

**Manipal College of Pharmaceutical Sciences**  
**Manipal University, Manipal**  
**First year B. Pharm- Annual Examinations-April/May 2011**  
**Subject: MAT 101. Mathematics**

Date: 29-04-2011

Time: 10.00 am – 01.00 pm.

Max. Marks: 50

Answer All the questions. Use log tables If required.

**I. Long Essays. 3×8 = 24 marks**

1A. Solve by the matrix method

$$x + y - 2z = 0, \quad 2x - y + z = 2, \quad x + 2y - z = 2 \quad (4 \text{ marks})$$

1B. If  $A = \begin{pmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{pmatrix}$ , find the characteristic roots of A. (4 marks)

2A. Find the coordinates of the circumcentre of the triangle ABC; whose vertices A, B and C are (4, 6), (0, 4) and (6, 2) respectively. (4 marks)

2B. Find the equation of the circle passing through the points (1,1), (-2,2), (-6,0). (4 marks)

3A. Evaluate:  $\lim_{x \rightarrow 0} \left[ \frac{(1+x)^3 - (1-x)^3}{x+x^3} \right]$

3B. Prove that  $\int_0^a f(x) dx = \int_0^a f(a-x) dx$  (4 + 4 = 8 marks)

**II. Short Notes. 4×4 =16 marks**

4. Differentiate  $y = \frac{(x+2)\operatorname{cosec} x}{x^2+1}$  with respect to 'x'. (4 marks)

5A. If  $f(x) = \begin{cases} \frac{x^2-256}{x-4} & \text{if } x \neq 4 \\ k & \text{if } x = 4 \end{cases}$  find k, given that f(x) is continuous at x = 4.

5B. If  $y = \frac{x^2 - x\sqrt{2} + 1}{x^2 + x\sqrt{2} + 1}$  find  $\frac{dy}{dx}$  (2 + 2 = 4 marks)

6. Solve for  $x, y, z$ : 
$$\begin{bmatrix} x & 2 & -3 \\ 5 & y & 2 \\ 1 & -1 & z \end{bmatrix} \begin{bmatrix} 3 & -1 & 2 \\ 4 & 2 & 5 \\ 2 & 0 & 3 \end{bmatrix} = \begin{bmatrix} 5 & 3 & 3 \\ 19 & -5 & 16 \\ 1 & -3 & 0 \end{bmatrix}$$

(4 marks)

7. Evaluate  $\int_0^{\pi/2} \frac{a \sin x + b \cos x}{\sin x + \cos x} dx$  (4 marks)

### III. Short Answers. $5 \times 2 = 10$ marks

8. Define symmetric and skew-symmetric matrices.

(2 marks)

9. Which point on the  $y$ -axis is equidistant from the points  $(12, 3)$  and  $(-5, 10)$ .

(2 marks)

10. Define Unit matrix and give an example for the same.

(2 marks)

11. From the differential equation  $\sin^{-1} x + \sin^{-1} y = c$  where  $c$  is a parameter

(2 marks)

12. Evaluate:  $\int \frac{1}{1-5x} dx$

(2 marks)

**Manipal College of Pharmaceutical Sciences**  
**Manipal University, Manipal**  
**First year B. Pharm- Annual Examinations-April/May 2011**  
**Subject: PCO 101. Biology**

**Date: 29-04-2011**

**Time: 10.00 am – 01.00 pm.**

**Max. Marks: 50**

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**Answer All the questions. Draw neat labelled diagrams wherever necessary.**

**I. Long Essays. (3×8 = 24 marks)**

1. Define fruit. How they are classified? Discuss the various types of the fruits with diagrams.
2. Explain arial and sub arial modification s of stem with one example of each.
3. Give a detailed account on apex and bases of leaves.

**II. Short Essays. (4×4 = 16 marks)**

4. Give the mechanism of pulmonary respiration of frog with neat diagrams.
5. Write a note on nature of food of frog and its digestion.
6. Bring out the differences between meristematic and permanent tissues.
7. Give an account of typical parts of the flower with neat labeled diagram.

**III. Short Notes. (5×2 = 10 marks)**

8. Hibernation.
9. Endoplasmic reticulum.
10. Open collateral and closed collateral vascular bundles.
11. Fissipeda and pinnipeda.
12. Fluid tissue.

## MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2011

SUBJECT: ANATOMY AND PHYSIOLOGY (APH 102)  
(CREDIT BASED SYSTEM)

Monday, May 02, 2011

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Long essay:**

1. Draw a neat, labeled picture of the respiratory system. Describe the chemical and neural mechanisms that regulate respiration. How does respiratory distress syndrome occur?  
(2+4+2 = 8 marks)
2. Illustrate the motor neuron pathways in ANS with a neat diagram. Discuss the physiological effects of the autonomic nervous system. What is ataxia?  
(2+4+2 = 8 marks)
3. With the help of a neat labeled diagram, discuss the anatomy of the eyeball. Explain the processing of visual signals in retina. How does accommodation occur?  
(3+3+2 = 8 marks)

**4. Short essay:**

- 4A. Show the steps involved in blood coagulation.
- 4B. Briefly explain the process of spermatogenesis in the testes.
- 4C. Write a note on the synthesis of thyroid hormones.
- 4D. Explain any four transport processes across the plasma membrane.  
(4×4 = 16 marks)

**5. Short answers:**

- 5A. Mention any four functions of the kidneys.
- 5B. Enumerate the bones of the cranium.
- 5C. Dermatome and its clinical significance.
- 5D. Define: i) hypertension ii) cardiac arrhythmia
- 5E. Describe the biliary composition.  
(2×5 = 10 marks)



## MANIPAL UNIVERSITY

**FIRST YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2011**

**SUBJECT: BIOCHEMISTRY (PBT 103)  
(CREDIT BASED SYSTEM)**

Wednesday, May 04, 2011

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer all the questions. Draw a neat labeled diagrams wherever necessary.**

✍ **Long Essays:**

1. Identify the catabolic and anabolic pathways in carbohydrate metabolism and explain, with examples, why is citric acid cycle called amphibolic? Add a note on generation of ATP and regulation of the same.
2. Explain in detail  $\beta$ -oxidation of fatty acids with respect to
  - a) Activation
  - b) Carnitine shuttle system
  - c)  $\beta$ - Oxidation proper
3. With the help of neat labeled diagram, explain the translation process in eukaryotic organisms.

(8×3 = 24 marks)

**4. Short Essays:**

- 4A. Explain the chemiosmotic hypothesis of oxidative phosphorylation.
- 4B. Name bile pigments. Give reactions involved in the formation of stercobilin from HEME.
- 4C. Write short notes on the biochemical manifestations, enzyme defect, diagnosis and treatment of alkaptonuria.
- 4D. Identify the parent nucleotide in the biological synthesis of purine nucleotides. Explain the salvage pathway for the formation of the same.

(4×4 = 16 marks)

**5. Short Answers:**

- 5A. Mention the functions of Golgi bodies.
- 5B. Differentiate between exergonic and endergonic reactions with an example.
- 5C. Write a note on any two diseases associated with Vitamin A deficiency.
- 5D. Define isoenzymes.
- 5E. Write a short note on GABA shunt.

(2×5 = 10 marks)



**MANIPAL UNIVERSITY****FIRST YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2011****SUBJECT: PHARMACEUTICAL INORGANIC CHEMISTRY (PCH 104)  
(CREDIT BASED SYSTEM)**

Friday, May 06, 2011

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

**Long essays:**

1A. What are the factors that influence the design of limit test?

1B. Explain the limit test for Lead IP 96.

(4+4 = 8 marks)

2A. Explain the method of preparation of Magnesium hydroxide. Enlist the drawbacks of commonly used antacids.

2B. Give the preparation and uses of Zinc undecenoate and Bismuth subcarbonate.

(4+4 = 8 marks)

3A. What are cements and fillers? Mention their applications.

3B. Explain the assay of Zinc oxide.

3C. Discuss the assay of Oxygen IP 96.

(2+2+4 = 8 marks)

**4. Short essays:**

4A. Give the preparation and assay method for Ferrous ammonium citrate

4B. Give the reactions for the preparation of following pharmaceuticals:

i. Sodium acid phosphate

ii. Tribasic calcium phosphate

iii. Potassium citrate

iv. Sodium potassium tartrate

4C. Write the method of synthesis, assay and uses of Sodium thiosulphate.

4D. Give the preparation, assay of Sodium lactate. Write the uses.

(4×4 = 16 marks)

**5. Short answers:**

5A. Enlist any four diagnostic applications of radioisotopes

5B. Explain the term “does” and “category” by giving examples.

