Question Paper Code:U1021

SRI DEVRAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

M.B.B.S Phase-I Degree Examination APRIL 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. Describe the process of oxygen transport in blood. Add a note on cyanosis.(7+3)
2. Describe the changes that takes place during erythropoeisis.Explain the role of maturation factors in regulating erythropoeis(5+5)

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

3. Explain regulation of cephalic phase of gastric secretion with experimental evidence.(5)
4. Describe ventricular pressure & volume changes that takes place in various phases of cardiac cycle(5)
5. Give the cause of hemophilia and its presenting symptom. (5)
6. Classify hypoxia.Explain any two of them & explain the role of oxygen treatment in them(2+3)
7. Describe the functions of surfactant (5)
8. Describe role of countercurrent mechanism(5)
9. Describe sinoaortic reflex & its importance(5)
10. Describe small intestine movements.(5)
11. Explain the process of H+ secretion in the renal tubules(5)
12. Explain the rlole of renin angiotensin system in the regulation of blood pressure(5)

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

13. Explain plasma clearance.
14. Define GFR. Give the normal value. How is it measured.
15. Draw a neat labeled diagram of ECG.
16. Define vital capacity. Mention the factors influencing it.(2+3)
17. Name Agglutinogens and agglutinins in the following blood types a) AB Negative b) O positive.
18. List 3 factors regulating gastric emptying time &the effect it has on gastric emptying
19. Draw a neat labeled diagram of nephron.
20. List the properties of cardiac muscle.
21. Give the cause & blood picture of pernicious anaemia
22. Explain secondary active transport with example.

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. Define synapse. List the properties of synapse. Explain any three properties of synapse.(2+3+5)
2. List and describe the functions of growth hormone.Add a note on pitutary Dwarf(7+3)

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

3. Give the cause & explain the basis of the features of Diabetes Mellitus.(1+4)
4. List the errors of refraction . Explain its corrections with the help of the diagram.(2+3)
5. Classify nerve fibers based on their diameter and conduction velocity.(5)
6. Explain the sequence of events of excitation contraction coupling in skeletal muscle.(5)
7. Describe neuromuscular transmission.(5)
8. Describe the features of cerebellar lesion.
9. Define referred pain and explain the theories of referred pain.(2+3)
10. Describe the ovarian and endometrial changes in a 30 day menstrual cycle(2.5+2.5)
11. Name the nuclei of Basal Ganglia and list the functions.(2+3)
12. Describe the steps in synthesis of thyroid hormones. (5)

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

13. List the receptors for color vision
14. Explain impedance matching
15. Draw a neat labeled diagram of olfactory pathway
16. Draw a neat labeled diagram of dorsal column.
17. List clinical features of hyperthyroidism.
18. List the functions of sertoli cells
19. Give the function of aldosterone & its site of action.(2+1)
20. List cause and clinical features of tetany.
21. Name the tests of ovulation.
22. Describe Refractory period and give its importance.

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Time:2.30 hours **Max Marks:80**

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. Mr Puffer who is a monk is practicing meditation which focuses on breathing. He takes a long breath in through his nose.
   1. Name the muscles involved in respiration. (3)
   2. Describe the mechanism of respiration .(7)
2. Define erythropoesis.Describe the stages of erythropoesis.Give the normal reticulocyte count

SHORT ESSAY ***6 X 5 = 30 Marks***

3. Explain the steps of intrinsic clotting pathway. Mention one anticoagulant and its action
4. Define GFR .Give the normal value.Explain the role of afferent arterioles in regulating GFR.
5. Explain how blood pressure is regulated during change in posture
6. Describe the properties of cardiac muscle
7. Explain the role of T cells in immunity.
8. List 2 factors influencing gastric Hcl secretion and explain the mechanism by which they do so.

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

9. Define circulatory shock. List features of hypovolemic shock.
10. Mention the 3 basic renal processes that lead to formation of urine.
11. List non excretory functions of kidney.
12. Give physiological importance for AV nodal delay.
13. Explain the methods of estimation of cardiac output.
14. Describe receptive relaxation of stomach
15. Define physiological dead space & its significance.
16. In oxygen dissociation curve give the significance of P50.
17. Define asphyxia and list two causes for the same .
18. List the movements of small intestine.

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Time:2.30 hours **Max Marks:80**

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. 50 Year old man comes with history of weakness ,increased thirst , increased urination and increased appettite .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 liver (4)
2. Draw a neat labeled diagram of pyramidal tract. Describe the origin, course and termination. List differences between upper motor neuron and lower motor neuron lesions.

