

Manipal College of Pharmaceutical Sciences
Manipal University, Manipal
First year B. Pharm- Annual Examinations-April 2012
Subject: MAT 101. Mathematics

Date: 27-04-2012

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. Find AB , where $A = \begin{bmatrix} 1 & 0 & 0 \\ 1 & 2 & 0 \\ 3 & 5 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 1 & 1 \\ -1 & 0 & -3 \\ -1 & 3 & 0 \end{bmatrix}$. (4 Marks)

1B. Determine the equation of the straight line passing through the two points $(1, 4)$ and $(-2, 7)$. If the point $(2a, 5 + a)$ lies on this line, find the value of a . (4 Marks)

2A. State, with reason, whether the straight lines $2y = 6x - 5$ and $9x - 3y = 5$ are parallel or not. (2 Marks)

2B. Solve (6 Marks)

$$\begin{aligned} x + y + 2z &= 5 \\ x - y - z &= 2 \\ x + 2y - z &= 2 \end{aligned}$$

3A. Differentiate $2x^3 - 5x + \sin(x)$. (2 Marks)

3B. Find the characteristic equation of $A = \begin{bmatrix} 2 & 1 \\ 1 & -3 \end{bmatrix}$, and verify Cayley-Hamilton theorem for A . (6 Marks)

II. Short Notes. 4×4 =16 Marks

4. Find the centre and radius of the circle having the equation $x^2 + y^2 - 6x + 2y - 6 = 0$. (4 Marks)

(PTO)

5. Evaluate $\int \sin(x^2 - 1) dx$. (4 Marks)

6. Evaluate the determinant $|A|$, where $A = \begin{bmatrix} 0 & 1 & 1 \\ -1 & 0 & -3 \\ -1 & 3 & 0 \end{bmatrix}$ (4 Marks)

7. Show that $f(x)$ is continuous at $x = 3$: (4 Marks)

$$f(x) = \begin{cases} \frac{x^2 - 2x + 15}{x - 3} & x < 3 \\ x^2 - 1 & x \geq 3 \end{cases}$$

III. Short Answers. 5×2 =10 Marks

8. If $A = \begin{bmatrix} 7 & -2 \\ 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 3 \\ 5 & 5 \end{bmatrix}$, find $A + B$, $A - B$, and $A^T - B$. (2 Marks)

9. Find the distance of the point $(10, -1)$ from $(7, 3)$. (2 Marks)

10. Solve $\sin(x) dx - 2dy = 0$. (2 Marks)

11. Find the equation of the circle with centre $(0, 4)$ and radius 3. (2 Marks)

12. Differentiate $y = e^x - e^{-x} + 5x^2 - \frac{5}{x^2}$ (2 Marks)

MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2012

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

Wednesday, May 02, 2012

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

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

✍ **Long Essay:**

1. Draw a neat, labeled diagram of animal cell and describe all the organelles present in the cell. (2+6 = 8 marks)
2. Describe the events of excitation and contraction coupling in the skeletal muscle. (8 marks)
3. Explain the synthesis, storage and secretion of thyroid hormones. (3+3+2 = 8 marks)

4. Short Essay:

- 4A. Explain the exchange of gases in external and internal respiration. (2+2 = 4 marks)
- 4B. Write about different types of papillae for gustation. (4 marks)
- 4C. Compare and contrast graded potential and action potential in nervous tissue. (4 marks)
- 4D. Describe the functions of liver. (4 marks)

5. Short Answers:

- 5A. List the buffer systems which help to maintain the pH of the body fluids. (2 marks)
- 5B. Write the name and function of any two hormones secreted from kidney. (1+1 = 2 marks)
- 5C. What is the life span of RBC? Which tissue is called as grave yard of RBC? (1+1 = 2 marks)
- 5D. Define haemopoiesis. Name any two hormones regulating it. (1+1 = 2 marks)
- 5E. Classify the joints on the basis of their functions with examples. (2 marks)



MANIPAL UNIVERSITY
FIRST YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2012

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

Friday, May 04, 2012

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL the questions.**

✍ **Draw neat labeled diagrams wherever necessary.**

✍ **Long Essay:**

1. Explain the reactions involved in the conversion of glycogen stored in the liver to glucose. Free glucose is formed in liver, kidney and intestine but not in muscle and brain through these reactions. Why?
2. Explain in detail ketone bodies with respect to their synthesis, utilization and significance.
3. Explain the components and functions of the following with respect to prokaryotes.
a) Transcription unit b) RNA polymerase II

