

**MANIPAL ACADEMY OF HIGHER EDUCATION**

(Deemed University)

**FIRST YEAR B.Sc. M.I.T. DEGREE EXAMINATION – MAY/JUNE 2006****SUBJECT: HUMAN PHYSIOLOGY**

Thursday, June 01, 2006

Time: 1½ Hrs.

Max. Marks: 50

☞ Answer all questions.

- 1A. What is erythropoiesis? List the changes taking place during erythropoiesis. Enumerate four factors needed for erythropoiesis. Define anemia.
- 1B. Name the nerves supplying the mammalian heart. Mention the effect of stimulation of these nerves on cardiac function. Name the pacemaker of the human heart.
- 1C. Draw a labelled diagram showing various lung volumes and capacities. Define vital capacity and give its normal value.

(6×3 = 18 marks)

- 2A. Define GFR. Give its normal value. Name four factors which influence GFR.
- 2B. Mention the agglutinogens and agglutinins present in each of the groups of ABO system of blood grouping.
- 2C. Name the salivary glands. Name two important constituents of saliva. List two functions of saliva.
- 2D. Give the cause and two features each of: i) Cretinism ii) Cushing's syndrome
- 2E. Define menstrual cycle. Explain the endometrial changes during a normal menstrual cycle.
- 2F. Define ECG. Draw a labelled diagram of ECG recorded from limb lead II. List two uses of ECG.

(4×6 = 24 marks)

- 3A. Mention the cell that secretes testosterone. List any three actions of testosterone.
- 3B. Define deglutition and mention the phases of deglutition.
- 3C. What is the respiratory rate at rest? Name two conditions which increase the rate of breathing?
- 3D. Name two hormones of adrenal cortex. Enumerate two actions of any one of them.

(2×4 = 8 marks)



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**FIRST YEAR B.Sc. M.I.T. DEGREE EXAMINATION – MAY/JUNE 2006**

**SUBJECT: BIOCHEMISTRY**

Friday, June 02, 2006

Time: 2 Hrs.

Max. Marks: 40

1. Choose the single best response to each of the following:

1A. All of the following are disaccharides except

- a) Mannose      b) Sucrose      c) Maltose      d) Lactose

1B. The net ATPs produced from complete oxidation of palmitic acid are

- a) 100      b) 131      c) 129      d) 140

1C. Which of the following is not involved in calcium homeostasis?

- a) Calcitonin      b) PTH      c) Vitamin D      d) Vitamin E

1D. Bile salts are required for the absorption of

- a) Fat      b) Protein      c) Carbohydrate      d) Iron

(1×4 = 4 marks)

2. State whether the following statements are **TRUE/FALSE**:

2A. Insulin increases the blood sugar level.

2B. Cellulose is a heteropolysaccharide.

2C. Iron transported in the blood is bound to transferrin.

2D. Fatty acid synthase complex is a tetramer.

(1×4 = 4 marks)

3. Fill in the blanks:

3A. \_\_\_\_\_ is a copper containing protein.

3B. The normal blood urea level is \_\_\_\_\_.

(1×2 = 2 marks)

4. Answer any **SIX** of the following:

4A. Write briefly on chemiosmotic theory.

4B. Draw a neat labeled diagram of eukaryotic cell.

4C. Briefly describe glycogenesis.

4D. Describe the absorption of glucose from intestine with the help of diagram.

4E. Write short note on GTT.

4F. Discuss the homeostasis of serum calcium.

4G. What are the important compounds synthesized from cholesterol?

(3×6 = 18 marks)

5. Answer any **TWO** of the following:

- 5A. i) Classify the enzymes with suitable examples.  
ii) Write briefly about clinical enzymes.

(4+2 = 6 marks)

5B. Discuss vitamin D under the following headings.

- i) Sources and RDA                      ii) Synthesis of calcitriol  
iii) Functions                              iv) Deficiency

(1+2+2+1 = 6 marks)

5C. Describe the digestion and absorption of fat in the GI tract.

(6 marks)



**MANIPAL ACADEMY OF HIGHER EDUCATION**

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**FIRST YEAR B.Sc. M.I.T. DEGREE EXAMINATION – JUNE 2006****SUBJECT: RADIATION PHYSICS**

Saturday, June 03, 2006

Time: 3 Hrs.

Max. Marks: 80

*≠ Answer any FIVE of the seven questions.*

1. Explain the following decay schemes:

- 1A. Alpha Decay.
- 1B. Beta Decay.
- 1C. Internal Conversion.
- 1D. Gamma emission.

(4×4 = 16 Marks)

2A. Discuss different Atomic Models.

2B. Explain Half-life period and Mean life period of a radioactive element using plots.

(8×2 = 16 Marks)

3. Define Half Value Layer and Tenth Value Layer of a material using plots and starting from attenuation equation arrive at Half Value Layer and Tenth Value layer and write the relation between them.

(16 Marks)

4. Explain the following

- 4A. Exposure
- 4B. Kerma
- 4C. Absorbed Dose
- 4D. Relative Biological Effectiveness
- 4E. f-factor.

(4+3+3+3+3 = 16 Marks)

5A. Discuss the important effects on which the radiation detection is based.

5B. Write a short note on Pocket dosimeters and Area monitors.

(8+8 = 16 Marks)

6A. Mention the type of transformers and give the conditions under which it is called so.

6B. If the number of turns in the primary coil is 10000 and voltage in the primary and secondary are same then find out the number of turns in the secondary and mention the name of the transformer.

6C. On the basis of Second law of Transformer find out the efficiency of the transformer under the assumption that no energy loss.

6D. Find out the transformer rating for a three phase generator operating at 100kV and 500mA.

(4×4 = 16 Marks)

7. Explain the following electrical instruments with necessary diagrams.

- 7A. Moving coil Galvanometer.
- 7B. Ammeter.
- 7C. Voltmeter.

(8+4+4 = 16 Marks)



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# MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

**FIRST YEAR B.Sc. M.I.T. DEGREE EXAMINATION – MAY/JUNE 2006**

**SUBJECT: X-RAY DARK ROOM TECHNIQUES**

Monday, June 05, 2006

Time: 3 Hrs.

Max. Marks: 80

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- ✍ **Answer any FIVE questions.**
  - ✍ **Question number 1 is compulsory.**
  - ✍ **Each question carries 16 marks.**

1. Write short notes on any **FOUR** of the following:
  - 1A. Functions of gelatin in film.
  - 1B. Single coated film.
  - 1C. Step-wedge.
  - 1D. Basic fog.
  - 1E. Emulsion layer of film.
  - 1F. Cross over effect.
2. Describe types of films used for medical imaging and their uses.
3. Write a short note on manual processing.
4. Write a short note on intensifying screen.
5. What is characteristic curve? Describe the effect of developer temperature on characteristic curve.
6. Write about fixer solution in detail.
7. Describe in detail about dark room illumination.