Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR B.Sc. M.R.T. DEGREE EXAMINATION – MAY/JUNE 2012

SUBJECT: BASIC SCIENCE: ANATOMY

Tuesday, May 29, 2012

Time: 10:00-13:00 Hrs. Max. Marks: 80

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

1A. Describe the different types of Muscular tissues.

1B. Describe in detail the right atrium.

(10+10 = 20 marks)

2A. Describe the bronchopulmonary segments and root of the lungs in detail.

2B. List the parts of urinary system. Describe the urinary bladder.

(10+10 = 20 marks)

3. Write briefly on:

3A. Corpus callosum

3B. Pancreas

3C. Diaphragm

3D. Male urethra

3E Tympanic membrane

(5×5 = 25 marks)

4. Write short note on:

4A. Cartilages

4B. Caecum

4C. Thick skin

4D. Ovary

4E. Retina

(3×5 = 15 marks)

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MANIPAL UNIVERSITY

FIRST YEAR B.Sc. M.R.T. DEGREE EXAMINATION – MAY/JUNE 2012

SUBJECT: BASIC SCIENEC: PHYSIOLOGY

Thursday, May 31, 2012

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

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

1. Essay questions:

1A. Draw a labeled diagram of the nerve action potential. Mention the ionic basis for the different phases.

1B. In the form of a flow chart write the sequence of events occurring during the excitation contraction on coupling of a skeletal muscle.

1C. Describe the changes seen in the ovary during menstrual cycle.

1D. Explain the various types of movements in the small intestine.

(5×4 = 20 marks)

2. Write short answers for the following:

2A. What are anticoagulants? Mention any two anticoagulants.

2B. Mention any two functions of basal ganglia.

2C. Write any two properties of cardiac muscle.

2D. Define cardiac output and give the normal value.

2E. Define alveolar ventilation and pulmonary ventilation.

2F. Name the hormones of posterior pituitary. Mention one action of any one hormone

2G. Mention the cause and two features of clinical features of diabetes mellitus.

2H. Define GFR and mention the normal value.

2I. Draw a diagram to depict a reflex arc.

2J. List any two common errors of refraction. Describe any one.

(2×10 = 20 marks)

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MANIPAL UNIVERSITY

FIRST YEAR B.Sc. M.R.T. DEGREE EXAMINATION – MAY/JUNE 2012

SUBJECT: RADIOBIOLOGY

(NEW REGULATION)

Saturday, June 02, 2012

Time: 10:00-11:30 Hrs. Max. Marks: 40

1. Answer the following questions:

1A. Write a short note on the effect of radiation exposure on central nervous system (CNS).

1B. Write note on the effects of radiation on human fetus.

1C. Briefly discuss about the mammalian cell survival curve.

1D. Write short note on compton effect.

(5×4 = 20 marks)

2. Answer the following questions:

2A. Discuss the outcome of the interaction of radiation with biomolecules.

2B. Describe the interaction radiation with water and the associated chain reaction.

(10×2 = 20 marks)

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MANIPAL UNIVERSITY

FIRST YEAR B.Sc. M.R.T. DEGREE EXAMINATION – MAY/JUNE 2012

SUBJECT: BASIC AND APPLIED MATHEMATICS

Tuesday, June 05, 2012

Time: 10:00-13:00 Hrs. Max. Marks: 80

Answer any FIVE full questions.

1A. Define Cartesian product of two sets A and B. If A= $\{1,2,3\}$, find A×A.

Is $A \times B = B \times A$ in general?

1B. Find: i) $\int \left(e^x + \frac{1}{x}\right) dx$ ii) $\int (x + \frac{1}{x})^2 \, dx$

1C. Solve the system of equations:

$x+3y+6z = 2$

$3x - y +4z = 9$

$x -4y +2z = 7$

(4+6+6 = 16 marks)

2A. Curved surface area of a right circular cylinder is 4.4 cm^2. If the radius of the base of the cylinder is 0.7 cm, find its height.

