

2016

PHYSIOLOGY - PAPER-I

Time Allowed : 3 Hours

Full Marks : 200

If the questions attempted are in excess of the prescribed number, only the questions attempted first up to the prescribed number shall be valued and the remaining ones ignored.

Answers may be written either in English or in Bengali but all answers must be in one and the same language.

GROUP-A

Answer any three questions.

1. a) Define colloidal solution with example. 5
- b) Discuss the optical and electrical properties of colloidal solution. 10
- c) How you can determine the osmotic pressure of a biological fluid ? 10
- d) Mention the factors regulating the buffer capacity of a solution. 5
- e) Name the blood buffers and discuss how they regulate blood pH. 10
2. a) Discuss the steps of glycolysis and its regulation. 10
- b) Discuss the formation of ketone bodies. 10
- c) Discuss with example :
 - i) transamination. 10
 - ii) oxidative deamination reactions. 5
- d) What are the metabolic significance of HMP-shunt ? 5
- e) Discuss the functions of different lipoproteins. 5
3. a) Discuss the role of osteoblasts and osteoclasts in bone physiology. 10
- b) What is red pulp and white pulp ? 5
- c) Compare the histological characteristics of spleen and lymph gland. 10
- d) Compare Bruner's gland and Payer's patch. 5
- e) Discuss the formation of HCl by the oxyntic cells. 10
4. a) Vit. D is a prohormone and Vit. E is an anti-oxidant justify. 10
- b) Discuss the Physiological changes that occur in Protein energy malnutrition. 10
- c) Name the essential fatty acids and essential amino acids. 5
- d) Discuss the role of Vit. D on Calcium and Phosphorous metabolism. 10
- e) Discuss the factors affecting B.M.R. 5

P.T.O.

5. a) Name the plasma proteins, their normal values, origin and functions. 20
- b) Explain the basis of ABO and Rh blood grouping. 10
- c) Discuss the hazards of blood transfusion. 5
- d) State the difference between plasma and lymph. 5

GROUP-B

Answer any two questions.

6. a) Discuss the regulation of Cardiac output. 10
- b) Discuss the role of vagus and sympathetic nerve on heart. 10
- c) Mention the histological structure of heart muscle. 5
- d) Discuss the peculiarities of Coronary circulation. 10
- e) What is Cardiac efficiency test ? 5
7. a) Discuss the baroreceptor and chemoreceptor regulation of blood pressure. 10
- b) Discuss the mechanism of regulation of heart rate. 10
- c) What is Ballistocardiogram ? 5
- d) How you can record radial pulse ? 5
- e) Interpret the waves of a normal ECG. 10
8. a) Discuss the neural regulation of respiration. 10
- b) Discuss the role of Hering-Breuer reflex in respiration. 10
- c) Discuss the transport of O_2 and CO_2 by the blood. 10
- d) State the factors affecting O_2 dissociation curve of Hb. 5
- e) Calculate the work of breathing. 5
9. a) Discuss the ultra structure of juxtaglomerulus apparatus. 10
- b) Mention the peculiarities of renal circulation. 10
- c) Discuss the counter-current theory of urine concentration. 10
- d) What is inulin and urea clearance test ? 5
- e) How Kidney maintain acid-base balance ? 5