

P.G. ENTRANCE EXAMINATION, APRIL 2022

HUMAN PHYSIOLOGY

Time : Two Hours

Maximum : 200 Marks

*Each question carries 4 marks.
1 mark will be deducted for each wrong answer.*

Section A

Answer all the questions.

1. Enzyme acts best at a particular temperature called :
 - (a) Catalytic Temperature.
 - (b) At normal Body temperature.
 - (c) Optimum temperature.
 - (d) None of the above.
2. Adult haemoglobin contains ————— polypeptide chains.
 - (a) $2\alpha, 2\gamma$.
 - (b) $2\alpha, 2\beta$.
 - (c) $2\alpha, 2\delta$.
 - (d) $2\beta, 2\gamma$.
3. The term ER was coined by :
 - (a) Camillo Golgi.
 - (b) Porter.
 - (c) Robert Brown.
 - (d) Benda.
4. Which structure is present in animal cell but is absent from plant cell ?
 - (a) Centrioles.
 - (b) Golgi apparatus.
 - (c) Mitochondria.
 - (d) Endoplasmic reticulum.
5. Bile reduces the surface tension and causes :
 - (a) Emulsification of fat.
 - (b) Digestion of fat.
 - (c) Absorption of fat.
 - (d) All of the above.
6. Homeostasis means
 - (a) Control of internal environment of the body.
 - (b) Adaptation with the environment.
 - (c) Constant environment of the body.
 - (d) All of the above.

Turn over

7. In most reflex arcs, sensory neurones synapse in :
- (a) The dura mater. (b) The cerebrospinal fluid.
(c) The spinal cord. (d) The brain stem.
8. How many pairs of cranial nerves originate in the brain ?
- (a) 8. (b) 10.
(c) 12. (d) 14.
9. Nerve impulses from visual stimuli are integrated in which lobe ?
- (a) Frontal. (b) Temporal.
(c) Parietal. (d) Occipital.
10. This hormone acts on the intestines and causes increased calcium absorption :
- (a) Calcitonin. (b) Calcitriol.
(c) Thyroxine. (d) Pancreatic polypeptide.
11. Name the arteries and veins facilitating blood flow to and from the lower limbs :
- (a) Brachial. (b) Mesenteric.
(c) Femoral. (d) Carotid.
12. Blood pressure is highest when leaving which heart chamber ?
- (a) Right atrium. (b) Right ventricle.
(c) Left atrium. (d) Left ventricle.
13. Hypoxia is a tissue-level deficiency of :
- (a) Oxygen. (b) Carbon dioxide.
(c) Carbon monoxide. (d) Water.
14. Healthy adults take approximately _____ breaths per minute.
- (a) 10. (b) 8.
(c) 14. (d) 12.
15. The enzyme pepsin digests which dietary component ?
- (a) Protein. (b) Fat.
(c) Carbohydrate. (d) Vitamins.
16. Through which arteriole does blood exit the glomerular capsule ?
- (a) Afferent. (b) Efferent.
(c) Renal. (d) Interlobular.

17. Which of the following structures is not part of the nephron ?
- (a) The calyx. (b) The distal convoluted tubule.
(c) The ascending loop of Henlé. (d) The collecting duct.
18. What is the large vessel running parallel to the spinal column transporting lymph called ?
- (a) The aorta. (b) The lymphatic duct.
(c) The thoracic duct. (d) The right subclavian vein.
19. Blood flows from the right atrium into the right ventricle via :
- (a) The mitral valve. (b) The semilunar valves.
(c) The tricuspid valve. (d) The AV node.
20. Name the site where digestion of proteins occurs :
- (a) Pancreas. (b) Rectum.
(c) Liver. (d) Ileum.
21. _____ are functional units of food absorption.
- (a) Red blood cells. (b) Small intestine.
(c) Villi. (d) Aggregated lymphoid nodules.
22. Which of the following organisms have book lungs ?
- (a) Spider. (b) Ant.
(c) Penguin. (d) Sealion.
23. Emphysema is characterized by :
- (a) Loss of peripheral vision.
(b) Shortness of breath.
(c) Chronic Diarrhea.
(d) Slow clotting from wounds.
24. Which of the following statements are false ?
- (a) Pituitary Gland is found at the base of the brain.
(b) Adrenal glands are found on top of the kidneys.
(c) Lymph nodes are found only near the neck and armpits.
(d) Thyroid glands are ductless glands.

