Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR B.Sc. M.L.T./B.Sc. N.M.T./B.Sc. R.T./B.Sc. M.R.T./B.Sc. M.I.T./ B.Sc. C.V.T./ B.Sc. R.R.T & D.T./M.Sc. N.M.T.

FIRST SEMESTER B OPTOM./B.Sc. H.I.A./ B.Sc. P.F.T.

DEGREE EXAMINATION – JUNE 2014

SUBJECT: ANATOMY/GENERAL ANATOMY

Tuesday, June 03, 2014

Time: 10.00-11.30 Hrs. Max. Marks: 40

✍ **Answer ALL the questions.**

1. Name the parts of respiratory system. Describe the right lung in detail.

(5+5 = 10 marks)

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

2A. Spermatic cord

2B. Pericardium

2C. Gall bladder

2D. Spinal cord

2E. Tongue

2F. Fibrous joints

(5 marks × 6 = 30 marks)

NMT

Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR BOT/B.Sc. MLT/B.Sc. CVT/B.Sc. MIT/B.Sc. RT/B.Sc. NMT/ B.Sc. RRT & DT/B.Sc. MRT/M.Sc. NMT DEGREE EXAMINATION – JUNE 2014

SUBJECT: PHYSIOLOGY

Thursday, June 05, 2014

Time: 10.00-11.30 Hours. Max. Marks: 40

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

1. **Essay questions**:

1A. Define cardiac output. Give its normal value and describe the factors regulating cardiac output.

1B. List any five actions of thyroid hormones.

1C. Define erythropoiesis. Mention its stages and list any two factors regulating it.

1D. Define a reflex. Draw a neat labeled diagram of a reflex arc.

(5 marks × 4 = 20 marks)

2. **Write short answers for the following:**

2A. Write any two differences between simple diffusion and facilitated diffusion.

2B. Draw a neat labeled diagram of a neuron.

2C. List any four hormones secreted by anterior pituitary.

2D. Name the two divisions of autonomic nervous system.

2E. Mention any two contraceptive methods in males.

2F. List two functions of liver.

2G. Mention the location of rods and cones. State one function of each.

2H. Classify hypoxia.

2I. Define GFR and give its normal value.

2J. Draw a labeled diagram of a sarcomere.

(2 marks × 10 = 20 marks)

Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR BPT/BOT/B.Sc. MLT/ B.Sc. NMT/B.Sc. RT/B.Sc. MIT/B.Sc. CVT/ B.Sc. RRT & DT/M.Sc. NMT

DEGREE EXAMINATION – JUNE 2014

SUBJECT: BIOCHEMISTRY

Saturday, June 07, 2014

Time: 10.00-11.30 Hours Max. Marks: 40

- **Answer ALL the questions.**
- **Draw diagrams and flow charts wherever appropriate.**

1. Explain gluconeogenesis under the following headings:

1A. Site and subcellular site

1B. Reactions of synthesis of glucose from lactate

(1+7 = 8 marks)

2. Classify enzymes giving one example for each class.

(6 marks)

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

3A. Structure of starch

3B. Reactions of β-oxidation of fatty acyl CoA

3C. Four differences between DNA and RNA

3D. Classification and functions of lipoproteins

(4 marks × 4 = 16 marks)

4. **Answer the following:**

4A. Define and write the normal values of BMR

4B. Name two essential fatty acids and write their functions

4C. Write the normal serum levels of total protein, creatinine, calcium and urea

4D. List four differences between kwashiorkor and Marasmus

4E. Mention the fate of the end product of glycogenolysis in liver and muscle

(2 marks × 5 = 10 marks)

Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR B.Sc. N.M.T. DEGREE EXAMINATION – JUNE 2014

SUBJECT: COMPUTERS AND MATHEMATICS

Tuesday, June 10, 2014

Time: 10.00-13.00 Hrs. Max. Marks: 80

✍ **Answer SECTION – A and SECTION – B in two separate answer books.**

SECTION – A: COMPUTERS: 40 MARKS

✍ **Answer ALL the questions.**

1. Explain on the various types of imaging adopted in Nuclear Medicine with examples. How is it been acquired? Also list out the various factors you would consider to acquire those imaging procedures.

(10 marks)

2. What are ADCs? Why are they required in Nuclear Medicine? Explain on any one ADC in detail.

(10 marks)

3. Smoothen the following data with a weighted filter:

Time (secs)	5	10	15	20	25	30	60	90	120	240	480	600
Counts	200	689	878	1015	2500	5800	7832	981	567	364	127	85

(5 marks)

4. **Convert the following:**

4A. $(18)_{10} = (\ )_2$

4B. $(01)_{10} = (\ )_2$

4C. $(100)_2 = (\ )_{10}$

4D. $(1010)_2 = (\ )_{10}$

(5 marks)

5. **Write short note on following:**

5A. Characteristics of ADC

5B. Cache Memory

(5 marks × 2 = 10 marks)

SECTION – B: MATHEMATICS: 40 MARKS

✍ **Answer any EIGHT questions of the following:**

6A. The length of an arc of a circle having radius 10 cm is 4 cm. Find the central angle.

6B. State and prove the Lagrange's Mean Value Theorem.

(2+3 = 5 marks)

7A. Show that $(\tan\theta + \cot\theta)^2 = \sec^2\theta + \operatorname{cosec}^2\theta$.

7B. Solve simultaneous equations: $3x + 2y - 1 = 0$; $x - y - 2 = 0$.

(2+3 = 5 marks)

8A. Evaluate: $\int_1^2 (x^3 + 1)\,dx$

8B. Form differential equation by eliminating the arbitrary constant 'a': $ay^2 = x^3$

(2+3 = 5 marks)

9A. Evaluate: $\lim_{x\to\infty} \dfrac{x^2 + b^2}{x^2 + a^2}$

9B. Evaluate: $\int (x^2 - 2x + 5)^5 (x-1)\ dx$

(2+3 = 5 marks)

10A. Explain the graph of log-log graph.

10B. Prove that: $\log 81/8 - 2\log 3/2 + 3\log 2/3 + \log \frac{3}{4} = 0$

(2+3 = 5 marks)

11. 800mCi of I - 131 calibrated for Sunday 12 noon reaches the department on Monday. Two patients were treated on the same day with 150 mCi each. For treating other patients on Thursday 8 a.m. how much activity would be available? ($t_{½}$ = 8 days)

(5 marks)

12A. Define union set and power set with one example each.

12B. Derive the Half- life of radioactivity.

(2+3 = 5 marks)

13A. Convert 100mCi into MBq.

13B. Show that two curves $2y = 3x + x^2$ and $2x + 3y - y^3 = 0$ cuts orthogonally.

(2+3 = 5 marks)

14A. Find the value of: Sin 420 . Cos (-300)

14B. Differentiate with respect to x: $y = \dfrac{x^2}{3x - 2}$

(2+3 = 5 marks)