Reg. No.										

MANIPAL UNIVERSITY

M.Sc. (MEDICAL) (PRELIMINARY) DEGREE EXAMINATION – MARCH 2013

PAPER I: ANATOMY

Tuesday, March 05, 2013

Time: 14:00 – 17:00 Hrs. Maximum Marks: 80

✍ **Answer ALL the questions. Draw labeled diagrams wherever necessary.**

1. Describe the Arterial supply and venous drainage of the heart.

(6+4 = 10 marks)

2. Describe the Pancreas under the following headings:

2A. Situation and Parts
2B. Relations of the head of the pancreas
2C. Ducts of the pancreas

(3+4+3 = 10 marks)

3. Write short notes on the following:

3A. Enumerate the parts of the extra hepatic biliary apparatus with the help of a diagram
3B. Name the parts and ligaments of the uterus
3C. Name the dural folds and sinuses in the cranial cavity
3D. Briefly describe the course of the external carotid artery and enumerate its branches
3E. Temporomandibular joint
3F. Name the parts of the tongue and mention its sensory nerve supply
3G. Internal capsule of the brain
3H. Sympathetic system
3I. Numerical chromosomal aberrations
3J. Prenatal diagnostic tests
3K. Neural tube
3L. Placenta
3M. Histology of the lymph node
3N. Histology of the liver
3O. Classify the joints and enumerate the components of the synovial joint

(4×15 = 60 marks)

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M.Sc. (MEDICAL) (PRELIMINARY) DEGREE EXAMINATION – MARCH 2013

PAPER II: PHYSIOLOGY

Monday, March 11, 2013

Time: 14:00 – 17:00 Hrs. Maximum Marks: 80

- **Answer ALL the questions.**
- **Illustrate the answers with labeled diagrams wherever appropriate.**

1. Explain how hemorrhage leads to hypotension and hypovolemic shock. How is this condition detected clinically? Mention the compensatory mechanisms that occur in this condition.

(10 marks)

2. Explain the different phases of deglutition in detail.

(10 marks)

3. **Short answer questions:**

3A. Describe any two properties of cardiac muscle. How are they suited to cardiac function?

3B. Define and give the normal values of:
   i) Tidal volume and
   ii) Respiratory dead space. Explain *Hering-Breuer inflation reflex*.

3C. Explain the role of medulla oblongata in the regulation of respiration.

3D. What is the normal plasma calcium level? Name the hormones involved in calcium homeostasis. List the actions of any one hormone.

3E. Compare causes and features of *diabetes insipidus* and *diabetes mellitus*.

3F. Describe the thermoregulatory changes in the body when exposed to hot climate.

3G. Briefly describe the structure and functions of the *filtration barrier* in kidneys.

3H. Name the different types of refractive errors of eye. Explain the basis of correction of any one error.

3I. Classify reflexes and give the basis of classification. Draw a monosynaptic reflex arc.

3J. Draw the simplified diagram of any one ascending tract and any one descending tract of spinal cord. Specify the function of each.

3K. Briefly explain the stages of spermatogenesis and add a note on the factors that influence the process.

3L. Explain the terms *menarche* and *menopause*. Mention the average age at which they occur/begin.

3M. Name the types of smooth muscles. Give any three functional differences between skeletal muscle and smooth muscle.

3N. Define:
   i) Neuron ii) Nerve iii) Refractory period iv) Threshold stimulus

3O. Give the total protein concentration in plasma. Explain the functions of albumin.

(4×15 = 60 marks)

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M.Sc. (MEDICAL) (PRELIMINARY) DEGREE EXAMINATION – MARCH 2013

PAPER III: BIOCHEMISTRY

Saturday, March 09, 2013

Time: 14:00 – 17:00 Hrs. Maximum Marks: 80

✍ **Answer ALL questions:**

✍ **Essay Questions:**

1. Describe glycolysis. Add notes on its regulatory enzymes and energetics.

(6+2+2 = 10 marks)

2. Write an account of replication. Name two inhibitors of replication.

(8+2 = 10 marks)

3. **Short Questions:**

3A. What is competitive inhibition? What is its clinical application?

(2+2 = 4 marks)

3B. Define β-oxidation. Name the steps and enzymes of β-oxidation.

(1+3 = 4 marks)

3C. How is ammonia formed and detoxified? Add a note on its disorders.

(1+2+1 = 4 marks)

3D. Explain digestion and absorption of lipids.

(4 marks)

3E. Name four water soluble vitamins. Write a reaction for each in which they function.

(4 marks)

3F. Name ketone bodies. How are ketone bodies synthesized and degraded?

(1+1½+1½ = 4 marks)

3G. Name the biologically important compounds derived from glycine.

(4 marks)

3H. Write the electron transport chain. Show the ATP synthesizing sites and their inhibitors.

(2+1+1 = 4 marks)

3I. How is heme degraded? Discuss the metabolism of bilirubin.

(2+2 = 4 marks)

3J. Write briefly on:

i) Metabolic alkalosis

ii) Anion gap

(2+2 = 4 marks)

3K. What is the normal serum calcium level? Discuss the serum calcium homeostasis.

(1+3 = 4 marks)

3L. What is protein calorie malnutrition? Describe the salient features.

(4 marks)

3M. Describe the fluid mosaic model of membrane structure with a diagram.

(4 marks)

3N. i) Name the metabolic defect in:

a) Phenyketonuria

b) Von Gierke's disease

ii) Give the diagnostic importance of elevation of:

a) Amylase

b) Acid phosphatase

(2+2 = 4 marks)

3O. i) Give the reactions catalysed by the key enzymes of gluconeogenesis.

ii) Draw a neat labeled diagram of tRNA.

(2+2 = 4 marks)