MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

M.Sc. (PRELIMINARY) DEGREE EXAMINATION – JULY 2006

PAPER I: ANATOMY

Monday, July 03, 2006

Time available: 3 Hours | Maximum Marks: 100

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

1. Enumerate the paired dural venous sinuses. Explain the cavernous sinus in detail.

(15 marks)

2. Describe the surfaces, borders, relations and nerve supply of urinary bladder.

(15 marks)

3. Write short notes on each of the following:

3A. Right atrium.

3B. Decidua.

3C. Facial artery.

3D. Hyoid bone.

(5×4 = 20 marks)

4. Describe the lateral wall of nasal cavity. Add a note on its blood supply.

(15 marks)

5. Describe the left lung under lobes, surfaces and its relations. Explain the bronchopulmonary segments.

(15 marks)

6. Write short notes on each of the following:

6A. Corpus luteum.

6B. Sternal angle.

6C. Microscopic structure of lymph node.

6D. Epicranial aponeurosis.

(5×4 = 20 marks)

MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

M. Sc. (PRELIMINARY) DEGREE EXAMINATION – JULY 2006

PAPER II: PHYSIOLOGY

Tuesday, July 04, 2006

Time available: 3 Hours | Maximum Marks: 100

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

1. Name the baroreceptors. Explain the mechanism of stimulation of these receptors. Explain the effect of stimulation of these receptors on

   i) Vasomotor centre ii) Cardio inhibitory center iii) Respiratory center

   (1+1+8 = 10 marks)

2A. Draw a labelled diagram to show the 'conducting system' of the human heart. Explain its function.

(2+3 = 5 marks)

2B. Draw a diagram to show the intrapleural pressure changes during a normal respiratory cycle. Add a note on the functions of intrapleural pressure.

(3+2 = 5 marks)

2C. Enumerate the factors influencing gaseous diffusion across the respiratory membrane. Explain the role of these factors.

(2+3 = 5 marks)

2D. Explain the mechanism of water diuresis.

(5 marks)

3A. Draw a diagram to show the parasympathetic innervation to the urinary bladder. Explain the mechanism of micturition in an infant.

(2+3 = 5 marks)

3B. Briefly describe the cephalic phase of gastric juice secretion.

(5 marks)

3C. Explain the functions of platelets.

(5 marks)

3D. Enumerate four dangers of blood transfusions. Explain any one.

(5 marks)

4. Give the source and actions of growth hormone. Add a note on the regulation of secretion of this hormone. Name two disorders of growth hormone secretion.

(6+3+1 = 10 marks)

5A. In a tabular column compare the actions of adrenalin and noradrenalin on cardio-vascular system.

(5 marks)

5B. Explain briefly the actions of estrogens in a nonpregnant woman on

i) uterine endometrium ii) uterine myometrium iii) the mammary gland

(2+1+2 = 5 marks)

5C. Draw a diagram to show the regulation of testosterone secretion. Briefly explain its action on protein metabolism.

(3+2 = 5 marks)

5D. Define and give an example for each:

i) isometric contraction ii) isotonic contraction

Tabulate two differences between them.

(5 marks)

6A. Define and classify synapses. Briefly explain the production of an EPSP.

(3+2 = 5 marks)

6B. Enumerate four functions of reticular formation and explain any one of these functions.

(2+3 = 5 marks)

6C. Name the primary taste sensations. Draw a diagram to show the taste pathway.

(2+3 = 5 marks)

6D. Draw a diagram of visual pathway. Define:

i) Bitemporal hemianopia ii) Right homonymous hemianopia

(3+2 = 5 marks)

MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

M. Sc. (PRELIMINARY) DEGREE EXAMINATION – JULY 2006

PAPER III: BIOCHEMISTRY

Wednesday, July 05, 2006

Time: 3 Hrs. Max. Marks: 100

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

1. Explain the different types of enzyme inhibitors. What are the applications of competitive inhibitors in medicine?

(15 marks)

2. Discuss glycogenolysis in muscle.

(5 marks)

3. What are lipoproteins? Explain their specific functions.

(5 marks)

4. Explain with examples the biochemical importance of glycine in our body.

(5 marks)

5. Explain the digestion and absorption of proteins.

(5 marks)

6. Write short notes on:

6A. Essential amino acids.

6B. Lipid peroxidation.

6C. Oxidative decarboxylation reaction.

(5×3 = 15 marks)

7. Describe the structure of DNA. Explain the differences between DNA and RNA.

(15 marks)

8. Explain the principle of electrophoresis.

(5 marks)

9. What is the significance of urine urolilinogen?

(5 marks)

10. Give the sources, RDA, biochemical functions and deficiency manifestations of niacin.

(5 marks)

11. Explain the biological functions of free nucleotides.

(5 marks)

12. Write short notes on:

12A. Mutation.

12B. Buffering capacity.

