MANIPAL UNIVERSITY

FIRST YEAR B.Sc. M.L.T./ B.Sc. N.M.T./ B.Sc. R.T./ B.Sc. M.I.T./ B.Sc. C.V.T. DEGREE EXAMINATION – JUNE 2010

SUBJECT: ANATOMY

Monday, June 07, 2010

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

1. Name the parts of respiratory system. Briefly explain the right lung.

                                                           (2+6 = 8 marks)

2. Describe the right atrium in detail.

                                                           (8 marks)

3. **Write briefly on:**

3A. Large intestine

3B. Kidney

3C. CSF circulation

3D. Epithelium

3E. Synovial joints

3F. Spinal cord

3G. Pleura

3H. Thyroid gland

                                                           (3×8 = 24 marks)

MANIPAL UNIVERSITY

FIRST YEAR B.P.T./B.O.T./B.Sc.M.L.T./B.Sc.N.M.T/B.Sc.R.T. /B.Sc.M.R.T.
DEGREE EXAMINATION – JUNE 2010

SUBJECT: PHYSIOLOGY

Wednesday, June 09, 2010

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

✍ **Answer all questions.**

1. Draw a labelled diagram of neuromuscular junction. Write the sequence of events of neuromuscular transmission

(10 marks)

2. Describe the actions of thyroid hormones. Add a note on Cretinism

(10 marks)

3. Write short notes on the following:

3A. Facilitated diffusion.

3B. ABO system of blood grouping.

3C. Stages of deglutition.

3D. Functions of cerebrospinal fluid.

3E. Baroreceptor role in regulation of blood pressure.

3F. Oxygen transport.

3G. Functions of kidney.

3H. Functions of placenta.

(5×8 = 40 marks)

4. Write brief answers to the following questions:

4A. List the functions of rods and cones.

4B. Give the cause for each of the following conditions:

    i)   Cushing's syndrome   ii)   Diabetes mellitus

4C. Mention two actions of estrogen.

4D. What is neutrophilia? Give one condition for it.

4E. Mention any two sensations carried by the dorsal column tract.

4F. Define hypoxia. Give one cause for it.

4G. Define blood pressure. Give its normal value.

4H. Enumerate the functions of liver.

4I. Define glomerular filtration rate. Give its normal value.

4J. Name the muscle proteins that have a role in contraction.

(2×10 = 20 marks)

✵✵✵✵✵

MANIPAL UNIVERSITY

FIRST YEAR B.P.T./B.O.T/ B.Sc. M.L.T./ B.Sc. N.M.T./ B.Sc. R.T./ B.Sc. M.I.T./ B.Sc.C.V.T

DEGREE EXAMINATION – JUNE 2010

SUBJECT: BIOCHEMISTRY
(NEW REGULATIONS)

Friday, June 11, 2010

Time: 10.00-11.30 Hours
Max. Marks: 40

1. With the help of graphs, explain the effect of competitive and non competitive inhibitors on enzyme activity.

(4 marks)

2. Classify lipids giving one example for each class.

(3 marks)

3. Tabulate THREE similarities and THREE differences between starch and glycogen.

(3 marks)

4. With the help of schematic diagram, explain the biochemical changes taking place in a patient with lactose intolerance after the intake of milk.

(4 marks)

5. Explain with reactions, the process of glycolysis.

(7 marks)

6. Write short notes on the importance of dietary fibers.

(3 marks)

7. Explain the process of protein digestion in the stomach.

(3 marks)

8. List four similarities and four differences between marasmus and kwashiorkor.

(4 marks)

9. Write the reactions of the urea cycle.

(5 marks)

10. Describe the Watson and Crick model of DNA.

(4 marks)

MANIPAL UNIVERSITY

FIRST YEAR B.Sc. N.M.T. DEGREE EXAMINATION – JUNE 2010

SUBJECT: COMPUTERS AND MATHEMATICS

Monday, June 14, 2010

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.   Write short note on Floppy diskette.

2.   What is the corrected kidney counts if:

2A. the total counts obtained from the left and right kidney ROI is 2914 and 2790 respectively.

2B. the number of pixels in the left and right kidney ROI is 84 and 82 respectively.

2C. the average background count per pixel for both the ROI is 20.

3.   Write a short note on BUS.

4.   Write a brief note on Networking.

5.   Convert the following:

5A. $(312)_{10}$

5B. $(1010)_2$

6.   What matrix size would you choose for a first pass angiography if the system resolution and field of view of the gamma camera is 10mm and 40cms respectively?

7.   Apply a 3 point box-car filter on the following data to smoothen the noisy curve.

Time (mins)	Original Curve (kcts)
5	200
10	850
15	1750
20	650

8.   Define the following terms:

8A. Pixel

8B. Gamma Camera Interface

SECTION – B: MATHEMATICS: 40 MARKS

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

9A. Define radian and convert $25°$, $35°$ to radian and $(¾)^c$, $(2/5)^c$ to degree.

9B. Prove that: $\log 81/8 - 2 \log 3/2 + 3 \log 2/3 + \log ¾ = 0$.

$(2+3 = 5 \text{ marks})$

10A. Define one-one function, onto function, even function and odd function.

10B. State and prove the Lagrange's Mean Value Theorem.

$(2+3 = 5 \text{ marks})$

11A. Show that $(\tan \theta + \cot \theta)^2 = \sec^2 \theta + \text{cosec}^2 \theta$.

11B. Prove that l is the length of an arc of a circle of radius r, subtending an angle θ^c at the centre, then $l = r\theta$.

$(2+3 = 5 \text{ marks})$

12A. Solve: $\underset{x \to \infty}{\text{Lt.}} \dfrac{(3x + 1)(2x + 4)}{(x + 1)(x + 7)}$

12B. Solve simultaneous equations: $3x + 2y - 1 = 0$; $x - y - 2 = 0$.

$(2+3 = 5 \text{ marks})$

13A. Evaluate: $\int_1^2 (x^2 + 1) \, dx$.

13B. Form differential equation by eliminating the arbitrary constant 'a' : $ay^2 = x^3$

$(2+3 = 5 \text{ marks})$

14A. The radius of a right circular cylinder is 7 cm. If the height of the cylinder is 10 cm. Calculate the curved surface area.

14B. Evaluate $\int x \cos^2 x \, dx$.

$(2+3 = 5 \text{ marks})$

15. 600mCi of I- 131 calibrated on Monday 12 noon, two patients are treated on the same day with 100 mCi dose each. On Saturday 10 a.m. how much activity available for treating the other patients. ($t_{½} = 8$ days)

(5 marks)

16A. Define union set and power set with one example each.

16B. Solve the equation $x^2 - 5x - 14 = 0$ by completing the square method.

$(2+3 = 5 \text{ marks})$

17A. Find derivative of : $x^2 - 3x + 2$ with respect to x.

17B. Evaluate $\int (x^2 - 2x + 5)^5 (x - 1) \, dx$.

$(2+3 = 5 \text{ marks})$

〄〄〄〄〄