25. Hormone is secreted by which of the following organ ?
- (a) Pancreas. (b) Liver.
(c) Duodenum.
26. Fat digestion occurs in :
- (a) Small intestine. (b) Stomach.
(c) Duodenum.
27. Respiratory centre is located in :
- (a) Cerebellum. (b) Medulla oblongata.
(c) Cerebrum.
28. A person has difficulty breathing due to inflammation of bronchi and bronchioles. What does he or she have ?
- (a) Emphysema. (b) Occupational respiratory disorders.
(c) Asthma.
29. When an individual consumes a large amount of protein, he or she will excrete ?
- (a) More urea and uric acid. (b) More glucose.
(c) Salt.
30. The life span of White Blood Cells is :
- (a) Between 20-30 days. (b) Between two to three months.
(c) Less than ten days.
31. Which of the following is responsible for the red colour of blood ?
- (a) Hemocyanin. (b) Myoglobin.
(c) Haemoglobin.
32. Which body muscle can resist fatigue ?
- (a) Voluntary. (b) Striped.
(c) Cardiac.
33. When Sympathetic Nerves get activated, it releases :
- (a) Adrenaline which stimulates the organ.
(b) Adrenaline which inhibits the organ.
(c) Acetylcholine that stimulates the organ.

34. Secretion of K^+ by the distal tubule will be decreased by :
- (a) Metabolic alkalosis.
 - (b) A high K^+ diet.
 - (c) Hyperaldosteronism.
 - (d) Spironolactone administration.
 - (e) Thiazide diuretic administration.
35. Regarding absorption of Na^+ in the proximal tubule :
- (a) The proximal tubule reabsorbs 80% of the filtered sodium load.
 - (b) Absorption of Na^+ causes increasing hypertonicity in the tubule lumen.
 - (c) Absorption is powered by the Na^+/H^+ ATPase.
 - (d) Shares a common carrier with glucose.
 - (e) All of the above are true.
36. Depolarization :
- (a) Is associated with increase in membrane permeability to Na^+ .
 - (b) Is terminated with closure of voltage activated K^+ channels.
 - (c) Is followed by muscle relaxation.
 - (d) Is caused by K^+ efflux.
37. The trachea is supported by _____.
- (a) Capillaries.
 - (b) Bone.
 - (c) Muscle.
 - (d) Cartilage.
38. The group of chemical messengers whose actions are known to be mediated by receptor tyrosine kinases includes :
- (a) Angiotensin II, ANP and ET 1.
 - (b) EDRF, ANP and AVP.
 - (c) FSH, LH and GHRH.
 - (d) Insulin, EGF, IGF 1, PDGF.
39. The three glycoprotein hormones each containing 2 subunits (an alpha and a beta subunit) produced by the pituitary are :
- (a) FSH, LH and TRH.
 - (b) TRH, ACTH and LH.
 - (c) TSH, LH and FSH.
 - (d) GH, TSH and LH.

40. The adrenal medulla does not normally secrete :
- (a) Epinephrine.
 - (b) Norepinephrine.
 - (c) Chromogranin B.
 - (d) Vasoactive intestinal polypeptide.
41. The release of gastrin from G cells in the antrum of the stomach is inhibited by :
- (a) Activation of vagal efferent fibers to the stomach.
 - (b) Circulating epinephrine.
 - (c) Mechanical distention of the stomach.
 - (d) Somatostatin.
42. The most abundant bile acid is :
- (a) Cholic acid.
 - (b) Chenodeoxycholic acid.
 - (c) Deoxycholic acid.
 - (d) Lithocholic acid.
43. The term 'hormone' was coined by Ernest H. Starling to describe the actions of :
- (a) Secretin.
 - (b) Insulin.
 - (c) Growth hormone.
 - (d) Glucagon.
44. The theory of 'Natural selection' was given by :
- (a) Hugo de vries.
 - (b) Lamarck.
 - (c) Darwin.
 - (d) Wallace.
45. Blood flows out of the ventricles when :
- (a) The atrio-ventricular valves are open.
 - (b) The semi-lunar valves are open.
 - (c) The bicuspid valves are open.
 - (d) The mitral valves are closed.
46. Blood pressure is highest when leaving which heart chamber :
- (a) Right atrium.
 - (b) Right ventricle.
 - (c) Left atrium.
 - (d) Left ventricle.
47. Through which arteriole does blood exit the glomerular capsule ?
- (a) Afferent.
 - (b) Efferent.
 - (c) Renal.
 - (d) Interlobular.

48. Which one of the following substances does not normally pass through the glomerular capsule ?
- (a) Albumin.
 - (b) Glucose.
 - (c) Urea.
 - (d) Sodium ions.
49. The acrosome of sperm contains :
- (a) Mitochondria.
 - (b) Lysosomal enzymes.
 - (c) Nuclear material.
 - (d) All of the above.
50. The female external genitalia are called:
- (a) The pubic symphysis.
 - (b) The vagina.
 - (c) The vulva.
 - (d) The clitoris.