5C. What is the chemical structure of Zinc stearate and Ferrous fumarate?

5D. Classify gastro-intestinal agents with example.

5E. What is ORS?

(2×5 = 10 marks)





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**Manipal College of Pharmaceutical Sciences**  
**Manipal University, Manipal**  
**First year B. Pharm- Annual Examinations-April/May 2011**  
**Subject: PCE 106 Computer Science and Statistics**

Date: 30-04-2011

Time: 10.00 am – 01.00 pm.

Max. Marks: 50

Answer All the questions. Use log tables If required.**I. Long Essays. 3×8 = 24 marks**

1. Find the co-efficient of correlation between age of mother (x) and number of children (y) from the following data

$\begin{array}{l} x \downarrow \\ y \rightarrow \end{array}$	0	1	2	3	4	5
20-25	3	4	2	-	-	-
25-30	4	8	8	2	-	-
30-35	-	1	7	10	2	4
35-40	1	-	3	8	4	5
40-45	1	3	6	2	1	2
45-50	8	9	5	3	2	7

- 2A. Estimate the regression equations for the following data. (4 marks)

X	183	187	194	176	184	198	196
Y	31	30	27	31	32	29	25

- 2B. Explain the various views in MS-PowerPoint. (4 marks)

3. Explain the features of MS-Word.

**II. Short Notes. 4×4 =16 marks**

4. For the following data, who is the average scorer and which two judges are more consistent.

Contestant	1	2	3	4	5	6	7	8	9	10
Judge I	8	6	7	3	9	2	1	4	5	10
Judge II	3	7	5	4	10	6	2	1	9	8

5. Explain how to find mode by grouping method with an example.

6. Write a short note on generation of computers.



7. Write the HTML code to get the following output;

Info Hardware Systems

List of items provided:

- a) 2 GB RAM - 04 Nos.
- b) 4 GB USB - 08 Nos.

**III. Short Answers. 5×2 =10 marks**

8. Find the median graphically for the following distribution.

CI	>20	>40	>60	>80	>100	>120	>140	>160
F	32	24	16	12	9	8	4	1

9. Represent the following by sector diagram;

Mother tongue	Hindi	Bengali	Telugu	Tamil	Kannada
%	48.5	8.22	7.8	9.34	3.89

10. Explain the icons available in windows desktop.

11. Explain any TWO mathematical functions in MS-Excel with examples.

12. Write a short notes on classification of computers.

**Manipal College of Pharmaceutical Sciences**  
**Manipal University, Manipal**  
**First year B. Pharm - Annual Examinations – April/May 2011**  
**Subject: Physics**

**Date: 29-04-2011**

**Time: 10.00 am – 01.00 pm**

**Max. Marks: 50**

**Answer all the questions. Use log tables IF required.**

**I. Long essay. (3 × 8 = 24 marks)**

1. [a] Explain the different stages of Carnot cycle with the help of a P-V diagram.  
[b] Derive  $v^2 = u^2 + 2as$ , from velocity-time graph.
2. [a] Based on Bohr's postulates, obtain an expression for the radius of the electron in the  $n^{\text{th}}$  orbit.  
[b] State and explain the law of triangle of forces and lami's theorem.
3. [a] Derive the relation  $n = \frac{\sin(A+D)/2}{\sin A/2}$ , where the symbols have their usual significance.  
[b] Obtain the equivalent resistance (with diagram) of three resistors connected in series.

**II. Short note. (4 × 4 = 16 marks)**

4. What is a capacitor? Explain the principle of a capacitor.
5. Define Brewster's angle. Show that the reflected and the refracted rays are perpendicular to each other when the angle of incidence is equal to the Brewster's angle.
6. A galvanometer with a resistance of  $50 \Omega$  and requires a current of  $0.5\text{mA}$  for full scale deflection. How would you convert it into a voltmeter of range  $0-30\text{V}$ ?
7. Calculate the efficiency of a Carnot's engine working between  $100^\circ\text{C}$  and  $400^\circ\text{C}$ . If it absorbs  $200$  joule per cycle from the source, Calculate the heat rejected to the sink in one cycle.

**III. Short answer. (5 × 2 = 10 marks)**

8. Write Sabine's formula for reverberation time, explain the terms.
9. Distinguish between scalar and vector quantities.
10. State the laws of refraction of light.
11. State and explain Kirchhoff's current law.
12. Mention any two applications of polaroids.