

**Manipal College of Pharmaceutical Sciences**  
**Manipal University, Manipal**  
**First year BPharm - Annual Examinations, May 2014**  
**Subject: MAT 101. Mathematics**

Date: 02-05-2014

Time: 10:00 am – 01:00 pm.

Max. Marks: 50

Answer ALL the questions. Use log tables If required.

**I. Long Essay Questions (3 × 8 marks = 24 marks)**

1A. Find the equation of the circle with centre (4, 6) and which touches the y axis. 4 marks

1B. Evaluate  $\lim_{x \rightarrow 1} \frac{x^2 - 5x + 4}{x^2 - 4x + 3}$ . 4 marks

2A. Prove that the function  $f(x) = \begin{cases} x + 3 & \text{when } x \leq 2 \\ 5 & \text{when } x = 2 \\ 3x - 1 & \text{when } x \geq 2 \end{cases}$  is continuous at  $x = 2$ . 4 marks

2B. Prove that  $\frac{d(x^n)}{dx} = nx^{n-1}$  by using first principle method. 4 marks

3A. Solve the following system of equations by using matrix method.

$$\begin{aligned} x + y + z &= 1 \\ 3x + 4y + 7z &= 14 \\ x - y + z &= 1 \end{aligned}$$

4 marks

3B. Verify Cayley-Hamilton theorem for the matrix  $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ . 4 marks

**II. Short Essay Questions (4 × 4 marks = 16 marks)**

4. Differentiate  $\sqrt{\frac{1 + \cos 2x}{\sin 2x}}$  with respect to x. 4 marks

5. Write the distance formula. Show that the points (-2, -1), (4, 0), (3, 3) and (-3, 2) are the vertices of the parallelogram. 4 marks

6. Evaluate  $\lim_{n \rightarrow \infty} \frac{n^2 + n + 1}{3n^2 + 2n - 1}$ . 4 marks

7. Integrate the following with respect to x: 2 + 2

i)  $\frac{\sec x}{\sec x - \tan x}$       ii)  $\frac{1}{x\sqrt{36-x^2}}$  marks

III. Short Answer Questions (5 × 2 marks = 10 marks)

8. Find  $\frac{dy}{dx}$  if  $y = x^3 - 3x + 7$ . 2 marks
9. Find the radius and centre of the circle  $3x^2 + 3y^2 + 9x - 12y + 19 = 0$ . 2 marks
10. What is characteristic equation of the matrix? 2 marks
11. Write the quotient rule of differentiation. 2 marks
12. Find the anti-derivative of  $\sqrt[3]{x^2}$ . 2 marks

“End of question paper”

**Manipal College of Pharmaceutical Sciences**  
**Manipal University, Manipal**  
**I Year BPharm–Annual Examination, May, 2014**

**Subject: PCO 101. Biology**

Date: 02-05-2014

Time: 10:00 am - 13:00 hrs

Max. Marks: 50

**Instructions: Answer ALL questions.**

**I. Long Essay Questions (3×8 marks = 24 marks)**

1. Differentiate Monocotyledons from Dicotyledons and Meristematic from Permanent tissues.
2. Explain the digestive system of frog with a note on physiology of digestion.
3. Describe the typical structure of a plant cell and mention various functions of its organelles

**II. Short Essay Questions(4×4 marks = 16 marks)**

4. Draw and label the parts of the heart of the frog with a brief note on its mechanism.
5. Sketch any two diagrams for different types of a) Leaf bases b) Leaf shapes c) Leaf margins d) Leaf apices.
6. Write the General characters of class Mammalia.
7. Give the distinguishing characters of the family Liliaceae.

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

8. Draw and label different parts of a typical flower.
9. Write short notes on frog's kidney.
10. Define root and label different parts of a taproot.
11. Hibernation and aestivation.
12. Reflex action.

**Manipal College of Pharmaceutical Sciences**  
**Manipal University, Manipal**  
**First Year BPharm – Annual Examinations, May 2014**

**Subject: PCE 106. Computer Science and Statistics**

Date: 03-05-2014

Time: 10:00 am - 01:00 noon

Max. Marks: 50

Instructions: Answer ALL questions.

