

# MANIPAL UNIVERSITY

**M. Sc. (FINAL) PHYSIOLOGY DEGREE EXAMINATION – FEBRUARY 2008**

**PAPER I: GENERAL PHYSIOLOGY, NERVOUS SYSTEM INCLUDING  
SPECIAL SENSES AND MUSCLES**

Monday, February 04, 2008

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.**

1. Explain how a nerve impulse is transmitted across the synapse.

(20 marks)

2. Explain how Hunger and Appetite are regulated.

(20 marks)

3. Explain the mechanism of decerebrate rigidity.

(20 marks)

4. How is excitation coupled to contraction in skeletal muscle? Explain.

(20 marks)

5. With a suitable example explain the consequence of inhibiting sodium potassium pump.

(20 marks)

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## M. Sc. (FINAL) PHYSIOLOGY DEGREE EXAMINATION – FEBRUARY 2008

### PAPER II: BLOOD AND BODY FLUIDS, CARDIOVASCULAR SYSTEM, RESPIRATORY SYSTEM, RENAL PHYSIOLOGY, SKIN AND TEMPERATURE REGULATION

Tuesday, February 05, 2008

Time available: 3 Hours

Maximum Marks: 100

✍ **Answer ALL the questions.**

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

1. Describe the cardio respiratory changes occurring when you are subjected to moderate exercise. Add a note on how trained athletes differ from untrained persons.

(15+5 = 20 marks)

2. Discuss the concept of 'clearance' and its application as a tool to understand renal functions using appropriate examples.

(20 marks)

3. Describe the process of erythropoiesis. Discuss different anemias and physiological basis of the treatment.

(20 marks)

4. Discuss the role of blood plasma, respiratory system and kidneys in the maintenance of acid base balance.

(20 marks)

5. Explain how the following regional circulations are designed to suit the function of the respective organs/areas

5A. Cutaneous circulation.

5B. Foetal circulation.

5C. Renal circulation.

(20 marks)



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## M. Sc. (FINAL) PHYSIOLOGY DEGREE EXAMINATION – FEBRUARY 2008

### PAPER III: GASTROINTESTINAL TRACT, ENDOCRINOLOGY AND REPRODUCTION

Wednesday, February 06, 2008

Time available: 3 Hours

Maximum Marks: 100

- ✍ **Answer ALL the questions.**
- ✍ **Illustrate your answers with neatly drawn and correctly labelled diagrams wherever appropriate.**

1. Describe in detail the mechanism of secretion, storage and release of bile. Explain the role of bile in the digestion and absorption of foods.  
(20 marks)
  
2. Describe the physiological actions and control of secretion of growth hormone. Add a note on the role of other hormones that play an important part in somatic growth.  
(20 marks)
  
3. Describe the hormonal control of growth and development of mammary gland in females.  
(20 marks)
  
4. Discuss the physiological actions and control of secretion of testosterone. Add a note on 'precocious puberty'.  
(20 marks)
  
5. Write Briefly on:
  - 5A. Second messengers.
  - 5B. Cretinism.
  - 5C. Permissive action of cortisol.
  - 5D. Factors influencing gastric emptying.  
(20 marks)



# MANIPAL UNIVERSITY

M. Sc. (FINAL) PHYSIOLOGY DEGREE EXAMINATION – AUGUST 2008

## PAPER I: GENERAL PHYSIOLOGY, NERVOUS SYSTEM INCLUDING SPECIAL SENSES AND MUSCLES

Monday, August 04, 2008

Time available: 3 Hours

Maximum Marks: 100

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✍ **Answer ALL the questions.**

✍ **Draw neat labeled diagram wherever appropriate.**

1. Explain the physiological basis of Resting Membrane Potential. Write down an equation from which the value of RMP can be calculated.

(20 marks)
2. Explain the connections and role of Reticular Activating System.

(20 marks)
3. How are the skeletal muscle fibers classified? Explain the basis of this classification in a tabular form.

(20 marks)
4. Explain the mechanism of transport of glucose across the cell membrane in
  - 4A. Muscle.
  - 4B. Kidney.
  - 4C. Intestine.

(20 marks)
5. Explain how the following conditions may be caused:
  - 5A. Homonymous Hemianopia.
  - 5B. Conductive deafness.

(20 marks)

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**M. Sc. (FINAL) PHYSIOLOGY DEGREE EXAMINATION – AUGUST 2008**

**PAPER II: BLOOD AND BODY FLUIDS, CARDIOVASCULAR SYSTEM, RESPIRATORY SYSTEM, RENAL PHYSIOLOGY, SKIN AND TEMPERATURE REGULATION**

Tuesday, August 05, 2008

Time available: 3 Hours

Maximum Marks: 100

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✍ **Draw neat labeled diagram wherever appropriate.**

✍ **All questions carry equal marks.**

1. Describe in detail the neurohormonal control of 'blood pressure'.
2. Describe the cardiorespiratory changes observed after exercise. Explain the importance of regular exercise in cardiovascular fitness.
3. Describe the role of granulocytes in immunity.
4. Discuss the role of kidney in the regulation of 'plasma osmolarity'.
5. Explain the:
  - 5A. Changes in foetal circulation at birth.
  - 5B. Apnea following voluntary hyperventilation.
  - 5C. Importance of 'Bohr effect' on oxygen transport.
  - 5D. Reason to select 'inulin clearance' to measure 'glomerular filtration rate'.

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## M. Sc. (FINAL) PHYSIOLOGY DEGREE EXAMINATION – AUGUST 2008 PAPER III: GASTROINTESTINAL TRACT, ENDOCRINOLOGY AND REPRODUCTION

Wednesday, August 06, 2008

Time available: 3 Hours

Maximum Marks: 100

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✍ **Answer ALL the questions.**

✍ **Draw neat labelled diagram wherever appropriate.**

1. Describe the hormonal control of normal growth and maintenance of function of mammary glands.  
(20 marks)
2. Describe how sex differentiation and determination occurs in foetal life.  
(20 marks)
3. Describe storage, release and functions of bile.  
(20 marks)
4. Discuss the functional role of glucocorticoids.  
(20 marks)
5. Write briefly on:
  - 5A. Contraceptive methods.
  - 5B. Effects of orchidectomy in young adult male.  
(20 marks)