12C. Recombinant DNA technology.

(5×3 = 15 marks)

MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

M. Sc. (PRELIMINARY) DEGREE EXAMINATION – DECEMBER 2006

PAPER I: ANATOMY

Monday, December 04, 2006

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 parotid gland in detail. Add a note on its applied aspects.

(15 marks)

2. Describe the right atrium of heart. Add a note on its development.

(15 marks)

3. Write short notes on each of the following:

3A. Digastric muscle.

3B. Cavernous sinus.

3C. Coeliac trunk.

3D. Microscopic structure of thyroid gland.

(5×4 = 20 marks)

4. Describe the uterus in detail. Enumerate the supports of the uterus.

(15 marks)

5. Describe the parts and relations of duodenum. Add a note on its blood supply.

(15 marks)

6. Write short notes on each of the following:

6A. Periosteum.

6B. Morula.

6C. Facial nerve in the face.

6D. Histology of hyaline cartilage.

(5×4 = 20 marks)

MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

M. Sc. (PRELIMINARY) DEGREE EXAMINATION – DECEMBER 2006

PAPER II: PHYSIOLOGY

Tuesday, December 05, 2006

Time available: 3 Hours | Maximum Marks: 100

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

1. Explain the consequence of 'hemisection of the spinal cord' (Brown-sequard syndrome).

(10 marks)

2 Describe how kidney is able to produce a concentrated urine during water deprivation.

(10 marks)

3A Outline the functions of cerebellum. List any four features of 'cerebellar lesion'.

(3+2 = 5 marks)

3B Enumerate the actions of thyroid hormones.

(5 marks)

3C. Explain the formation and actions of calcitriol.

(3+2 = 5 marks)

3D. Explain the action/s of glucagon and control of its secretion.

(2+3 = 5 marks)

4A. Describe the second stage of deglutition.

(5 marks)

4B. Enumerate the phases of gastric secretion. Explain how any one of them is controlled.

(1+4 = 5 marks)

4C. List the steps of neuromuscular transmission.

(5 marks)

4D. Draw a labelled diagram of auditory pathway. What is audiogram?

(3+2 = 5 marks)

5A. Define cardiac output and give its normal value. Mention four factors which determine the cardiac output. Explain how any one of them influences cardiac output.

(1+2+2 = 5 marks)

5B. Define Marey's law. Explain how it is brought about.

(1+4 = 5 marks)

5C. Draw a labelled diagram of ECG from limb lead II. Mention four clinical uses of ECG.

(3+2 = 5 marks)

5D. Name two indicators of ovulation and give the basis of each.

(2+3 = 5 marks)

6A. Classify leucocytes. Mention their relative percentage. List the functions of leucocytes.

(1+2+2 = 5 marks)

6B. Explain the mechanism of action of following anticoagulants.

i) sodium citrate ii) Dicoumarol

(2½+2½ = 5 marks)

6C. Define timed vital capacity. Give the normal value and conditions in which it is altered.

(1+1+3 = 5 marks)

6D. Name the forms of oxygen transport in blood. What is hypoxia? Name two types of hypoxias and give an example for each.

(2+1+2 = 5 marks)

MANIPAL ACADEMY OF HIGHER EDUCATION

(Deemed University)

M. Sc. (PRELIMINARY) DEGREE EXAMINATION – DECEMBER 2006

PAPER III: BIOCHEMISTRY

Wednesday, December 06, 2006

Time: 3 Hrs. Max. Marks: 100

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

1. Define gluconeogenesis. Describe the process of conversion of lactate to glucose. Add a note on its regulation.

(15 marks)

2. Write short notes on:

2A. Competitive inhibition of enzymes.

2B. Secondary structure of proteins.

2C. Name the enzymes defective in the following disorders:

i) Von Gierke's disease ii) Classic galactosemia iii) Phenylketonuria

iv) Tay Sach's disease v) Lesch Nyhan syndrome

2D. Southern blotting

2E. Genetic code

2F. Reactions of urea cycle

2G. Draw a normal electrophoretic pattern of serum lipoproteins. Write the function of each of different lipoproteins.

(5×7 = 35 marks)

3. Discuss vitamin A metabolism with respect to:

3A. RDA and sources

3B. Metabolism

3C. Role in vision

3D. Deficiency manifestations.

(3+4+4+4 = 15 marks)

4. Answer the following:

4A. Name iron containing proteins. Write a note on the absorption of iron.

4B. Explain active transport with a suitable example.

4C. Body buffer system.

4D. Electron transport chain.

4E. Sources of dietary fiber and its importance in nutrition.

4F. Glucose tolerance test.

4G. An adult man is consuming 350g of carbohydrates, 70g of fat and 60g of protein per day. Calculate the total calorie content of his diet. Calculate the percentage of calories obtained from carbohydrates, lipids and proteins.

(5×7 = 35 marks)