

**MANIPAL ACADEMY OF HIGHER EDUCATION**  
(Deemed University)

**M.Sc. (PRELIMINARY) DEGREE EXAMINATION – JULY 2003**

**PAPER I: ANATOMY**  
Tuesday, July 01, 2003

**Time available: 3 Hours**

**Maximum Marks: 100**

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- ➔ **Answer ALL the questions.**
  - ➔ **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**
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1. Write a brief account of the ventricles of the heart. (15 marks)
  
2. Describe the right kidney. Add a note on its microscopic structure. (15 marks)
  
3. Write short notes on each of the following: (5×4 = 20 marks)
  - 3A. Spermatogenesis
  - 3B. Somite
  - 3C. Stratified Squamous Epithelium
  - 3D. Spleen
  
4. Describe the layers of the scalp. Add a note on its blood supply and nerve supply. (15 marks)
  
5. Describe the parotid gland. Add a note on its nerve supply. (15 marks)
  
6. Write short notes on each of the following: (5×4 = 20 marks)
  - 6A. Palatine Tonsil
  - 6B. Development of pancreas
  - 6C. Root of right lung
  - 6D. Internal trigone of urinary bladder



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**M.Sc. (PRELIMINARY) DEGREE EXAMINATION – JULY 2003**

**PAPER II: PHYSIOLOGY**

Wednesday, July 02, 2003

**Time available: 3 Hours**

**Maximum Marks: 100**

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♣ **Answer all the questions.**

♣ **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

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1. Describe the function of hypothalamus.

(20 marks)

2A. List the functions of upper respiratory tract.

2B. Explain the method of conduction in a myelinated nerve.

2C. Mention the function of corpus luteum.

2D. Give the source, action, regulation of parathormone.

2E. Enumerate factors influencing 'venous return'.

2F. Explain any one method of determining the 'time of ovulation'.

(5x6 = 30 marks)

3. Describe neural mechanism of control of arterial blood pressure.

(20 marks)

4A. Explain how cochlea helps frequency analysis of sounds.

4B. Give the source, normal count, function of platelets.

4C. Name photo receptors. Explain their function.

4D. Source and functions of gastrin.

4E. Role of bile in fat digestion.

4F. Physiological mechanism of heat loss.

(5x6 = 30 marks)

**MANIPAL ACADEMY OF HIGHER EDUCATION**  
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**M.Sc. (PRELIMINARY) DEGREE EXAMINATION – JULY 2003**

**PAPER III: BIOCHEMISTRY**

Thursday, July 03, 2003

**Time available: 3 Hours**

**Maximum Marks: 100**

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♠ **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

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1. Explain the sources of  $\text{NH}_3$  and its detoxification in the liver. Add a note on the significance of transamination.  

(15 marks)
  
2. Write briefly on:  

(7x5 = 35 marks)

  - 2A. Tertiary structure of proteins
  - 2B. Structure of glycogen
  - 2C. Heterogeneous nuclear RNA
  - 2D. Active transport
  - 2E. Electron transport chain
  
3. Describe  $\beta$ -oxidation of fatty acids and its energetics. Add a note on ketogenesis in liver.  

(15 marks)
  
- 4A. Explain salient features of competitive inhibition with suitable example.
- 4B. What are iso enzymes? Describe with two examples.
- 4C. Explain the role of vitamin A in vision.  

(5+5+5 = 15 marks)
  
5. Write short notes on:  

(5x4 = 20 marks)

  - 5A. Functions of  $\text{Zn}^{2+}$
  - 5B. Glycogen storage disease type I
  - 5C. Urea clearance
  - 5D. Detoxification by conjugation



# MANIPAL ACADEMY OF HIGHER EDUCATION

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## M. Sc. (PRELIMINARY) DEGREE EXAMINATION – DECEMBER 2003

### SUBJECT: PAPER – I: ANATOMY

Monday, December 01, 2003

**Time available: 3 Hours**

**Maximum Marks: 100**

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- ➔ **Answer ALL the questions.**
  - ➔ **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**
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1. Describe the musculature, nerve supply, development and lymphatic drainage of tongue.  
(15 marks)
  
2. Describe the formation, course, tributaries and termination of portal vein. Give its applied importance.  
(15 marks)
  
3. Write short notes on:
  - 3A. Morula
  - 3B. Microscopic structure of large vein
  - 3C. Falx cerebri
  - 3D. Openings in the diaphragm.(5 × 4 = 20 marks)
  
