Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

SUBJECT: BIOLOGY (PCO 101)

(CREDIT BASED SYSTEM)

Monday, May 04, 2009

Time: 10.00-13.00 Hrs. Max. Marks: 50

- **Answer ALL the questions.**
- **Draw neat labelled diagrams wherever necessary.**

1. Long Essays:

1A. Describe the external and internal structure of the heart of the frog and add a note on the mechanism of heart.

1B. What are ergastic substances of plant cell? Classify them with examples.

1C. Define and explain different types of seeds. Add a note on special features of seeds.

(8×3 = 24 marks)

2. Short Essays:

2A. Describe the different modification of the tap root for storage of food.

2B. Bring out the differences between angiosperms and gymnosperms.

2C. Describe the characters of class Mammalia.

2D. Give the distinguishing characters of the following families along with suitable examples.

i) Umbeliferae ii) Zingiberaceae

(4×4 = 16 marks)

3. Short Answers:

3A. Endospermic and non-endospermic seeds.

3B. Hypogynous and perigynous flowers.

3C. Unicostate parallel and multicostate parallel.

3D. Actinomorphic and zygomorphic flower.

3E. Fissipeda and pinnipeda.

(2×5 = 10 marks)

Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

SUBJECT: MATHEMATICS (MAT 101)
(CREDIT BASED SYSTEM)

Monday, May 04, 2009

Time: 10.00-13.00 Hrs. Max. Marks: 50

1. Answer all questions.

1A. Prove all the properties on determinant.

1B. i) Differentiate with respect to x.

If $y = \left(x + \sqrt{a^2 + x^2}\right)^n$ show that $(a^2 + x^2)y^2 = n^2 y^2$.

ii) Integrate with respect to $x - \frac{2+x}{\sqrt{x^2 - 1}}$.

1C. Solve the following differential equations:

i) $\left[y(1 + x^{-1}) + \sin y\right] dx + (x + \log x + x \cos y)dy = 0.$

ii) $(2x - 10y^3)\,dy/dx + y = 0$

(8+(4+4)+(4+4) = 24 marks)

2. Answer all questions.

2A. If $A = \begin{bmatrix} 1 & -2 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} -2 \\ 2 \\ -5 \end{bmatrix}$

Find $A^{-1}B$ ($A^{-1} \rightarrow$ inverse of A).

2B. Derive the "general equation" of the circle.

2C. Derive the formula for "integration by parts".

2D. Solve the following differential equation $\frac{dy}{dx} + P.y = Q.$

(4×4 = 16 marks)

3. Answer all questions.

3A. If $A = \begin{pmatrix} 1 & 3 \\ 5 & 7 \end{pmatrix}$ *and* $B = \begin{pmatrix} -1 & 2 \\ 3 & -4 \end{pmatrix}$ find adj(AB) (adjoint of AB).

3B. Find the perimeter of the triangle formed by the points (5,0), (4,-2) and (2,-1).

3C. Differentiate: "cot x".

3D. Integrate: $(x^2 + 5x + 2)$.

3E. Form the differential equation for the following:

$(xy^2 + x)\,dx + (yx^2 + y)dy = 0.$

(2×5 = 10 marks)

Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

SUBJECT: COMPUTER SCIENCE AND STATISTICS (PCE 106)

(CREDIT BASED SYSTEM)

Wednesday, May 06, 2009

Time: 10.00-13.00 Hrs. Max. Marks: 50

✍ **Answer all questions.**

✍ **Long essay questions:**

1. Explain the following:
   i) http ii) URL iii) Modem iv) Slide sorter in MS-PowerPoint

(8 marks)

2A. Give shortcut key commands for the following in Ms – word:
   i) Left alignment ii) Page break iii) Under line iv) Copy and Paste

2B. Find mode of the following data:

Percentage of 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

(4+4 = 8 marks)

3. Prove the properties of A. M (Arithmetic Mean).

(8 marks)

4. Write short notes for the following:

4A. Explain the different types of cell referencing in MS – Excel with examples.

4B. Explain the evolution of computers.

4C. Find the missing frequency for the following data. If mean is 52

Marks	0-20	20-40	40-60	60-80	80-100
Students	8	–	19	14	9

4D. Find S.D (Standard Deviation) for the following data.

No of cookees	12	13	14	15	16	17	18
No of days	1	0	4	12	20	15	6

(4×4 = 16 marks)

5. Write short answer for the following.

5A. Mention the parts of a computer.

(2 marks)

5B. What is WAN? Explain briefly.

(2 marks)

5C. i) What is binary system?
   ii) Write the formula for: a) Karl Pearson's coefficient of skewness.
   b) Bowley's coefficient of skewness.

(1+1 = 2 marks)

5D. Explain in short, the term "dispersion".

(2 marks)

5E. In a frequency distribution, mean and median are 12 and 15 respectively. The standard deviation is 10. Calculate the coefficient of skewness.

(2 marks)

Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

SUBJECT: PHARMACEUTICAL INORGANIC CHEMISTRY (PCH 104)

(CREDIT BASED SYSTEM)

Friday, May 08, 2009

Time: 10.00-13.00 Hrs. Max. Marks: 50

✍ **Answer all questions.**

✍ **Long essays:**

1A. What is the importance of quality control in pharmacy? List out different sources of impurities in pharmaceutical substances.

1B. Giving chemical reactions, explain the principle involved in the limit test for iron.

(4+4 = 8 marks)

2A. Give the preparation and assay method for following pharmaceuticals:

i) Sodium acid phosphate ii) Aluminium hydroxide gel

2B. How do you classify cathartics based on the mode of action? Give examples.

