blood rise rapidly. What is the source of the estrogen?
    a. Corpus luteum
    b. Developing follicles
    c. Endometrium
    d. Stromal cells of the ovaries
16. Spermatogenesis is regulated by a negative feedback control system in which follicle-stimulating hormone (FSH) stimulates the steps in sperm cell formation. What is the negative feedback signal associated with sperm cell production that inhibits pituitary formation of FSH?
    a. Testosterone
    b. Inhibin
    c. Estrogen
    d. Luteinizing hormone
17. A 30-year-old woman is breast-feeding her infant. During suckling, which of the following hormonal responses is expected?
    a. Increased secretion of antidiuretic hormone (ADH) from the supraoptic nuclei
    b. Increased secretion of ADH from the paraventricular nuclei
    c. Increased secretion of oxytocin from the paraventricular nuclei
    d. Decreased secretion of neurophysin
18. Seven days after ovulation, pituitary secretion of luteinizing hormone (LH) decreases rapidly. What is the cause of this decrease in secretion?
    a. The anterior pituitary gland becomes unresponsive to the stimulatory effect of gonadotropinreleasing hormone (GnRH)
    b. Estrogen from the developing follicles exerts a feedback inhibition on the hypothalamus
    c. The rise in body temperature inhibits hypothalamic release of GnRH
    d. Secretion of estrogen and progesterone by the corpus luteum suppresses hypothalamic secretion of GnRH and pituitary secretion of LH
19. Cerebrospinal fluid is formed by
    a. Choroid plexus
    b. Arachanoid granulations
    c. Nerve cell body
    d. Axonal terminal
20. Pacinian corpuscles are
    a. A type of temperature receptor
    b. Usually innervated by Aδ nerve fibers
    c. rapidly adapting receptors
    d. Slowly adapting receptors.