**I. Long Essay Questions (3 × 8 marks = 24 marks)**

1. Discuss in detail the evolution of computer. 8 marks

2A. Explain the Central Processing Unit with a neat diagram. 4 marks

2B. Draw the histogram for the following table. 4 marks

Heights (in cm.)	140-155	145-150	150-155	155-160	160-165	165-170	170-175
No. of students	4	10	18	20	19	6	3

3A. Calculate the median. 4 marks

C.I	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9
Frequency	2	14	20	31	30	8

3B. Find the geometric mean for the following table. 4 marks

C.I	1.1-1.2	1.2-1.3	1.3-1.4	1.4-1.5
F	4	14	13	1

**II. Short Essay Questions (4 × 4 marks = 16 marks)**

4. Explain in brief the functions of the Operating System in Larger Systems. 4 marks

5. Write short notes on network topologies. 4 marks

6. Following is the distribution of wage of workers. Draw a histogram and find the mode of the distribution. 4 marks

Weekly Wages	200-400	400-450	450-500	500-600	600-700	700-800	800-900
No. of workers	40	85	160	280	110	60	10

7. Find the Arithmetic mean for the data given below. 4 marks

Marks	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of students	23	44	35	12	9	3	2

### III. Short Answer Questions (5 × 2 marks = 10 marks)

8. Explain TCP/IP. 2 marks
9. Differentiate between Compilers and Interpreters. 2 marks
10. Perform the following operations:  
(i)  $(110)_2 * (101)_2$  (ii) convert 27 to binary digit 1+1 marks
11. If the mean and standard deviation of a set of values are 12 cm. and 3 cm. respectively, find the co-efficient of variation. 2 marks
12. Find Range for 16, 18, 18, 16, 18, 20, 17, 19, 24 and 16. 2 marks

“End of question paper”

**MANIPAL UNIVERSITY****FIRST YEAR B. PHARM. DEGREE EXAMINATION – MAY 2014****SUBJECT: ANATOMY AND PHYSIOLOGY (APH 102)  
(CREDIT BASED SYSTEM)**

Tuesday, May 06, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions and draw a labeled diagram wherever necessary.**

✍ **Long Essays:**

1. What are the structural components of plasma membrane of a cell? Discuss the transport mechanisms across the plasma membrane with suitable examples.

(2+6 = 8 marks)

2. Enlist the blood components. Define PCV and ESR. Explain the methods to determine ESR and PCV. Discuss their clinical significance.

(2+1+3+2 = 8 marks)

3. With a labelled diagram, discuss the internal anatomy of heart. Explain the pulmonary and systemic circulation.

(5+3 = 8 marks)

4. **Short Essays:**

4A. Explain the parts of neuron with a diagram.

4B. Discuss the role any four hormones that regulate renal tubular reabsorption.

4C. Enlist the differences between somatic and autonomic nervous systems.

4D. Discuss the factors affecting oxygen-hemoglobin dissociation curve.

(4 marks×4 = 16 marks)

5. **Short Answers:**

5A. Enumerate the layers of stomach and small intestine.

5B. List the hormones secreted by ovary. Mention the function of any one hormone.

5C. Classify the methods of contraception, giving suitable examples.

5D. Enlist the layers of eyeball. Mention the role of any one layer.

5E. Write any four functions of skeletal system.

(2 marks×5 = 10 marks)





## MANIPAL UNIVERSITY

## FIRST YEAR B. PHARM. DEGREE EXAMINATION – MAY 2014

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

Thursday, May 08, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ Answer ALL the questions.

✍ Draw neat labeled diagrams wherever necessary.