(4+4 = 8 marks)

3A. What is the role of Zinc in our physiology? How do you prepare Zinc sulphate?

3B. Explain the assay of Oxygen.

(4+4 = 8 marks)

4. Short essays:

4A. i) Mention the uses and side effects of Fluoride ions.

ii) Write a note on Charcoal in terms of its preparation and use.

(2+2 = 4 marks)

4B. i) How do you prepare Sodium perborate?

ii) What are the applications of radioisotopes in therapy?

(2+2 = 4 marks)

4C. What are topical agents? Classify them giving examples. Explain the mechanism of action of inorganic antimicrobial agents.

(4 marks)

4D. Explain Electrolyte combination therapy.

(4 marks)

5. **Short answers:**

5A. Write a note on mechanism of action of astringents.

5B. Explain the development of IP.

5C. Mention the major intra and extra cellular electrolytes? What is their role in body functions?

5D. How is Sodium metabisulphite prepared?

5E. What modifications are expected to be done while carrying out the sulphate limit test for the sample of Sodium benzoate?

(2×5 = 10 marks)

Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

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

Monday, May 11, 2009

Time: 10.00-13.00 Hrs. Max. Marks: 50

1. **Long Essays:**

1A. Discuss the formation and detoxification of ammonia in detail.

1B. Give the reactions involved in purine nucleotide biosynthesis.

1C. Write the reactions of anaerobic glycolysis. Add a note on its energetics.

(8×3 = 24 marks)

2. **Short Essays:**

2A. How mevalonate is converted to squalene? Give reactions.

2B. Discuss the structure of DNA with the help of a diagram.

2C. Discuss any four factors affecting enzyme activity.

2D. Write the biochemical significance of vitamin C.

(4×4 = 16 marks)

3. **Short Answers:**

3A. Oxidation of one molecule of NADH gives three ATPs but one $FADH_2$ gives two ATPs. Justify.

3B. Give the enzyme defect in the case of: i) Acute intermittent porphyria
ii) Alkaptonuria

3C. Give one reaction each for i) Biotin ii) FAD

3D. Is tyrosine an essential amino acid? Justify.

3E. Explain two posttranslational modifications with examples.

(2×5 = 10 marks)

Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

SUBJECT: ANATOMY AND PHYSIOLOGY (APH 102)

(CREDIT BASED SYSTEM)

Wednesday, May 13, 2009

Time: 10.00-13.00 Hrs. Max. Marks: 50

✍ **Draw diagrams wherever necessary.**

1A. Name the hormones secreted by anterior pituitary. Mention the action of each. How is the secretion of these hormones regulated?

1B. What is Cushing's syndrome? Give any TWO features.

(5+3 = 8 marks)

2A. Define 'hemostasis'. Briefly explain the events leading to blood coagulation.

2B. Discuss briefly on any two bleeding disorders.

(5+3 = 8 marks)

3A. Draw a neat labelled diagram of the intrinsic conducting system of human heart and explain the functions of it.

3B. Explain how sympathetic and parasympathetic divisions of the autonomic nervous system control heart rate.

(5+3 = 8 marks)

4. Write briefly on the following.

4A. Location and structure of the kidney.

4B. Mechanism of inspiration.

4C. Contraception.

4D. Composition and functions of saliva.

(4×4 = 16 marks)

5. Write short answers to each of the following:

5A. Name the two hormones produced by the ovaries. Mention the role of any ONE of them.

5B. List four functions of skin.

5C. What constitutes blood brain barrier? Mention its function.

5D. Name the types of connective tissue.

5E. Define: i) Hypoxia ii) Cardiac stroke volume
iii) Residual volume of lung iv) Cataract

(2×5 = 10 marks)

Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR B. PHARM. DEGREE EXAMINATION – MAY 2009

SUBJECT: PHARMACEUTICAL ORGANIC CHEMISTRY (PCH 105)

(CREDIT BASED SYSTEM)

Friday, May 15, 2009

Time: 10:00-13:00 Hrs. Max. Marks: 50

✍ **Long Essays:**

1. Explain the conversion of following with reaction mechanism.
   i) Phenol to salicylaldehyde
   ii) Benzaldehyde to cinnamaldehyde.

(4+4 = 8 marks)

2A. What are bonding and antibonding orbitals.
2B. Discuss with suitable examples rearrangement in S_N1 reactions.

(4+4 = 8 marks)

3A. Explain the Elimination-addition mechanism for Nucleophilic Aromatic Substitution.
3B. Explain three nucleophilic substitution reactions of alkyl halides with equations.
3C. What are the characteristic IR absorption bands for the following functional groups:
   i) -CHO ii) $-NH_2$

(3+3+2 = 8 marks)

✍ **Short Essays:**

4A. Explain four methods of preparation of aldehydes with equations.
4B. Comment on the basic strength of Pyridine, Pyrrole and Quinoline.
4C. Explain the isotopic effect and element effect in E2 reaction.
4D. What is hyperconjugation? What is its effect on the stabilization of alkyl radical?

(4×4 = 16 marks)

✍ **Short Answers:**

5A. Give the medicinal uses of aspirin and benzocaine.
5B. What are the conditions for a compound to show optical activity?
5C. With suitable examples, give the specific uses of Diazomethane.
5D. How will you convert phenol to p-hydroxypropiophenone?
5E. Complete the following reactions

C_2H_5 -O-C_2H_5 $\xrightarrow{Cl_2,\ light}$ ----------

C_2H_5 -O-C_2H_5 $\xrightarrow{Cl_2,\ dark}$ ----------

(2×5 = 10 marks)