SHORT ESSAY ***6 X 5 = 30 Marks***

3. Explain the functions of hypothalamus
4. Explain how colour is appreciated. Classify colour blindness.
5. Describe the actions and factors controlling the secretions of Vasopressin
6. Explain the steps of synaptic transmission across an excitatory synapse with a neat labelled diagram.
7. Explain the steps of skeletal muscle contraction.
8. Describe the functions of thyroid hormone.

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

9. Describe permissive action of hormone
10. Explain the basis of "Gravidex" Test in Pregnancy.
11. Define fatigue. Give the cause for fatigue
12. Name the vitamin responsible for night vision .Explain its role
13. Explain one test of ovulation.
14. List the functions of aldosterone.
15. Define brain death
16. Name the primary taste sensations
17. Draw a neat labelled diagram of muscle spindle
18. Explain why appendix pain is felt at the umbilical region.

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Time:30 minutes **Max Marks:20**

PHYSIOLOGY PAPER I

Multiple Choice Questions ***1 X 20 = 20 Marks***

1. All of the following are expiratory muscles except
   a) rectus abdominis
   b) internal intercoastal
   c) internal and external obliques
   d) diaphargm

2. A 54-year-old woman eats a healthy meal. Approximately 20 min later the woman feels the urge to Defecate. Which of the following reflexes results in the urge to defecate when the stomach is stretched?
   a) duodenocolic reflex
   b) enterogastric reflex
   c) gastrocolic reflex
   d) intestino-intestinal reflex

3. Human TPA (tissue plasminogen activator)used clinically in treatment of early myocardial infarction acts by
   a) stimulating heparin release from liver
   b) removing activated clotting factors from the circulation
   c) activation of fibrinolytic system
   d) inhibiting thrombin

4. Cortical nephrons differ from juxtamedullary nephrons in all except
   a) smaller sized glomeruli
   b) rate of filtration is slow
   c) play a major role in waste excretion
   d) filtration of glomeruli occurs under pressure

5. The following statement regarding concentration of urine is true except
   a) countercurrent exchanger develops the medullary gradient
   b) ADH acts on collecting ducts to increase water absorption
   c) occurs in the juxtamedullary nephrons
   d) urea contributes to development of medullary gradient

6. Binding of oxygen to hemoglobin reduces its affinity for carbondioxide. This is the:
    a) bohr effect
    b) haldane effect
    c) hawthorne effect
    d) hamburger effect

7. Which of the following components of the circulatory system has the largest distribution of blood volume?
    a) arteries
    b) capillaries
    c) veins
    d) pulmonary circulation

8. Resting membrane potential is close to iso-electrical potential of
    a) sodium
    b) chloride
    c) potassium
    d) magnesium

9. The cephalic phase of gastric secretion accounts for about 30% of the acid response to a meal.Which of the following can totally eliminate the cephalic phase of gastric secretion?
    a) antacids (e.g., rolaids)
    b) anti-gastrin antibody
    c) atropine
    d) vagotomy

10. In sickle cell anemia the basic defect is
    a) glutamic acid is replaced by the valine in the 6th position of the beta chain
    b) histidine is replaced by the valine in the 6th position of the beta chain
    c) glutamic acid is replaced by cysteine in the 6th position of the beta chain
    d) glutamic acid is replaced by the valine in the 16th position of the beta chain

11. Which of the following causes increased gastric secretion by stimulating vagus nerve?
    a) alcohol
    b) hypoglycaemia
    c) caffeine
    d) all of the above

12. First heart sound (S1):
    a) marks the onset of ventricular systole
    b) caused by the closure of semilunar valves
    c) best heard over aortic and pulmonary areas
    d) characterized byt high pitch and sharp sound

13. Plasma clearance value of glucose in diabetes mellitus patients will be
    a) zero
    b) equal to that of inulin clearance
    c) greater than that of pah clearance
    d) more than zero

14. Which of the following would tend to cause an increase in blood flow?
    a) increase in hematocrit
    b) decrease in arterial pressure
    c) twofold increase in arteriole diameter
    d) twofold increase in blood viscosity

15. Sequence of events involved during the phagocytic mechanism are
    a) chemotaxis-diapedesis-opsonization –phagocytosis
    b) diapedesis-opsonization – chemotaxis-phagocytosis
    c) diapedesis - chemotaxis-opsonization –phagocytosis
    d) phagocytosis—diapedesis- chemotaxis- opsonization

16. Examples of primary active transport are
    a) sodium potassium pump
    b) sodium hydrogen cotransport
    c) sodium glucose transport
    d) sodium chloride cotransport