(8×3 = 24 marks)

4. Short Essays:

- 4A. Explain the effect of pH and temperature on enzyme activity.
- 4B. Write the steps involved in the conversion of succinyl CoA to HEME.
- 4C. Write a note on the specialized products obtained from glycine.
- 4D. Write a note on the following:
i) Primary Gout ii) Lesch Nyhan syndrome

(4×4 = 16 marks)

5. Short Answers:

- 5A. Mention the role of golgi apparatus and mitochondria.
- 5B. What is the relationship between free energy and equilibrium constant?
- 5C. Name the two flavin coenzymes. Enlist any two biological functions of each of them.
- 5D. Define oxidative phosphorylation.
- 5E. Mention the significance of van den Bergh reaction.

(2×5 = 10 marks)



MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2012

SUBJECT: PHARMACEUTICAL INORGANIC CHEMISTRY (PCH 104)
(CREDIT BASED SYSTEM)

Monday May 07, 2012

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer all the questions.**

✍ **Long Essays:**

1A. Explain in detail the method of preparation and assay of Magnesium carbonate.

1B. Explain in detail the method of preparation and assay of Calcium lactate.

(4+4 = 8 marks)

2A. Define Astringents. Give the preparation and uses of Zinc sulphate.

2B. How will you assay Sodium fluoride?

2C. Give the storage conditions and uses of Titanium dioxide.

(4+2+2 = 8 marks)

3A. Define the following terms:

i) Dose ii) Category iii) Assay iv) Monograph.

3B. How will you assay oxygen? Explain.

3C. Why Potassium sulphate is used in the limit test for sulphate?

(4+3+1 = 8 marks)

4. Short Essays:

4A. How will you prepare and assay Ferrous Sulphate?

4B. Explain in detail the method of preparation and assay of Sodium phosphate.

4C. Write the principle in the limit test for Iron with reactions.

4D. How will you prepare and assay Ammonium chloride? Explain.

(4×4 = 16 marks)

5. Short Answers:

5A. Give the uses of the following:

i) Ammonium chloride

ii) Bismuth subnitrate

5B. Explain the physiological role of Calcium.

5C. Mention four diagnostic applications of Radioactive isotopes.

5D. Write the preparation and uses of copper sulphate.

5E. Define REM and Curie.

(2×5 = 10 marks)



MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2012

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

Wednesday, May 09, 2012

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer all the questions.**

✍ **Long Essays:**

- 1A. Discuss the mechanism of E2 reaction with suitable example.
1B. Comment on the influence of substituents on the acidic strength of Phenols. (4+4 = 8 marks)
- 2A. What is racemic modification? Explain the methods used for the separation of a racemic mixture.
2B. Discuss with suitable example, the mechanism of S_N1 reaction. (5+3 = 8 marks)
- 3A. How will you prepare and assay Chloroxylenol?
3B. What are Nitrenes? Explain their generation and applications. (4+4 = 8 marks)

4. Short Essays:

- 4A. Give the mechanism and synthetic applications of Benzoin condensation.
4B. Write specific uses of following reagents
i) Sodium borohydride
ii) N-bromosuccinimide
4C. Explain the mechanism of Friedel-craft's acylation of benzene.
4D. Define and explain the followings with suitable examples.
i) Ozonolysis
ii) Oxymercuration and demercuration (4×4 = 16 marks)

5. Short Answers:

- 5A. State Markovnikoff's and Anti markovnikoff's rule.
5B. Give the structure and uses of Methyl paraben.
5C. Explain the following terms:
i) Hydrogen bonding
ii) Electronegativity
5D. How will you convert Toluene into m- nitrobenzoic acid and p-nitrobenzoic acid?
5E. Write any two methods of preparation of alkenes. (2×5 = 10 marks)



**Manipal College of Pharmaceutical Sciences
Manipal University, Manipal
First year BPharm - Annual Examinations, April 2012**

Subject: PCE 106. Computer Science and Statistics

Date: 28-04-2012

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. Describe the following operating system services: (4 marks)

- | | |
|-----------------------------|---------------------------------|
| (i) Program development | (ii) Program execution |
| (iii) Access to I/O devices | (iv) Controlled access to files |

1B. Draw a flowchart for ordering of items in restaurant. Also write the corresponding algorithm for the same. (4 marks)

2A. Explain the steps to calculate standard deviation in excel. (4 marks)

2B. Calculate mean deviation from mean. (4 marks)

C.I	40-60	60-80	80-100	100-120	120-140	140-160
f	12	47	31	8	2	3

3A. Graphically find the median. (4 marks)

C.I	0-1	1-2	2-3	3-4	4-5	5-6	6-7
f	1	8	28	53	31	12	3

3B. Calculate the Spearman's coefficient of rank correlation. (4 marks)

x	43	96	74	38	35	43	22	56	35	80
y	30	94	84	13	30	18	30	41	48	95

II. Short notes. (4×4 = 16 marks)

4. With a suitable example, explain the process of creating a macro and its usage in preparing word document.

5. What is a computer network? Give at least 2 important application areas of computer networks. Name the key elements of a network protocol.

