Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR B.Sc. M.L.T./ B.Sc. N.M.T./ B.Sc. R.T./ B.Sc. M.I.T. DEGREE EXAMINATION – JUNE 2008

SUBJECT: ANATOMY

Monday, June 09, 2008

Time: 1½ Hrs. Max. Marks: 40

- **Answer all the questions.**
- **Draw neat labeled diagram wherever necessary.**

1. Classify the joints giving examples to each variety. Discuss the structure of a typical synovial joint.

(8 marks)

2. Name the fissures and lobes of the right lung. Name the structures related to the mediastinal surface of right lung.

(2+6 = 8 marks)

3. Answer briefly on:

3A. Multipalar neuron

3B. Trachea

3C. Interior of the right ventricle

3D. Stomach

3E. Spleen

3F. Uterus

3G. Functional areas of cerebrum

3H. Right kidney

(3×8 = 24 marks)

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FIRST YEAR B.P.T./B.O.T./B.Sc.M.L.T./B.Sc.N.M.T/B.Sc.R.T.T. DEGREE EXAMINATION – JUNE 2008

SUBJECT: PHYSIOLOGY

Tuesday, June 10, 2008

Time available: 3 Hours. Max. Marks: 80

1. Essay:

1A. Describe the origin and conduction of impulse in the human heart. Relate these events to waves of ECG.

1B. Draw labeled diagram showing the origin, course and termination of the corticospinal pathway. Mention three characteristic features of damage to this pathway.

(10+(7+3) = 20 marks)

2. Write short notes on the following:

2A. Cerebrospinal fluid.

2B. Neuromuscular junction.

2C. Functions of skin.

2D. Carbon dioxide transport in blood.

2E. Types of transport mechanisms across cell membrane.

2F. Composition of blood.

2G. Salivary secretion-composition and regulation.

2H. Ovarian hormones.

(5×8 = 40 marks)

3. Write brief answers to the following:

3A. List any four functions kidney.

3B. Define ovulation. Mention two methods to detect the time of ovulation.

3C. Name four hormones that increase plasma glucose level.

3D. List two adverse effects of mismatched blood transfusion.

3E. Define sensory receptor. List two properties of sensory receptor.

3F. What is hemophilia?

3G. List two functions of middle ear.

3H. Draw a diagram of the motor unit.

3I. Mention two causes of tachycardia.

3J. Define the following:

i) Hypoxia ii) Apnea

(2×10 = 20 marks)

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SUBJECT: BIOCHEMISTRY
(NEW REGULATIONS)

Wednesday, June 11, 2008

Time available: 1½ Hours | Max. Marks: 40

Answer ALL questions.

1. Classify polysaccharides. Give TWO examples for each with their functions.

(4 marks)

2. Write the reactions of the citric acid cycle. Add a note on its energetics.

(8 marks)

3. Mention TWO physiologically important compounds each derived from glycine, tyrosine, histidine and tryptophan.

(4 marks)

4. Give the RDA, sources, biochemical functions and disorders for Vitamin A.

(6 marks)

5. Give the normal serum level and TWO conditions in which they are altered for glucose and protein.

(3 marks)

6. Write the reactions involved in the oxidation of palmitic acid.

(6 marks)

7. What is the diagnostic importance of serum creatine kinase and alanine transaminase?

(3 marks)

8. What is biological value of a protein? Mention protein sources with high biological value.

(2 marks)

9. Mention the causes for lactose intolerance. Describe the clinical features and biochemical changes occurring after the intake of milk in these patients.

(4 marks)

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FIRST YEAR B.Sc. N.M.T. DEGREE EXAMINATION – JUNE 2008

SUBJECT: COMPUTERS AND MATHEMATICS

Thursday, June 12, 2008

Time: 3 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 on the classification of computers.

2. Write a short note on pixel depth.

3. Calculate the left ventricular ejection fraction (LVEF) using the following parameters:

ROI	No: of Pixels	Total Counts
ED	800	202000
ES	400	93000
Bkg	20	9500

4. Write a short note on Image addition and image subtraction.

5. Convert the following:

5A. $(111)_2$

5B. $(186)_{10}$

6. Apply a 9 point filter of (4, 2, 1) weightage on the following image matrix.

1	2	1	2
3	8	4	7
2	4	3	1

7. Write on the following:

7A. Seek time

7B. Latency Period

8. Define the following terms:

8A. Software

8B. Pixel

8C. Frame rate

8D. Analogue Number

(5×8 = 40 marks

SECTION – B: MATHEMATICS: 40 MARKS

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

9A. Evaluate $\int e^{3x} dx$

9B. Write the condition for the angle of intersection of two curves.

9C. Define one-one function and onto function.

9D. Write the equation of normal and tangent.

9E. Solve: $\lim_{x \to a} \frac{x^{3/2} - a^{3/2}}{x - a}$.

(1×5 = 5 marks)

10A. A circular ring of radius 6cm is reshaped into an arc of a circle of radius 48cm. What will be the central angle?

10B. If $x = a\cos\theta + b\sin\theta$, $y = a\sin\theta - b\cos\theta$, prove that $x^2+y^2 = a^2+b^2$.

(2+3 = 5 marks)

11A. Find the value of $\frac{\sin 135^\circ - \cos 120^\circ}{\cos 135^\circ + \sin 480^\circ}$

11B. If set A = {x/x ∈ N (N is Natural No.) and x ≤ 6}
B = {x/x is an odd integer and 0 < x < 10}, Find A×B, A∩B, A∪B, A–B and draw Venn diagram.

(2+3 = 5 marks)

12A. Solve the equation $2x^2 - 13x + 15 = 0$ by using the quadratic formula.

12B. Derive cos x by first principle.

(2+3 = 5 marks)

13A. Differentiate with respect to x: $4x^2 - 3\cos x + e^x + 2\sin x$.

13B. Solve the simultaneous equation $x + 2y = 17$, $2x - y - 1 = 0$.

(2+3 = 5 marks)

14A. Find the slope of the tangent $\sqrt{x} + \sqrt{y} = 5$ *at* $(4, 9)$ and write the equation of tangent.

14B. State and prove the Rolle's Theorem.

(2+3 = 5 marks)

15A. Evaluate $\int_0^1 (2x^3 + 3x^2 - 4x)dx$.

15B. Prove that $\log_3 4 . \log_4 5 . \log_5 6 . \log_6 7 . \log_7 8 . \log_8 9 = 2$.

(2+3 = 5 marks)

16. Evaluate $\int \frac{2x+1}{x^2 + 3x + 2} dx$.

(5 marks)

17. Derive the exponential law for radioactive decay.

(5 marks)

18. I – 131 is calibrated on Tuesday at 12 noon is 200 mCi, find the activity on previous day 12 noon. ($t_{½}$ = 8 hours)

(5 marks)