17. . Humoral response of natural immunity is mediated by
    a) neutrophil
    b) compliment system
    c) monocytes and macrophages
    d) t cells and b cells

18. It is impossible to tetanize a heart because :

a) cardiac muscles have a long mechanical refractory period.

b) cardiac muscles do not contain calcium ions.

c) the refractory period and the mechanical contractile response of the cardiac muscle are of almost equivalent duration.

d) the mechanical contractile event of a cardiac muscle is usually shorter than the duration of the electrical depolarization

19. QRS width in ECG represents

a) time required for a stimulus to spread through the ventricles

b) ventricular depolarization

c) 0.1 second or less

d) all of the above

20. Nitrogen narcosis is associated with

a) bends

b) chokes

c) paresthesia

d) euphoria

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PHYSIOLOGY- PAPER 2

Multiple Choice Questions ***1 X 20 = 20 Marks***

1. The brain area involved in speech is
   a) area 4
   b) area 6
   c) area 8
   d) area 44

2. Integration of temperature information by the nervous system occurs mainly in the
   a) spinal cord
   b) hypothalamus
   c) amygdala
   d) peripheral receptors

3. Growth hormone secretion is stimulated by
   a) hypoglycemia,nrem sleep
   b) hyperglycemia,rem sleep
   c) stress,pregnancy
   d) obesity ,rem sleep

4. Hormones which act on cell membrane receptor are
   a) follicular stimulating hormone
   b) aldosterone
   c) triiodothyronine
   d) cortisol

5. For a sensory nerve fiber that is connected to a Pacinian corpuscle located on palmar surface of the right hand, the synaptic connection with the subsequent neuron in the corresponding sensory pathway is located in
   a) the right dorsaql column nucleus
   b) the left dorsaql column nucleus
   c) the dorsaql horn of the right side of the spinal cord
   d) the dorsaql horn of the left side of the spinal cord

6. A visual exam in a 70-year-old woman shows blindness in the temporal visual field of the right eye and the nasal visual field of the left eye. This visual defect could result from a lesion of the
   a) the left optic nerve.
   b) right optic tract.

c) left lateral geniculate nucleus.
d) optic chiasm.

7. Which of the following toxins inhibit the release of acetylcholine from alpha-motor neurons?
   a) tetanus toxin
   b) cholera toxin
   c) botulinum toxin
   d) saxitoxin

8. The theory that explains referred pain is the
   a) convergence projection theory
   b) myogenic theory
   c) frequency theory
   d) gate control theory

9. HCG is secreted from
   a) placenta
   b) ovary
   c) corpus luteum
   d) sertoli cells

10. Primary Hyperaldosteronism is called
   a) Cushing's disease
   b) Addison's disease
   c) Cushing's syndrome
   d) Conn's syndrome

11. The muscle spindle remains capable of responding to stretch even while the muscle is contracting. This is possible due to
   a) the presence of stretch receptors in the tendon
   b) co-activation of alpha- and gamma-motor neurons
   c) reciprocal innervation
   d) autogenic inhibition

12. In Grave's disease, increased free T3, T4 levels are due to:
   a) raised TSH
   b) raised thyroid stimulation antibodies
   c) increased TRH
   d) marked fall in tsh levels

13. All of the following hypotheses explain control of food intake EXCEPT
   a) lipostatic hypothesis
   b) neuronal hypothesis
   c) gut peptide hypothesis
   d) glucostatic hypothesis

14. Iodine is concentrated in thyroid follicular cells by
    a) primary active transport
    b) secondary active transport
    c) simple diffusion
    d) facilated diffusion

15. Insulin secretion is stimulated by all except
    a) increased blood glucose
    b) increased fattyacids
    c) acetylcholine
    d) somatostatin

16. Calcitonin is secreted by
    a) Adrenal gland
    b) Pituitary gland
    c) Thyroid gland
    d) Parathyroid gland

17. The response to stimulation of two pre-synaptic neurons is less than the sum total of the response obtained when they are stimulated separately. This property of synaptic transmission is called
    a) divergence
    b) occlusion
    c) facilitation
    d) synaptic fatigue

18. Cerebrospinal fluid is mainly formed by the
    a) choroid plexus
    b) arachnoid villi
    c) oligodendroglia
    d) astrocytes

19. Which of the following is not a component of the Papez cicuit?
    a) posterior nucleus of the thalamus
    b) hippocampus
    c) mammillary bodies
    d) cingulate gyrus

20. The following statements regarding skeletal muscle contraction are correct except
    a) it is dependent on ECF calcium.
    b) calcium binds to troponin C
    c) ATP is split and contraction occurs
    d) power stroke shortens the sarcomere.