

U.G./P.G. ENTRANCE EXAMINATION, APRIL 2021

HUMAN PHYSIOLOGY

Time : Two Hours

Maximum : 100 Marks

Section A

*Answer all the questions.**Each question carries 2 marks.*

1. Number of iron atoms in one haemoglobin molecule are :
 - (a) 1.
 - (b) 3.
 - (c) 4.
 - (d) 8.
2. Normal blood pH is :
 - (a) 7.3.
 - (b) 7.2.
 - (c) 7.4.
 - (d) 8.4.
3. Commonest anaemia in India is :
 - (a) Pernicious anaemia.
 - (b) Sickle cell anaemia.
 - (c) Iron deficiency anaemia.
 - (d) None of the above.
4. In 70S ribosome 'S' stands for :
 - (a) S.I unit.
 - (b) Solubility factor.
 - (c) Svedberg unit.
 - (d) None of the above.
5. Aerobic respiration is performed by :
 - (a) Glyoxisomes.
 - (b) Mitochondria.
 - (c) Lysosomes.
 - (d) Chloroplast.
6. Ultrafiltration helps in :
 - (a) Formation of Glomerular filtrate.
 - (b) Formation of urine.
 - (c) Accumulation of proteins.
 - (d) Separation of vitamins.

Turn over

7. A typical neural pathway is :

- (a) Effector-sensory nerve-PNS-motor nerve-receptor.
- (b) Receptor-sensory nerve-CNS-motor nerve-effector.
- (c) Effector-motor nerve-PNS-sensory nerve-receptor.
- (d) Receptor-motor nerve-CNS-sensory nerve-effector.

8. Each cerebral hemisphere is divided into how many lobes ?

- (a) 2.
- (b) 3.
- (c) 4.
- (d) 5.

9. The sympathetic nervous system mediates :

- (a) Rest and digest responses.
- (b) Fright, fight or flight responses.
- (c) Sleeping responses.
- (d) Gastric responses.

10. Which of the following is not an anatomical structure of the ear ?

- (a) Tympanic membrane.
- (b) Olfactory organs.
- (c) Semi-circular canals.
- (d) Cochlea.

11. Somatostatin is secreted by :

- (a) The pancreatic delta cells.
- (b) The pancreatic polypeptide cells.
- (c) The zona fasciculata.
- (d) The posterior pituitary.

12. Cardiac output is the amount of blood pumped by :

- (a) 1 ventricle in 1 minute.
- (b) 1 atrium in 1 minute.
- (c) Both ventricles in 1 minute.
- (d) Both atria in 1 minute.

13. 31 Divisions of the systemic circulation are usually named according to :
- (a) Cells that make them up.
 - (b) Bones they supply.
 - (c) Tissues/organs they supply.
 - (d) People who first identified them.
14. Carbon dioxide is carried from body tissues in what form ?
- (a) Dissolved CO₂.
 - (b) Oxyhaemoglobin.
 - (c) Carbaminohaemoglobin.
 - (d) Bicarbonate ions.
15. The primary phase in the regulation of gastric secretion and motility is called :
- (a) The swallowing phase.
 - (b) The gastric phase.
 - (c) The cephalic phase.
 - (d) The intestinal phase.
16. The blood filtering capacity of the renal corpuscles is enhanced by :
- (a) The thin porous endothelial-capsular membrane.
 - (b) A large capillary surface area.
 - (c) High capillary pressure.
 - (d) All of the above.
17. Which of the following acts as the filtration apparatus of the kidneys ?
- (a) The descending loop of Henle.
 - (b) The glomerular capsule.
 - (c) The collecting duct.
 - (d) The renal pelvis.
18. What is the first line of defence in any immune response ?
- (a) Anatomical, mechanical and chemical barriers.
 - (b) B- and T-lymphocytes.
 - (c) Antibodies.
 - (d) Macrophages.

Turn over

19. Identify the second of the four stages in an immune response :
- (a) Plasma cells make antibodies.
 - (b) Phagocytes engulf pathogens.
 - (c) T-cells activate B-cells to produce plasma cells.
 - (d) Phagocytes activate T-cells.
20. The atrioventricular node :
- (a) Conducts impulses rapidly allowing almost immediate activation of ventricular muscle.
 - (b) Delays impulses for about 200 ms, allowing time for atrial contraction to complete ventricular filling.
 - (c) Is connected to specialized wide, fast conducting myocytes in the bundle of His and Purkinje fibres.
 - (d) Is a band of fibrous connective tissue which separates the atria from the ventricles.
21. Night blindness and xerophthalmia are generally conditions associated with the deficiency of which vitamin ?
- (a) Vitamin B.
 - (b) Vitamin K.
 - (c) Vitamin B₂.
 - (d) Vitamin A.
22. The maximum amount of carbon dioxide in the human body is transported as :
- (a) Bicarbonate.
 - (b) Carbide.
 - (c) Amylase.
 - (d) None of the above.
23. Hypopnea is a condition where :
- (a) The airway becomes partially obstructed.
 - (b) The blood does not clot properly.
 - (c) The lungs cannot eliminate the excess carbon dioxide from the body.
 - (d) The blood oxygen levels are abnormally low.
24. Jellyfish breathe through :
- (a) Book lungs.
 - (b) Gills.
 - (c) Diffusion.
 - (d) None of the above.