4. Describe the right atrium.  
(15 marks)
  
5. Describe the anal canal.  
(15 marks)
  
6. Write short notes on:
  - 6A. Buccinator muscle
  - 6B. Middle meningeal artery
  - 6C. Pterygopalatine ganglion
  - 6D. Gall bladder.(5 × 4 = 20 marks)



## M. Sc. (PRELIMINARY) DEGREE EXAMINATION – DECEMBER 2003

### SUBJECT: PAPER – II: PHYSIOLOGY

Tuesday, December 02, 2003

Time available: 3 Hours

Maximum Marks: 100

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- ♣ Answer all the questions.
  - ♣ Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.
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1. Mention the changes that occur during the formation of RBC. Give the basis of different types of anemias and jaundice.  
(3+4+3 = 10 marks)
  
- 2A. Name the contents and functions of middle ear.  
(2+3 = 5 marks)
  
- 2B. Enumerate four functions of thalamus. Describe any one of them.  
(2+3 = 5 marks)
  
- 2C. Draw diagrams to show the pathways for fine touch sensation from the right leg.  
(5 marks)
  
- 2D. What is a synapse? Describe briefly any four properties of synapse.  
(1+4 = 5 marks)
  
- 2E. List the factors that influence venous return. Explain how venous return influences cardiac function.  
(2+3 = 5 marks)
  
- 2F. Draw and label a normal ECG from Limb lead II and mention the cause of the various waves.  
(3+2 = 5 marks)
  
- 2G. Name the different types of blood vessels and explain the functions of each.  
(2+3 = 5 marks)
  
- 2H. Define motor unit. Describe its relation to muscle contraction.  
(1+4 = 5 marks)
  
3. Describe the actions and regulation of secretion of growth hormone. Explain the basis of features of acromegaly.  
(7+3 = 10 marks)

4A. Explain with one suitable example each the negative and positive feedback mechanisms in the regulation of secretion of hormone.

(5 marks)

4B. Account for the occurrence of hyperpnoea:

- i) at high altitude            ii) during muscular exercise

(5 marks)

4C. Explain the factors influencing gas exchange at the alveoli.

(5 marks)

4D. With the help of a diagram explain the defecation reflex.

(5 marks)

4E. Enumerate the constituents of pancreatic juice. Describe how the secretion of pancreatic juice is regulated.

(1+4 = 5 marks)

4F. Give a brief account of the functions of renal tubules.

(5 marks)

4G. Outline the role of skin in body temperature regulation.

(5 marks)

4H. When does ovulation occur in a 40 day menstrual cycle? Draw a line diagram to show the phases of menstrual cycle, ovulation day and safe period in a 40 day menstrual cycle.

(1+4 = 5 marks)

## M. Sc. (PRELIMINARY) DEGREE EXAMINATION – DECEMBER 2003

### SUBJECT: PAPER – III: BIOCHEMISTRY

Wednesday, December 03, 2003

**Time available: 3 Hours**

**Maximum Marks: 100**

✍ Answer ALL questions.

✍ Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.

1. Describe the different types of enzyme inhibition with suitable examples. Add a note on the chemotherapeutic importance of certain inhibitors.  
(11+4 = 15 marks)
2. Answer the following:
  - 2A. Inborn errors associated with phenylalanine metabolism.  
(5 marks)
  - 2B. Write short notes on the cyclic AMP.  
(5 marks)
  - 2C. Briefly describe the formation of Bilirubin. Write its normal serum level. Name the test which is used to estimate serum bilirubin.  
(3+1+1 = 5 marks)
  - 2D. What is a plasmid? What is its application in recombinant DNA technology?  
(2+3 = 5 marks)
  - 2E. Name the vitamins with anti-oxidant properties. What is their role in cancer prevention?  
(2+3 = 5 marks)
  - 2F. Define detoxification. Give the names of chemical reactions involved and examples for each type of reaction.  
(1+4 = 5 marks)
  - 2G. How is serum calcium level maintained?  
(5 marks)
3. Describe the denovo synthesis of fatty acids.  
(15 marks)
4. Write short notes on:
  - 4A. Wilson's disease
  - 4B. Metabolic acidosis
  - 4C. Basal metabolic rate
  - 4D. Oncogenes
  - 4E. Uncouplers
  - 4F. Mucopolysaccharides
  - 4G. Functions of prostaglandins.  
(5 × 7 = 35 marks)