(PTO)

6. Find the standard deviation and variance for the following data.

C.I	78-80	80-82	82-84	84-86	86-88	88-90
f	3	15	26	23	9	4

7. Find the Mode for the data given below.

Marks	10-19	20-29	30-39	40-49	50-59	60-69	70-79
No. of students	8	19	29	36	25	13	4

III. Short answers. (5×2 = 10 marks)

8. With a relevant example, demonstrate the concept of nested formulae in excel.

9. Write HTML code to link 2 HTML files in the same directory and display them in the web browser.

10. Convert the decimal number 36 into its binary equivalent.

11. In a bivariate data, if $b_{xy} = -7.3$ and $b_{yx} = -0.11$. Find coefficient of correlation r .

12. Find the geometric mean for the data given below.

X	110	115	118	119	120
F	4	11	21	6	2

Reg. No.																				
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Manipal College of Pharmaceutical Sciences, Manipal University
Department of Pharmacognosy
First year B.Pharm
Annual Examination, April-May, 2012

Subject: Biology
Date : 27-04-2012
Time : 10.00 – 13.00 hrs.

Subject Code: PCO 101
Max. Marks : 50

Answer all the Questions with neat labeled diagrams wherever necessary:

I. Long Essays **(3 x 8 = 24 Marks)**

1. Write the important characters of Cryptogams and Phanerogams. Explain classification with schematic representation.
2. Describe the external and internal structure of the frog heart and explain the mechanism of its functioning.
3. a) What are the underground modifications of stems? Describe each with three examples.
b) Briefly explain about hypogynous, perigynous and epigynous flowers.

II. Short Essays **(4 x 4 = 16 Marks)**

4. Explain the digestive system of frog with a special note on its physiology of digestion.
5. What are plant tissues? Mention the characters of different types of simple permanent tissues.
6. Write the characters of class Mammalia.
7. Sketch any two diagrams for different types of
(a) Leaf bases (b) Leaf shapes (c) Leaf margins (d) Leaf apices

III. Short Answers **(5 x 2 = 10 Marks)**

10. Define the term fruit. Briefly mention classification.
11. Draw and label the V.S. of skin of frog.
12. Define root and label different parts.
13. Draw and label uriniferous tubule frog.
14. Define ergastic substances of plants. Name different types.

Manipal College of Pharmaceutical Sciences
Manipal University, Manipal
First year BPharm- Annual Examinations - April 2012
Subject: Physics

Date: 27-04-2012

Time: 3 hr.

Max. Marks: 50

Answer ALL the questions. Use log tables IF required.

I. Long essays. (3×8 = 24 marks)

1A. Distinguish between heat and temperature.

1B. Derive $v = u + at$, from velocity- time graph.

2A. Based on Bohr's postulates, obtain an expression for the radius of the electron in the n^{th} orbit.

2B. State and explain the law of triangle of forces and Lami's theorem.

3A. State and explain Soddy's group displacement laws with examples.

3B. Obtain the equivalent resistance (with diagram) of three resistors connected in series.

II. Short notes. (4×4 = 16 marks)

4. What is a capacitor? Explain the principle of a capacitor.

5. Show that 1 newton = 10^5 dynes.

6. A galvanometer with a resistance of 50Ω and requires a current of 0.5mA for full scale deflection. How would you convert it into a voltmeter of range 0-30V?

7. Calculate the efficiency of a Carnot's engine working between 100°C and 400°C . If it absorbs 200 joule per cycle from the source, calculate the heat rejected to the sink in one cycle.

III. Short answers. (5×2 = 10 marks)

8. What are isotopes? Give an example.

9. Distinguish between scalar and vector quantities.

10. State the laws of refraction of light.

11. What is radioactivity? Name the radioactive radiations emitted in natural radioactivity.

12. Mention any two applications of polaroids.

MANIPAL UNIVERSITY

SECOND YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2012

SUBJECT: PATHOPHYSIOLOGY (PTH 201)
(CREDIT BASED SYSTEM)

Monday, April 30, 2012

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer all questions.**

✍ **Long Essay:**

1A. Define and classify pathological calcification.

