Reg. No.										

MANIPAL UNIVERSITY

M.Sc. (MEDICAL) PRELIMINARY DEGREE EXAMINATION – MAY 2015

SUBJECT: PAPER I: ANATOMY

Monday, May 04, 2015

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

- **Answer ALL questions.**
- **Draw labeled diagram wherever necessary.**

1. Enumerate contents of a typical intercostal space. Describe in detail course and distribution of the typical intercostal nerve.

(3+7 = 10 marks)

2. Describe the thyroid gland under following headings:

2A. Situation and parts

2B. Relations

2C. Arterial supply

(3+5+2 = 10 marks)

3. **Write short notes on the following:**

3A. Major openings in the diaphragm

3B. Fallopian tube

3C. Tentorium cerebelli

3D. Nasal septum

3E. External jugular vein

3F. Oblique muscles of eyeball

3G. Cerebellar peduncles

3H. Neat labeled diagram of cross section of spinal cord

3I. Down's syndrome

3J. Classification of chromosomes

3K. Formation and fate of notochord

3L. Trophoblast

3M. Histology of Hyaline cartilage

3N. Histology of Testis

3O. Periosteum

(4 marks × 15 = 60 marks)

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M.Sc. (MEDICAL) PRELIMINARY DEGREE EXAMINATION – MAY 2015

PAPER II: PHYSIOLOGY

Wednesday, May 06, 2015

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

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

1. Describe the source, actions and regulation of parathyroid hormone. List the clinical features of hypoparathyroidism.

(1+4+2+3 = 10 marks)

2. Define Erythropoiesis. Describe the stages mentioning the changes taking place in each stage. Name the factors influence erythropoiesis.

(1+6+3 = 10 marks)

3. **Short answer questions:**

3A. Draw a neat diagram of an ECG in lead II. Briefly explain the cause of each wave in the ECG.

3B. Name neuroglia. Explain their function.

3C. List the steps in excitation contraction coupling.

3D. Enumerate the functions of saliva.

3E. List three functions of cerebellum. Briefly explain any one of them.

3F. Define Hypoxia. Classify and give the causes of each with an example.

3G. Describe briefly the ovarian changes during normal menstrual cycle. Mention the hormones responsible for these changes.

3H. Draw a labelled diagram of visual pathway. Explain the term macular sparing.

3I. Add a note on special feature of coronary circulation.

3J. Water reabsorption in renal tubules.

3K. Draw and label Taste pathway.

3L. Explain the role of surfactant in pulmonary function.

3M. Explain any four differences in the functional properties of skeletal and smooth muscle.

3N. Define Chronaxie and rheobase. Draw a diagram of the strength duration curve. Give the significance of chronaxie.

3O. List the functions and regulation of secretion of pancreatic juice.

(4 marks × 15 = 60 marks)

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M.Sc. (MEDICAL) PRELIMINARY DEGREE EXAMINATION – MAY 2015

SUBJECT: PAPER III: BIOCHEMISTRY

Friday, May 08, 2015

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

✍ **Answer ALL the question.**

✍ **Essay questions:**

1. **Explain:**

1A. Glycogenesis

1B. Glycogenolysis

1C. Functions of insulin

(4+4+2 = 10 marks)

2. Describe the following aspects of nucleic acids with the help of diagrams (if necessary)

2A. Structure and function of t-RNA

2B. Transcription

2C. Genetic code

(3+5+2 = 10 marks)

3. **Short answer questions:**

3A. **Write notes on:**

i) Primary structure of proteins

ii) One reaction each for synthesis and catabolism of glycine

(2+2 = 4 marks)

3B. i) Classify proteins based on shape giving one example for each class.

ii) Write two functions and mention two disorders associated with albumin.

(2+2 = 4 marks)

3C. How ketone bodies are formed and utilized? What is ketosis?

(3+1 = 4 marks)

3D. i) Write functions of lipoproteins.

ii) Serum lipid profile values are as follows:
Total cholesterol: 390mg/dl, triglycerides: 130mg/dl, HDL – cholesterol: 30mg/dl. Calculate LDL-cholesterol level using Friedwald's formula. What is the normal range for LDL-cholesterol level?

(2+1+1 = 4 marks)

3E. Write the reactions for formation of epinephrine from tyrosine. Add a note on phenylketonuria.

(2+2 = 4 marks)

3F. **Draw a neat labeled diagram/diagrammatic representation of:**

i) Components of electron transport chain in sequence

ii) Fluid mosaic model of membrane structure

(2+2 = 4 marks)

3G. **Explain with one example each:**

i) Competitive enzyme inhibition

ii) Clinical utility of isoenzymes

(2+2 = 4 marks)

3H. Describe the sources, RDA and role of vitamin D in serum calcium homeostasis.

(1+1+2 = 4 marks)

3I. Enumerate the reactions of heme synthesis indicating the enzymes and coenzymes.

(4 marks)

3J. **Write one biochemical function each for:**

i) Copper ii) Fluorine iii) Thiamine iv) Biotin

(1 mark × 4 = 4 marks)

3K. Write the reactions of purine degradation pathway. What are the primary causes for gout?

(3+1 = 4 marks)

3L. **Write notes on:**

i) Kwashiorkor ii) Metabolic acidosis

(2+2 = 4 marks)

3M. **Indicate the biochemical basis for the following:**

i) Vitamin A deficiency causes night blindness

ii) Proteins can be precipitated at their isoelectric pH

iii) Liver failure results in ammonia toxicity

iv) Proteolytic enzymes are secreted as zymogens

(1 mark × 4 = 4 marks)

3N. **Write the deficiency/defect and one symptom for the following disorders:**

i) Scurvy ii) Alkaptonuria iii) Pellagra iv) Rickets

(1 mark × 4 = 4 marks)

3O. With the help of diagrams explain the steps of recombinant DNA technology. Mention two applications.

(3+1 = 4 marks)