25. The lungs are protected by :
- (a) Sternum.
 - (b) Rib cage.
 - (c) Backbone.
 - (d) All of the above.
26. A type of proteolytic enzyme is found in infants' gastric juices which help in digestion of milk proteins. The name of the enzyme is :
- (a) Peptide.
 - (b) Rennin.
 - (c) Amylases.
27. Which one of the following can be found in pancreatic juice ?
- (a) Trypsinogen.
 - (b) Proenzyme pepsinogen.
 - (c) Lysozyme.
28. The internal lining in the trachea is made up of :
- (a) Simple cuboidal epithelium.
 - (b) Pseudostratified epithelium.
 - (c) Simple squamous epithelium.
29. The right sequence of formation of urine is :
- (a) Secretion, reabsorption, filtration.
 - (b) Reabsorption, Secretion, filtration.
 - (c) Filtration, reabsorption, secretion.
30. The life span of Red Blood Cells is :
- (a) 100 days.
 - (b) 110 days.
 - (c) 120 days.
31. Which is the largest blood vessel in the human body ?
- (a) Pulmonary vein.
 - (b) Capillaries.
 - (c) Aorta.

Turn over

32. Which is a skull bone ?

- (a) Arytenoid.
- (b) Cricoid.
- (c) Pterygoid.

33. Which of the following controls skeletal muscles ?

- (a) Autonomic nerves.
- (b) Somatic nerves.
- (c) Sympathetic nerves.

34. Which of the following is the largest cranial nerve ?

- (a) Oculomotor nerve.
- (b) Olfactory nerve.
- (c) Trigeminal nerve.

35. The principal buffer in interstitial fluid is :

- (a) Carbonic acid.
- (b) Hb.
- (c) Phosphate.
- (d) Other proteins.

36. The first physiological response to high environmental temperature is :

- (a) Sweating.
- (b) Decreased heat production.
- (c) Vasodilatation.
- (d) Non-shivering thermogenesis.

37. RMP of a nerve :

- (a) Is caused by equal distribution of ions along both sides of the membrane.
- (b) Is caused by selective permeability of the membrane to the ions.
- (c) Na^+ - K^+ pump has no role in RMP.
- (d) Is caused by inward movement of Na^+ ions.

38. The term 'neurohormone' is applied to :

- (a) Oxytocin and vasopressin.
- (b) NO and CO.
- (c) Glycine and glutamate.
- (d) FSH and LH.

39. Which of the following hormones is not a glycoprotein ?
- (a) TRH. (b) FSH.
(c) LH. (d) hCG.
40. The hormone of energy storage (hormone of plenty) is :
- (a) Thyroxine. (b) Insulin.
(c) Glucagon. (d) Epinephrine.
41. The term "brain of the gut" is used to refer to the :
- (a) Autonomic ganglia.
(b) Enteric nervous system.
(c) Migratory motor complex.
(d) Interstitial cells of Cajal.
42. Gastric emptying is slowest after a meal containing :
- (a) Fat. (b) Carbohydrate.
(c) Protein. (d) Indigestible fiber.
43. The most alkaline exocrine secretion is :
- (a) Bile. (b) Pancreatic juice.
(c) Intestinal juice. (d) Saliva.
44. Malaria is transmitted by :
- (a) Anopheles. (b) Culex.
(c) Aedes. (d) Musca.
45. Oxygenated blood is carried to the heart by which of the following structures ?
- (a) Aorta. (b) Inferior vena cava.
(c) Pulmonary veins. (d) Superior vena cava.
46. Which cells in the blood do not have a nucleus ?
- (a) Lymphocyte. (b) Monocyte.
(c) Erythrocyte. (d) Neutrophil.

Turn over

47. Which of the following is flexible connective tissue that is attached to bones at the joints ?
- (a) Cartilage. (b) Epithelial.
(c) Muscle. (d) Nerve.
48. Which of the following allows air to pass into the lungs ?
- (a) Aorta. (b) Esophagus.
(c) Heart. (d) Trachea.
49. Which cells produce the pigment that contributes to hair colour :
- (a) Keratinocytes. (b) Melanocytes.
(c) Langerhans cells. (d) Merkel cells.
50. The waterproof coating found in epidermal cells is called :
- (a) Myelin. (b) Keratin.
(c) Melanin. (d) Albumin.

(50 × 2 = 100 marks)