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34 (1) PHYS 1.2

2021

(Held in 2022)

PHYSIOLOGY

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer **any two** of the following :

10×2=20

- (a) Define cardiac cycle and its phases. Give the definition, normal value of cardiac output.
- (b) Trace the pathways for pain sensation. Explain the gate control theory of pain.
- (c) Draw a labelled diagram of Sarcomere. Explain the sliding filament theory of skeletal muscle contraction.

Contd.

2. Answer **any ten** of the following : $5 \times 10 = 50$
- Describe in brief the hearing mechanism with diagram.
 - Explain the functions of placenta and placental hormones.
 - Define Jaundice. Discuss briefly about the different types of jaundice.
 - Explain spermatogenesis and its stages.
 - Discuss reflex and reflex arc. Mention the properties of reflexes.
 - Explain the phases in the regulation of gastric juice secretion.
 - Name the different blood groups. Write the indications and hazards of blood transfusion.
 - Explain the micturition reflex with diagram.
 - Define of Neuroglial cells. Discuss its types and functions of each.
 - Error's of refraction with diagram.
 - Write the structure and functions of Haemoglobin.
 - Functions of Thyroid hormones. Write about Cushing Syndrome.
3. Answer **any five** of the following : $2 \times 5 = 10$
- Neuromodulator *vs* Neurotransmitters
 - Oxygen-dissociation curve
 - ESR
 - Functions of liver
 - Hypoxia
 - Immunity and its types
 - Rods *vs* Cones
 - WBC and types
4. Choose the correct answer : $1 \times 20 = 20$
- The muscle spindle is not innervated by —
 - $A\alpha$ fibers
 - $A\gamma$ fibers
 - Ia fibers
 - II fibers
 - The first physiological response to high environmental temperature is
 - cutaneous vasodilation
 - decrease heat production
 - non-shivering thermogenesis
 - sweating.

(c) The amount of Hb present in 100 ml of red blood cells is defined as

- (i) MCH
- (ii) MCHC
- (iii) RDW
- (iv) Hb index

(d) Defecation reflex is integrated in the

- (i) brainstem
- (ii) pons
- (iii) medulla
- (iv) spinal cord

(e) Receptors for smell is

- (i) rods
- (ii) hair cells
- (iii) macula
- (iv) olfactory bulb

(f) Valve present between left ventricle and aorta is

- (i) mitral valve
- (ii) tricuspid valve
- (iii) aortic valve
- (iv) pulmonary valve

(g) The neurotransmitter at the neuromuscular junction is

- (i) acetylcholine
- (ii) epinephrine
- (iii) dopamine
- (iv) GABA

(h) Hypocapnia is usually due to

- (i) hypoxemia
- (ii) alkalosis
- (iii) decreased CO_2 production
- (iv) alveolar hyperventilation

(i) In the Nephron, glucose reabsorption occurs mainly in the

- (i) proximal tubule
- (ii) loop of Henle
- (iii) distal Convolutd tubule
- (iv) collecting duct

- (j) Which of the following hormones is not a glycoprotein ?
- (i) TRH
 - (ii) FSH
 - (iii) LH
 - (iv) hCG
- (k) Gap junction are present in
- (i) skeletal Muscles
 - (ii) smooth Muscles
 - (iii) cardiac Muscles
 - (iv) All of the above
- (l) The average lifespan of Neutrophils in the circulation is
- (i) 6 hrs
 - (ii) 5 Days
 - (iii) 2 Weeks
 - (iv) 1 month
- (m) Blood-Brain Barrier is formed by
- (i) tight junction between vascular endothelial cells in the cerebral capillaries.
 - (ii) choroidal epithelial cells
 - (iii) ependymal cells
 - (iv) foot processes of oligodendroglia
- (n) ESR is increased in
- (i) anaemia
 - (ii) hypofibrinogenemia
 - (iii) spherocytosis
 - (iv) polycythemia
- (o) "Christmas Disease" occurs due to deficiency of
- (i) Factor II
 - (ii) Factor V
 - (iii) Factor VIII
 - (iv) Factor IX
- (p) Bile is secreted from
- (i) salivary gland
 - (ii) stomach
 - (iii) gall bladder
 - (iv) pancreas

(q) Night blindness is due to deficiency of

(i) Vitamin A

(ii) Vitamin B₁₂

(iii) Vitamin D

(iv) Vitamin C

(r) Normal Tidal volume is

(i) 500 ml

(ii) 750 ml

(iii) 800 ml

(iv) 400 ml

(s) Not a feature of Hyperthyroidism

(i) Tachycardia

(ii) Exophthalmos

(iii) Cold intolerance

(iv) Sweating

(t) Normal GFR is

(i) 125 ml/sec

(ii) 180 L/min

(iii) 125 ml/min

(iv) 180 l/hr.