

MANIPAL UNIVERSITY**FIRST BDS DEGREE EXAMINATION – MAY 2007****SUBJECT: GENERAL HUMAN PHYSIOLOGY INCLUDING BIOCHEMISTRY (ESSAY)**

Tuesday, May 29, 2007

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 diagram to show the origin, course and termination of corticospinal tract. List the differences between upper motor neuron lesion and lower motor neuron lesion. (6+4 = 10 marks)
- 2A. Define clotting time. Give its normal value. Explain extrinsic mechanism of clotting. (1+½+3½ = 5 marks)
- 2B. Explain the functions of the different granulocytes. (5marks)
- 2C. With the help of a graph describe the pressure changes in the left ventricle during a cardiac cycle. (5 marks)
- 2D. How much is the normal resting heart rate in adults? Enumerate the different factors that regulate heart rate. (1+4 = 5 marks)
- 2E. Name the components of pancreatic juice. Describe the functions of each of these components. (2+3 = 5 marks)
- 2F. Enumerate the functions of saliva. Name a substance which blocks salivary secretion. (4+1 = 5 marks)
- 2G. List the physiological actions of Cortisol and explain any one of them. (3+2 = 5 marks)
- 3A. Name the hyperglycemic hormones. (2 marks)
- 3B. Mention the day of ovulation in a 30 day menstrual cycle. Give the significance of knowing the ovulation time. (½+1½ = 2 marks)
- 3C. Name the muscles which bring about quiet and forced inspiration. (2 marks)
- 3D. Enumerate the functions of middle ear. (2 marks)
- 3E. Enumerate four functions of kidneys. (2 marks)

SECTION – B : BIOCHEMISTRY: 25 MARKS

4. Enumerate the reactions of urea cycle. Which enzyme is defective in hyperammonemia type I?

(5+1 = 6 marks)

5. Explain briefly.

5A. Role of Vitamin D in calcium and phosphorus metabolism.

5B. Lipoproteins – classification and functions.

5C. Complete digestion of carbohydrates in the gastro intestinal tract.

(3×3 = 9 marks)

6A. Mention the dietary sources of iron and factors affecting iron absorption in gastrointestinal tract.

6B. Write a short note on nitrogen balance.

6C. Explain the dietary sources, functions and deficiency symptoms of Thiamin.

6D. Write briefly on dietary fibers.

6E. Write the reactions of ketogenesis.

(2×5 = 10 marks)



MANIPAL UNIVERSITY**FIRST BDS DEGREE EXAMINATION – SEPTEMBER 2007****SUBJECT: GENERAL HUMAN PHYSIOLOGY INCLUDING BIOCHEMISTRY (ESSAY)**

Saturday, September 22, 2007

Time available: 14:20 – 17:00 Hours

Maximum Marks: 80

- ✍ Answer Section “A” and Section “B” in two separate answer books.
✍ Draw diagrams and flow charts wherever appropriate.

SECTION – A : HUMAN PHYSIOLOGY: 55 MARKS

1. Define cardiac output and cardiac index. Mention two techniques of measurement of cardiac output. Discuss the regulation of blood pressure by baroreceptors. (2+2+6 = 10 marks)
- 2A. Draw a neat labelled diagram of oxygen haemoglobin dissociation curve. Mention four factors influencing this curve. (3+2 = 5 marks)
- 2B. Draw a neat labelled diagram of nerve supply to urinary bladder. Add a note on cystometrogram. (3+2 = 5 marks)
- 2C. Enumerate ten functions of blood. (5 marks)
- 2D. Mention the source and function of prolactin. Add a note on ‘milk ejection’ reflex. (2+3 = 5 marks)
- 2E. Enumerate the events occurring in neuro-muscular transmission. Name two blockers of neuromuscular transmission. (4+1 = 5 marks)
- 2F. Outline the events during the second stage of deglutition. (5 marks)
- 2G. Describe the effects of growth hormone on growth. Explain the consequences of its hypersecretion before puberty. (3+2 = 5 marks)
3. Write a note on:
- 3A. List four functions of CSF.
- 3B. Define dark adaptation. Specify the role of visual receptors in this process.
- 3C. List four functions of saliva.
- 3D. List four hyperglycemic hormones.
- 3E. List four mechanisms of heat production/conservation when exposed to cold. (2×5 = 10 marks)

