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 2007

SUBJECT: ANATOMY

Thursday, June 07, 2007

Time: 1½ Hrs. Max. Marks: 40

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

1. Give a brief account of the different parts of small intestine. Add a note on pancreas.

(4+4 = 8 marks)

2. Discuss the uterus under

2A. Normal axis

2B. Parts and relations

2C. Supports

(2+4+2 = 8 marks)

3. Answer briefly on:

3A. Vocal cord

3B. Left coronary artery

3C. Normal constrictions of ureter

3D. Position and external features of kidney

3E. External features of the right lung

3F. Neuron

3G. Microscopic structure of suprarenal gland

3H. Ascending tracts of the spinal cord and their functions.

(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 2007

SUBJECT: PHYSIOLOGY

Friday, June 08, 2007

Time available: 3 Hours. Max. Marks: 80

1A. Describe the mechanism of contraction in skeletal muscle.

1B. Describe the functions of the following structures of brain:

i. Hypothalamus ii. Cerebellum

(10+(5+5 = 20 marks)

2. Write short notes on each of the following:

2A. Lung volumes and capacities.

2B. Regulation of cardiac output in exercise.

2C. Digestive enzymes that act on carbohydrates in diet.

2D. Visual pathway.

2E. Nerve action potential.

2F. Functions of platelets.

2G. Lactation.

2H. Functions of renal tubules.

(5×8 = 40 marks)

3. Write brief answers to the following:

3A. Mention two conditions leading to bradycardia.

3B. Give the location of respiratory centers. Mention their functions.

3C. Mention two functions of smooth muscles.

3D. Name the receptors for

i. Colour vision ii. Hearing

3E. Mention two components of gastric juice.

3F. Mention the location and function of vestibular apparatus.

3G. Mention two functions of plasma proteins.

3H. Name any two hormones of adrenal cortex.

3I. Mention the normal body temperature and method of measuring it.

3J. Mention two factors affecting spermatogenesis.

(2×10 = 20 marks)

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FIRST YEAR B. Sc. N.M.T./B. Sc. M.I.T/B.Sc. R.T. DEGREE EXAMINATION – JUNE 2007

SUBJECT: BIOCHEMISTRY

Saturday, June 09, 2007

Time: 1½ Hrs. Max. Marks: 40

✍ Answer **ALL** the questions.

1. Define glycolysis. Write the reactions of aerobic glycolysis mentioning the enzymes and coenzymes at each step.

(1+7 = 8 marks)

2. Define the term carbohydrates. Classify carbohydrates and give two examples for each class.

(5 marks)

3. Name lipoproteins and write one function each of the lipoproteins.

(4 marks)

4. Define BMR and list the factors affecting it.

(4 marks)

5. With the help of a graph explain the effect of substrate concentration and temperature on enzyme activity.

(6 marks)

6. Discuss urea cycle under the following headings:

6A. Site and subcellular site.

6B. Reactions.

(1+5 = 6 marks)

7. What are essential fatty acids? Give **TWO** examples.

(2 marks)

8. Write the coenzyme form of thiamine and pyridoxine. Write two reactions each in which coenzyme form of the above vitamin takes part.

(5 marks)

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FIRST YEAR B.Sc. N.M.T. DEGREE EXAMINATION – JUNE 2007

SUBJECT: COMPUTERS AND MATHEMATICS

Monday, June 11, 2007

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. Each question carries 5 marks.**

1. With the help of a diagram give the working principle of a computer.

2. Write on the input and output devices of the computer.

3. Write a short note on Networking of Imaging Computers.

4. How would you reduce the noise in a curve?

5. Define the following terms:

5A. Matrix size.

5B. Pixel depth

5C. Bit depth

5D. BUS.

6. Write on matrix resolution.

7. Write a short note on Analogue to Digital Converter.

8. Convert the Following:

8A. $(25,300)_{10} = (\ )_2$

8B. $(1601)_{10} = (\ )_2$

8C. $(10011)_2 = (\ )_{10}$

8D. $(111111)_2 = (\ )_{10}$

(5×8 = 40 marks)

SECTION – B: MATHEMATICS: 40 MARKS

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

9A. Find the value of $\sin(\pi/3).\cos(\pi/6)$.

9B. Define constant function and give one example.

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

9D. Write the angle of intersection of two curves.

9E. Write the expression of decay constant.

(1×5 = 5 marks)

10A. A circular sector has perimeter 250 cm and central angle $(2\pi/3)$ radian. Find the area of the sector.

10B. Prove that $\sin^3 A + \cos^3 A = (\sin A + \cos A)(1 - \sin A.\cos A)$.

(2+3 = 5 marks)

11A. If $\cos\alpha = 5/13$, $270° < \alpha > 360°$ find the value of $\frac{2\sin\alpha - 3\cos\alpha}{4\sin\alpha + 9\cos\alpha}$.

11B. Solve the affected quadratic equation by completing the square.

$x^2 + 105 = 26x$

(2+3 = 5 marks)

12A. Prove that $\log(x/y) + \log(y/z) + \log(z/x) = 0$.

12B. Solve differential equation $dy/dx + xy = xy^2$.

(2+3 = 5 marks)

13A. Solve: $\underset{x\to 1}{Lt} \frac{x^2 - 4x + 3}{x^2 - 5x + 4}$.

13B. Verify Lagrange's Mean value Theorem for the function $f(x) = 1 - 3x$, Point c between (1, 4).

(2+3 = 5 marks)

14A. Differentiate $y = \log(\tan e^x)$ with respect to x.

14B. Evaluate $\int \sin^3 x.\cos x\, dx$

(2+3 = 5 marks)

15A. Solve: $2[8 \div (6-2) - \{(2-5)*6\}]$

15B. The radius of hemisphere is 3.5 cm. Find the total surface area and volume of the hemisphere.

(2+3 = 5 marks)

16A. If set $A = \{x/x \in N$ (N is Natural No.) and $x \le 6\}$.

$B = \{x/x$ is an odd integer and $0<x<10\}$, find $A \times B$, $A \cap B$, $A \cup B$.

16B. Evaluate: $\int (x^2 - 2x + 3)^5 (x-1)dx$.

(2+3 = 5 marks)

17. Derive the exponential law for radioactive decay.

(5 marks)

18. 100 mCi of Tc^{99m} calibrated at 9 a.m. Find the activity at 3 p.m. on the same day ($t_{1/2}$ = 6 hours).

(5 marks)