✍ Long Essays:

1. Differentiate aerobic Glycolysis from anaerobic Glycolysis. Mention the enzymes involved in mediating various reactions in glycolytic pathway. Explain its regulation.
2. Explain in detail the following abnormalities of lipid metabolism:
  - i) Atherosclerosis
  - ii) Fatty liver
3. With the help of a neat diagram, explain the process of DNA replication in prokaryotes.  
(8 marks×3 = 24 marks)

4. Short Essays:

- 4A. Explain the mechanisms of enzyme action.
- 4B. Explain the steps involved in the biosynthesis of HEME.
- 4C. Enlist the various disorders associated with phenylalanine metabolism. Add a note on the enzyme defect, clinical manifestations, diagnosis and treatment of phenylketonuria.
- 4D. Enlist the disorders of purine metabolism. Explain metabolic defects associated with primary gout.  
(4 marks×4 = 16 marks)

5. Short Answers:

- 5A. Differentiate between active transport and passive transport with an example.
- 5B. Cells are able to carry out various catabolic reactions that sustain as well as propagate their life through the utilization of a molecule, which is equivalent to currency. Identify it and draw its structure.
- 5C. Write a note on the biological role of vitamin K with special emphasis on the process of coagulation.
- 5D. Distinguish between substrate level and oxidative phosphorylation with an example.
- 5E. Why does the urine of alkaptonuric patients resemble coke in colour?  
(2 marks×5 = 10 marks)



**MANIPAL UNIVERSITY****FIRST YEAR B. PHARM. DEGREE EXAMINATION – MAY 2014****SUBJECT: PHARMACEUTICAL INORGANIC CHEMISTRY (PCH 104)  
(CREDIT BASED SYSTEM)**

Saturday, May 10, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer all the questions.**✍ **Long Essays:**

1A. Explain the method of preparation and assay of Potassium permanganate.

1B. Discuss the role of fluorides as anticaries agents.

1C. Explain the method of preparation of nitrous oxide with reaction.

(4+2+2 = 8 marks)

2A. Why zinc granules are used in the limit test for Arsenic?

2B. Classify antimicrobials with examples.

2C. List down the contents of monograph and explain any five of them with examples.

(1+2+5 = 8 marks)

3A. Explain in detail the method of preparation of Bismuth subnitrate and sodium phosphate.

3B. What are antacids? Explain the preparation and assay of Aluminium phosphate.

(4+4 = 8 marks)

**4. Short Essays:**

4A. How will you prepare the following?

i) Antimony potassium tartarate    ii) Copper sulphate

(2+2 = 4 marks)

4B. Explain in detail the method of preparation and assay of Potassium iodide.

(4 marks)

4C. Explain the principle involved in the measurement of radioactivity using Geiger-Muller counter.

(4 marks)

4D. Write the principle involved in the limit test for sulphate with equations.

(4 marks)

**5. Short Answers:**

5A. What is ORS? Give its composition.

5B. What are saline cathartics? Give examples.

5C. Enlist the factors influencing the design of limit test.

5D. What are protectives? Give two examples.

5E. Explain the physiological role of Iron.

(2 marks×5 = 10 marks)





## MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – MAY 2014

SUBJECT: PHARMACEUTICAL ORGANIC CHEMISTRY (PCH 105)  
(CREDIT BASED SYSTEM)

Tuesday, May 13, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer all the questions.**

✍ **Long Essays:**

1A. Explain two methods of preparation and reactions of aldehyde with equations.

1B. Explain Markovnikov addition with mechanism.

(4+4 = 8 marks)

2A. Explain the mechanism and stereochemistry of  $S_N1$  reaction.

2B. Explain the mechanism of Perkin condensation and mention its synthetic applications.

(4+4 = 8 marks)

3A. Discuss about the fate of Carbocations.

3B. Give the method of assay of the following:

i) Benzocaine      ii) Citric acid

(4+4 = 8 marks)

**4. Short Essays:**

4A. Explain Dipole moment and inductive effect with suitable examples.

4B. Explain the theory of reactivity in Electrophilic aromatic substitution.

4C. Explain Baeyers strain theory.

4D. Give two reactions and preparation of Phenols with equations.

(4 marks×4 = 16 marks)

**5. Short Answers:**

5A. Give any two reactions of ethers.

5B. With suitable examples, give the specific uses of N-bromosuccinimide.

5C. What are the conditions for a compound to show optical activity?

5D. With suitable example explain Saytzeff's rule.

5E. Give the structure and uses of glycerol.

(2 marks×5 = 10 marks)

