

**MANIPAL ACADEMY OF HIGHER EDUCATION**

(Deemed University)

**FIRST BDS DEGREE EXAMINATION – MAY 2005****SUBJECT: GENERAL HUMAN PHYSIOLOGY INCLUDING BIOCHEMISTRY (ESSAY)**

Friday, May 27, 2005

Time available: 14:20 – 17:00 Hours

Maximum Marks: 80

**ANSWER SECTION A & B IN TWO SEPARATE ANSWER BOOKS****Draw diagrams and flow charts wherever appropriate****SECTION – A : HUMAN PHYSIOLOGY: 55 MARKS**

1. Draw a labelled diagram to show the parasympathetic nerve supply to the salivary glands. Describe the regulation of salivary secretion in detail.  
(5+5 = 10 marks)
2. Name the different stages of erythropoiesis. List the various changes occurring at different stages of erythropoiesis.  
(2+3 = 5 marks)
3. Name the different plasma proteins. Give their normal values. Describe fluid shift across capillaries.  
(2+1+2 = 5 marks)
4. Enumerate any three factors influencing venous return to the heart. Explain any one of them.  
(3+2 = 5 marks)
5. Define electro cardiogram. Draw a graph to show the ECG as recorded with limb lead II. Write any four uses of ECG.  
(1+2+2 = 5 marks)
6. Explain the role of parathormone in the regulation of blood calcium level.  
(5 marks)
7. What is the source of anti diuretic hormone (ADH)? Explain the role of ADH in the regulation of body water.  
(1+4 = 5 marks)
8. Trace the pathway for pain sensation from face. Explain any one procedure for relieving pain.  
(4+1 = 5 marks)

9. With a diagram, indicate the locations for different primary taste sensations on the tongue. (2 marks)
10. Calculate the day of ovulation in a 34 day menstrual cycle. Give the significance of ovulation. (1+1 = 2 marks)
11. Give the content of  $O_2$  in the arterial and venous blood. (2 marks)
12. Enumerate the various heat loss mechanisms in the body during increased environmental temperature. (2 marks)
13. Define renal threshold. Give the normal value of renal threshold for glucose. (2 marks)

**SECTION – B : BIOCHEMISTRY: 25 MARKS**

- 14A. Explain  $\beta$ -oxidation of fatty acids with a note on carnitine transport system.
- 14B. Write the key gluconeogenic reactions.
- 14C. What is the normal plasma calcium level? How is it maintained? (6+4+4 = 14 marks)
- 15A. Classify carbohydrates with one example for each class. (3 marks)
- 15B. Write the coenzyme form and one reaction catalysed by:  
i) Pyridoxine      ii) Riboflavin (2 marks)
- 15C. Write short notes on:  
i) Marasmus      ii) Balanced diet  
iii) Clinical use of competitive inhibitors with 2 examples. (3×2 = 6 marks)



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**FIRST BDS DEGREE EXAMINATION – JULY/AUGUST 2005****SUBJECT: GENERAL HUMAN PHYSIOLOGY INCLUDING BIOCHEMISTRY (ESSAY)**

Friday, July 29, 2005

Time available: 14:20 – 17:00 Hours

Maximum Marks: 80

**ANSWER SECTION A & B IN TWO SEPARATE ANSWER BOOKS****Draw diagrams and flow charts wherever appropriate****SECTION – A : HUMAN PHYSIOLOGY: 55 MARKS**

1. Define blood pressure (BP). Give the normal values for systolic and diastolic blood pressure. Enumerate the factors determining blood pressure. Describe the role of baroreceptors in the regulation of BP.  
(1+1+2+6 = 10 marks)
2. Give the normal percentage of lymphocytes in a differential leucocyte count. Explain the role of B-lymphocytes in immunity.  
(1+4 = 5 marks)
3. In a tabular column indicate the agglutinogens and agglutinins in each of the blood groups of ABO and Rh system of blood grouping.  
(4+1 = 5 marks)
4. Describe the digestion of fat.  
(5 marks)
5. Describe the cephalic phase of gastric juice secretion.  
(5 marks)
6. List the features of i) Acromegaly ii) Thyrotoxicosis  
(5 marks)
7. List three actions of glucocorticoids and explain any one action.  
(3+2 = 5 marks)
8. Draw a labelled diagram of neuromuscular junction in skeletal muscle. List the events occurring during neuromuscular transmission.  
(2+3 = 5 marks)
9. List the changes in the eye during accommodation to near vision.  
(2 marks)

10. List the functions of cerebellum. (2 marks)
11. Name the different types of hypoxia. (2 marks)
12. List the factors influencing glomerular filtration rate. (2 marks)
13. Define micturition. (2 marks)

**SECTION – B : BIOCHEMISTRY: 25 MARKS**

- 14A. Enumerate the reactions of urea cycle. Add a note on Transamination reactions. (4+2 = 6 marks)
- 14B. What is normal blood glucose level? How is it regulated? (1+2 = 3 marks)
- 14C. Classify the lipoproteins. What are their functions? ( $\frac{1}{2}+1\frac{1}{2}$  = 2 marks)
- 14D. Write a short note on competitive inhibition (2 marks)
- 15A. Discuss the following aspects of thiamine and niacin:  
i) RDA and sources    ii) Coenzyme form    iii) Deficiency disorder (2×2 = 4 marks)
- 15B. Write the following aspects of iron:  
i) Factors affecting absorption    ii) Functions (1½+1½ = 3 marks)
- 15C. Discuss the importance of dietary carbohydrates. (2 marks)
- 15D. Give one example for each of the following:  
i) Essential fatty acid.  
ii) Enzyme required for oxidation-reduction reactions  
iii) Essential amino acids  
iv) Reducing sugar  
v) Dietary fibre  
vi) Dietary proteins achieving the mutual supplementation of proteins. ( $\frac{1}{2}\times 6$  = 3 marks)

