Reg. No.										

MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2014

SUBJECT: ADVANCES IN MOLECULAR PHARMACOLOGY & CHEMOTHERAPY (PHA 601)
(SPECIALIZATION: PHARMACOLOGY)

Saturday, May 24, 2014

Time: 10:00 – 13:00 Hrs. Max. Marks: 100

- **Answer ALL questions. Each question carries 20 marks.**
- **Draw neat, labeled diagrams wherever necessary.**

1A. Explain with examples the cell-cell interactions.

1B. Discuss the intracellular signal transduction through AC-cAMP-Pathways.

2A. Describe the Nollers experiment to explain the catalytic role of ribosomal RNA.

2B. How do the negative cell-cycle regulators control the cell cycle? Discuss the implications of this in cell cycle.

3A. Describe the cellular level mechanisms of actions of anti-cholinesterases.

3B. Make a brief review on proteins and peptides as drugs.

4A. Discuss the genetic and the biochemical determinants of the anti-microbial drug-resistance.

4B. With a neat illustration, discuss the mechanisms of actions of anticancer drugs affecting the tyrosine kinase cascade.

5A. Salient features of different generations of cephalosporins.

5B. Restriction enzymes and their applications in recombinant-DNA-technology.

5C. Biology of Mycobacterium tuberculosis and drugs affecting it.

5D. Gene inactivation strategy employed in gene-therapy.

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M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2014

SUBJECT: DYNAMICS OF DRUGS AFFECTING MAJOR ORGAN SYSTEMS (PHA 602)
(SPECIALIZATION: PHARMACOLOGY)

Monday, May 26, 2014

Time: 10:00 – 13:00 Hrs. Max. Marks: 100

- **Answer ALL the questions. Each question carries 20 marks.**
- **Draw neat, labeled diagrams wherever necessary.**

1A. Describe the differential effects of beta agonists and cardiac glycosides in cardiac contraction.

1B. Platelets play a central role in hemostasis. Discuss

2A. Discuss the mechanisms of antiepileptic drugs.

2B. Discuss the role of GABA as a neurotransmitter.

3A. Prostaglandins: Bio-synthesis and drugs affecting it.

3B. Write a detailed account of the mediators of immune system and explain how drugs modify their effect.

4A. Discuss the Hypothalamic-pituitary-gonadal axis. Describe the mechanisms of action of antiestrogens.

4B. Describe the pharmacology of glucocorticoids.

5. Write briefly on:

5A. Molecular mechanisms of thiazide diuretics

5B. Mechanism of action of proton pump inhibitors

5C. Ca^{2+} and K^{+} channel modulators as vasodilators

5D. Centrally acting cholinesterase inhibitors

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M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2014

SUBJECT: APPLIED AND CLINICAL PHARMACOLOGY (PHA 603)

(SPECIALIZATION: PHARMACOLOGY)

Wednesday, May 28, 2014

Time: 10:00 – 13:00 Hrs. Max. Marks: 100

- **Answer ALL questions.**
- **Draw the neat, labeled diagram wherever necessary.**

1A. With suitable examples, discuss the mechanism of drug interactions.

1B. Discuss the role of pharmacogenetics in the variation of pharmacokinetic and pharmacodynamic drug response.

(10+10 = 20 marks)

2A. Discuss the pathogenesis of Alzheimer's disease and the drugs used for it.

2B. Discuss the various types of primary hyperlipoproteinemia. Describe the pharmacotherapy of dyslipidemia.

((5+5)+(4+6) = 20 marks)

3A. Discuss the role of positive inotropic drugs in the management of congestive cardiac failure (CCF).

3B. Explain the biology of malarial infection. What is the importance of pharmacological intervention at different stages in the life cycle of the malarial parasite?

(10+(5+5) = 20 marks)

4A. List out the general, systemic and psychological causes of constipation. Discuss the management of constipation.

4B. Describe the pathophysiology of HIV infection and discuss the management of opportunistic infections in AIDS.

((5+5)+(5+5) = 20 marks)

5. **Write short essays:**

5A. Individualization of drug regimen

5B. Etiology and treatment of Myasthenia Gravis

5C. Management of dysmenorrhoea, menorrhagia and endometriosis

5D. Etiopathogenesis of iron deficiency and its management

(5 marks × 4 = 20 marks)

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MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2014

SUBJECT: PRECLINICAL DRUG DISCOVERY AND ANALYTICAL TECHNIQUES (PHA 604)

(SPECIALIZATION: PHARMACOLOGY)

Friday, May 30, 2014

Time: 10:00 – 13:00 Hrs. Max. Marks: 100

Answer ALL questions. Draw the neat, labelled diagram wherever necessary.

1A. Explain different approaches for the development of lead compounds.

1B. Compare and contrast ELISA and Radioimmunoassay technique.

(10+10 = 20 marks)

2A. Rao et al hypothesized that vitamin D is essential for calcium absorption. Thirty experimental animals with vitamin D deficiency were divided equally into three groups. Group I received a diet rich in calcium but deficient of vitamin D. Group II rats received a diet rich in vitamin D but deficient in calcium and group III rats received diet rich in calcium and vitamin D. At the end of the experimental period, one among the various parameters observed were serum calcium determination (mg/dl). The results are as follows:

Group I	6.7	8.4	7.8	8	5.9	9.8	8.2	8.4	10.2	6.9
Group II	12.3	16.8	15.6	14.2	12.6	16.2	10.3	12.2	23.3	12.6
Group III	20.9	24.9	21.3	20.8	24.8	19.2	32.6	29.8	20.8	25.6

Comment on the design of the experiment. Perform suitable statistical analysis to verify the hypothesis.

2B. Describe the CPCSEA guidelines for housing, maintenance and care of common laboratory animals used in research.

(10+10 = 20 marks)

3A. Describe four in-vivo methods for screening of local anesthetics.

3B. Discuss different animal models and techniques for screening of drugs for status-epilepticus.

(10+10 = 20 marks)

4A. Describe in vitro pharmacokinetic studies for determining absorption characteristics of a drug in a pre-clinical set up.

4B. Explain the endpoints for evaluation for male reproductive toxicity.

(10+10 = 20 marks)

5. **Write short notes on**:

5A. STZ induced diabetes as a model to screen anti-diabetic drugs

5B. Principle and applications of patch clamp technique

5C. Factors affecting the sensitivity of animal tests

5D. Principles and applications of immunoblotting

(5 marks × 4 = 20 marks)

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MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2014

SUBJECT: CLINICAL DRUG DEVELOPMENT (PHA 605)

(SPECIALIZATION: PHARMACOLOGY)

Monday, June 02, 2014

Time: 10:00 – 13:00 Hrs. Max. Marks: 100

- **Answer ALL the questions. Each question carries 20 marks.**
- **Draw neat, labeled diagrams wherever necessary.**

1A. Explain the roles and responsibilities of principal investigator and CRA.

1B. Explain the different phases of clinical trials through which a NCE has to pass through before it receives marketing approval.

2A. Protocol writing in a clinical trial.

2B. Describe the ICH guideline [E1A] for drugs intended for long-term treatment of non-life threatening conditions.

3A. Define intellectual property rights. How are they useful for pharmacy students?

3B. Explain the ICH guidelines for the clinical investigation in a pediatric population.

4A. Discuss the PK/PD approach studies in man.

4B. Importance of baseline date in clinical trials.

5A. Write briefly on the constitution of Institutional Review Board.

5B. Problems in Orphan drug development.

5C. Alternative to in-house drug development.

5D. Significance of medical writing in clinical research.