1B. Explain the clinical importance and mechanism of two types of calcification process.

(4+4 = 8 marks)

2A. Define and classify autoimmune diseases with suitable examples.

2B. Explain the mechanism of autoimmune diseases.

(2+6 = 8 marks)

3A. Define and classify epilepsy.

3B. Explain the pathogenesis of epilepsy.

(4+4 = 8 marks)

4. Short Essay:

4A. Explain the pathogenesis of tuberculosis.

4B. Differentiate between benign and malignant tumors.

4C. Explain the etiopathogenesis of atherosclerosis.

4D. Explain the pathogenesis of HIV infection and their complications.

(4×4 = 16 marks)

5. Short Answer:

5A. Enumerate the degenerative changes of cell injury.

5B. Enumerate four complications of chronic renal failure.

5C. Explain the structure of immunoglobulins.

5D. Differentiate iron deficiency and megaloblastic anaemia.

5E. Differentiate apoptosis and necrosis.

(2×5 = 10 marks)



MANIPAL UNIVERSITY

SECOND YEAR B. PHARM. DEGREE EXAMINATION –APRIL/MAY 2012

SUBJECT: PHARMACEUTICAL MICROBIOLOGY (PBT 202)
(CREDIT BASED SYSTEM)

Thursday, May 03, 2012

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ Answer ALL the Questions. Put question numbers properly in the margin.

✍ Long Essay:

1. With the help of a neat labeled diagram, discuss the structure of a typical bacterial cell.
2. Discuss sterilization by filtration with regard to theories behind mechanism of filtration and test for measuring the efficiency of filters.
3. Explain the principle, procedure and application of ELISA test.

(8×3 = 24 marks)

4. Short Essay:

- 4A. Write a detailed note on sexual spores produced by fungi with diagrams.
- 4B. Explain the tube dilution method and gradient plate technique for evaluating bacteriostatic activity of disinfectants.
- 4C. Enlist microbial virulence factors. How does hyaluronidase help in enhancing penetration of the host tissues by the pathogen?
- 4D. Write the causative organism, route of infection, symptoms and prevention of tuberculosis.

(4×4 = 16 marks)

5. Short Answer:

- 5A. Write any four differences between prokaryotes and eukaryotes.
- 5B. Simple staining can differentiate *Staphylococci* from *Streptococci* but to differentiate *B. subtilis* from *E. coli*, Gram Staining is needed. Why?
- 5C. Write the mechanism of moist heat sterilization.
- 5D. Write the formulae for calculating CMC and RWC of disinfectants.
- 5E. Mention the principle of 'Phosphatase Test'.

(2×5 = 10 marks)



MANIPAL UNIVERSITY
SECOND YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2012
SUBJECT: PHARMACEUTICAL CHEMISTRY (PCH 204)
(CREDIT BASED SYSTEM)

Tuesday, May 08, 2012

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer ALL questions.**

✍ **Long Essays:**

- 1A. Explain the structural elucidation of citral.
 1B. Define and classify alkaloids with examples.
- (6+2 = 8 marks)

- 2A. Explain Hantzsch synthesis of pyridine.
 2B. Explain nucleophilic substitution reactions of pyridine with suitable examples.
 2C. Give the structure of one pyrazine derivative with antitubercular activity.
- (3+4+1 = 8 marks)

- 3A. How will you prove that glucose has a six membered ring structure?
 3B. Discuss the chemistry of Taxol.
 3C. What are non-drying oils?
- (4+3+1 = 8 marks)

4. Short Essays:

- 4A. i) Discuss the Zeisel method for determining $-OCH_3$ group and Herzig-mayer's method for determining $N-CH_3$ group.
 ii) Write the synthesis and uses of ephedrine
- (2+2 = 4 marks)
- 4B. Explain any four chemical reactions of amino acids writing their chemical equations.
- (4 marks)
- 4C. Explain the chemistry of carotenoids and give its biological importance.
- (4 marks)
- 4D. Explain briefly the stereochemistry of E 2 reactions.
- (4 marks)

5. Short Answers:

- 5A. What are the uses of flavonoids?
 5B. Write the structure of any two pyrimidine bases present in nucleic acids.
 5C. In 2-bromocyclohexenone, why bromine takes up the axial position rather than the equatorial position?
 5D. Give the structures of two furan derivatives with antibacterial activity.
 5E. Write one method of preparation of Pyrazole
- (2×5 = 10 marks)



MANIPAL UNIVERSITY

SECOND YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2012

SUBJECT: PHARMACEUTICAL ANALYSIS (PQA 205)
(MAHE SYLLABUS)

Thursday, May 10, 2012

Time: 10:00 – 13:00 Hrs.