SECTION – B : BIOCHEMISTRY: 25 MARKS

4. Write the reactions of citric acid cycle. Add a note on its energetics. (4+2 = 6 marks)
5. List two trace elements. Write one function for each of the trace element. (1+1 = 2 marks)
6. What are essential amino acids? Name three essential amino acids. ($\frac{1}{2}+1\frac{1}{2} = 2$ marks)
7. Classify lipids giving one example for each class. (4 marks)
8. Explain competitive inhibition of enzymes. (2 marks)
9. Discuss the role of vitamin D in serum calcium homeostasis. (3 marks)
10. Write briefly on nitrogen balance. (2 marks)
11. Describe the reactions of urea cycle. (4 marks)



MANIPAL UNIVERSITY**FIRST BDS DEGREE EXAMINATION – DECEMBER 2007****SUBJECT: GENERAL HUMAN PHYSIOLOGY INCLUDING BIOCHEMISTRY (ESSAY)**

Friday, December 28, 2007

Time available: 14:20 – 17:00 Hours

Maximum Marks: 80

- ✍ Answer Section "A" and Section "B" in two separate answer books.
✍ Draw diagrams and flow charts wherever appropriate.

SECTION – A : HUMAN PHYSIOLOGY: 55 MARKS

1. Define erythropoiesis. Name the different stages of erythropoiesis. Enumerate any four factors necessary for normal erythropoiesis. Explain why anemia is harmful.
(1+3+4+2 = 10 marks)
- 2A. Give the normal respiratory rate and tidal volume at rest. Name two conditions which increase the rate of breathing. Give the locations of the centres for respiration.
(2+1+2 = 5 marks)
- 2B. Define stroke volume and cardiac output and give their normal values. Enumerate any four factors affecting cardiac output and briefly explain any one.
(2+2+1 = 5 marks)
- 2C. State the normal blood calcium level. Enumerate any four functions of ionic calcium. Mention the hormones that regulate blood calcium level.
(1+2+2 = 5 marks)
- 2D. Name the primary taste sensations. Draw a neat labelled diagram to show the pathway for taste sensation from anterior 2/3 of tongue.
(2+3 = 5 marks)
- 2E. Explain any two movements of small intestine and mention the functions they serve. Name two amylolytic enzymes of the GIT.
(4+1 = 5 marks)
- 2F. Enumerate the steps involved in neuromuscular transmission. Name any two neuromuscular blockers.
(4+1 = 5 marks)
- 2G. Briefly explain any two actions of each.
i) Testosterone in adult males.
ii) Oestrogen in adult females.
Mention the consequence of bilateral vasectomy in an adult.
(2+2+1 = 5 marks)

- 3A. Enumerate four different physiological mechanisms by which body temperature is regulated when exposed to cold environmental temperatures. (2 marks)
- 3B. Define hypoxia and cyanosis. (2 marks)
- 3C. Define the following terms:
i) Diuresis ii) Micturition. (1+1 = 2 marks)
- 3D. Classify lymphocytes and mention their functions. (2 marks)
- 3E. List any two functions of middle ear. (2 marks)

SECTION – B : BIOCHEMISTRY: 25 MARKS

- 4A. Define glycolysis and enumerate the steps of glycolysis in mature RBC. (6 marks)
- 4B. Write the reactions involved in the formation of acetoacetate. Add a note on ketosis. (3 marks)
- 4C. Write short note on absorption of glucose from GIT. (2 marks)
- 4D. Name any four classes of enzymes giving one example for each class. (2 marks)
- 5A. Discuss vitamin A under the following aspects:
i) RDA and sources ii) Role in vision. (1+3 = 4 marks)
- 5B. Write the following aspects of Calcium:
i) RDA ii) Serum level iii) Absorption. ($\frac{1}{2} + \frac{1}{2} + 2 = 3$ marks)
- 5C. What is nitrogen balance? Give one example each for positive and negative nitrogen balance. (2 marks)
- 5D. Write the reaction catalyzed by:
i) Serum glutamate oxaloacetate transaminase.
ii) Glutamate dehydrogenase.
iii) Carbamoyl phosphate synthetase. (3 marks)