2B. If $A = \{1,3,5\}, B = \{2,3,5\}$ find

$(A \cap B) \times (A - B)$, $A \times (A - B)$, $(A \Delta B) \times (A \cap B)$.

2C. Evaluate: $(i) \lim_{x \to (-2)} \frac{x^5+32}{x+2}$ (ii) $\lim_{x \to 1} \frac{x^5-1}{x-1}$

(4+6+6 = 16 marks)

3A. Find the total surface area of a cone, if its slant height is 21 cm and diameter of its base is 24 cm.

3B. Find: i) $\int x(x^2+1)^6 \, dx$ ii) $\sqrt{(6-4x)\,dx}$

3C. State Cauchy's mean value theorem and verify it for

$f(x) = x^3$ and $g(x) = x^2$ in $[1,2]$

(4+6+6 = 16 marks)

4A. Differentiate w.r.to x. i) $\frac{x e^x}{(\log x + 7)}$ ii) $x^3 e^{5x^2+8}$.

4B. Define a null (void) set and subset, give examples. If

$U = \{1,2,3,4,5,6\}$, $A = \{3,4,5\}$ and $B = \{1,3\}$, find

(i) Power set of A (ii) $n(A \cup B) - n(A \cap B)$ (iii) $(A^c \cap B^c)^c$

4C. Find whether Rolle's Theorem is valid for the function $f(x) = 2x^3+x^2-4x-2$ in $[-\sqrt{2}, \sqrt{2}]$. If so find c

(4+6+6 = 16 marks)

5A. Find the volume of the right circular cone with radius 6 cm and height 7 cm.

5B. Give the domains of the following functions

i) $f(x) = \sqrt{x - \frac{x}{1-x}}$ ii) $f(x) = \frac{x+3}{\sqrt{(x^2-5x+4)}}$

5C. Solve the equations: i) $2x^2+ 3x + 2 = 4$

ii) $3x^2- 6x+7=0$

(4+6+6 = 16 marks)

6A. State and prove Lagrange's Mean value theorem.

6B. Solve: i) $\frac{d^2y}{dx^2} + 6\frac{dy}{dx} + 9y = 0$ ii) $(D^2-2D+4)y=0$ where $D = \frac{d}{dx}$

6C. Find the area of the sector of a circle with radius 4 cm and angle of the sector is 30^0. Also find the area of the corresponding major sector.

(4+6+6 = 16 marks)

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MANIPAL UNIVERSITY

FIRST YEAR B.Sc. M.R.T. DEGREE EXAMINATION – MAY/JUNE 2012

SUBJECT: FUNDAMENTALS OF COMPUTERS AND COMPUTER APPLICATIONS (NEW REGULATION)

Thursday, June 07, 2012

Time: 10:00-11:30 Hrs. Max. Marks: 40

Answer any FOUR full questions.

1A. Explain the seven characteristics of computers.

1B. Categorize computers based on principle of working.

(7+3 = 10 marks)

2A. What is the relationship between bit, byte, KB, MB, GB and TB?

2B. Write a brief note on ROM.

2C. Explain PROM, EPROM, EEPROM memory.

(3+4+3 = 10 marks)

3A. Explain about stepwise usage of *Find and Replace* facility in Microsoft word.

3B. Write the short-cuts used for making any text –Bold, italic, underline, increase font size, decrease font size and superscript.

(7+3 = 10 marks)

4. Consider the following student data in Excel sheet and write the steps to perform the action specified.

A	B	C	D	E	F	G
1	Regnum	Mark1	Mark2	Mark3	Total	Average
2	100	60	50	80		
3	101					
..	..	..	..	..		
10	110	80	30	50		

i) Write the steps to fill column **F** and **G** using formula.

ii) Write the formula to Count the number of students who scored more than 60 in Mark1, Mark2, Mark3 and display the result in the cells C11, D11, E11.

iii) Write the formula to find highest total marks and highest average in cells F11 and G11 respectively.

(5+3+2 = 10 marks)

5A. In relational Databases like MS Access, explain Primary key and foreign key concept with example.

5B. Explain any five tags used in HTML along with syntax and example.

(5+5 = 10 marks)