Max. Marks: 75

- ✍ Answer ALL the questions. Draw neat and labelled diagrams whenever necessary.
✍ Write the chemical reactions whenever necessary.

1. Short answers:

1A. Define the following terms:

- i) Primary standard ii) Secondary standard iii) Absolute standard
iv) Derived standard v) Normality

(5 marks)

1B. Write a Short note on:

- i) Accuracy ii) Precision

(5 marks)

- 1C. i) What is Iodometry titration? Explain with the help of example.
ii) Write the Nernst Equation and its significance.

(3+2 = 5 marks)

1D. Explain the factor affecting the stability constant of EDTA complexes in brief.

(5 marks)

1E. Explain the preparation and standardization of 0.1M perchloric acid.

(5 marks)

1F. Explain Arrhenius theory of acids and bases and describe its limitations.

(5 marks)

1G. What is diazotization titration? Explain with suitable example.

(5 marks)

✍ Essay:

2. With the help of suitable example, explain in detail redox titration curve and give its significance.

(10 marks)

3. Explain the steps involved in gravimetric analysis in brief.

(10 marks)

4A. Explain the principle of estimation of sodium chloride by modified Volhards's method.

4B. Describe various concentration expressions of solution and explain them in brief.

(5+5 = 10 marks)

5A. Explain the direct and replacement complexometric titrations.

5B. Classify and write the properties of non-aqueous solvents.

(5+5 = 10 marks)



MANIPAL UNIVERSITY

SECOND YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2012

SUBJECT: PHARMACEUTICAL ANALYSIS (PQA 205)
(CREDIT BASED SYSTEM)

Thursday, May 10, 2012

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Long Essay:**

1. Explain redox titration curve with relevant example.
2. Explain the theories of acids and bases with two examples each. Give their merits and demerits.
3. Explain the factors affecting completeness of precipitation in gravimetry.

(8×3 = 24 marks)

4. Short Essay:

- 4A. Explain the preparation and standardization of 0.1M Potassium methoxide and give one example of drug estimated by titration with the same in non-aqueous titrimetry.
- 4B. Mention the differences between primary standard and secondary standards. Give examples of each.
- 4C. What is argentometric titration? Describe Fajan's method in detail.
- 4D. Explain in detail masking and demasking techniques with specific examples.

(4×4 = 16 marks)

5. Short Answer:

- 5A. Mention the types of crucibles used in gravimetric analysis.
- 5B. Can hydrochloric acid be used in ceric ammonium sulphate titrations? Justify your answer.
- 5C. Give one technique each for electrical and optical methods employed in pharmaceutical industries.
- 5D. Give the difference between, universal and mixed indicators with one example each.
- 5E. Enlist any four drugs determined by diazotization titration.

(2×5 = 10 marks)



MANIPAL UNIVERSITY
SECOND YEAR B. PHARM. DEGREE EXAMINATION – APRIL/MAY 2012
SUBJECT: PHARMACOGNOSY - I (PCO 206)
(CREDIT BASED SYSTEM)

Saturday, May 12, 2012

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ **Answer all the questions.**

✍ **Draw neat labeled diagrams and structures wherever necessary.**

✍ **Long Essays:**

1. Write the Botanical source, Family, Chemical constituents, Uses, Morphology, Microscopy and powder characteristics of Ephedra.
2. Explain the external factors affecting the cultivation of crude drugs.
3. Describe Acacia under a suitable Pharmacognostic scheme.

(8×3 = 24 marks)

4. Short Essays:

- 4A. Discuss in detail the biological methods of evaluation.
- 4B. Explain the Lipid biosynthesis with reactions.
- 4C. Write a note on Chaulmoogra oil.
- 4D. Give the extraction procedure of Tannins.

(4×4 = 16 marks)

5. Short Answers:

- 5A. Absorbable gelatin sponge.
- 5B. Significance of ash values.
- 5C. Turmeric.
- 5D. Scope of Pharmacognosy.
- 5E. Structure of Palmitic and Stearic acid.

(2×5 = 10 marks)

