Reg. No.										

MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2013

SUBJECT: ADVANCE IN MOLECULAR PHARMACOLOGY & CHEMOTHERAPY (PHA 601)

(SPECIALIZATION: PHARMACOLOGY)

Friday, May 24, 2013

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. What is an active transport? Discuss with different examples and pictures how active transport is driven by ATP hydrolysis.

1B. Discuss, with examples, the structure and functions of ion-channel receptors.

2A. Write briefly on Okazaki fragments, TATA box and transcription factors.

2B. With a neat picture, describe various mechanisms that regulate the intracellular calcium levels. Explain how drugs could affect this.

3A. Discuss the molecular and cellular mechanisms of actions of muscarinic receptors.

3B. Write briefly on 5HT-receptors and drugs affecting them.

4A. Discuss the antimicrobial drug combinations and their implications in chemotherapy.

4B. Explain the causes of cancer with a special reference to Tumor viruses.

5A. Antibacterial and Resistance mechanisms of Quinolones.

5B. Enzyme tools employed in gene-cloning.

5C. Mechanisms of action of the first-line antitubercular drugs.

5D. Gene-transfer techniques applied in gene-therapy in general.

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MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2013

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

(SPECIALIZATION: PHARMACOLOGY)

Monday, May 27, 2013

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. Discuss the genesis of cardiac arrhythmias. Describe the mechanisms of action of antiarrhythmic drugs.

1B. Describe the transport of lipoproteins in the body and the mechanisms of action of hypolipidaemic drugs.

2A. Explain the processes involved in gastric acid secretion and mechanisms of drugs affecting it.

2B. Discuss the signal transduction following glutamate receptors' activation.

3A. Cellular and molecular level mechanisms of actions of insulin and glitazones.

3B. Explain the biosynthesis, physiological significance and pharmacological actions of arachidonic acid metabolites.

4A. Describe the mechanisms of cellular immunity. How do immunosuppressants interfere with cellular immunity?

4B. Describe the synthesis of T_3 and T_4 and mechanism of action of antithyroid agents.

5. **Write briefly on:**

5A. Carbonic anhydrase inhibitors as diuretics

5B. Mechanisms of adverse effects of phenothiazines

5C. Expectorants

5D. Endogenous opioids and their biological roles

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MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2013

SUBJECT: APPLIED AND CLINICAL PHARMACOLOGY (PHA 603)

(SPECIALIZATION: PHARMACOLOGY)

Wednesday, May 29, 2013

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

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

1A. Explain the applications of clinical pharmacokinetic parameters.

1B. Explain the pharmacokinetic and pharmacodynamic mechanisms of drug interaction with suitable examples.

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

2A. Classify hypertension based upon JNC-7. Describe the clinical features and management of essential hypertension.

2B. Discuss the pathophysiology of bronchial asthma and drug therapy.

(3+2+5)+(5+5) = 20 marks)

3A. Discuss the clinical symptoms, pathophysiology and therapeutic management of tuberculosis.

3B. Discuss any five general adverse effects of anticancer drugs. Explain how these adverse effects can be minimized.

((2+3+5)+10 = 20 marks)

4A. Describe the pathophysiology of peptic ulcer and its pharmacotherapy.

4B. Discuss the pathogenesis of HIV infection. What is the role of combination therapy in AIDS?

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

5. **Write short essays on:**

5A. Role of hematological tests in diagnosis and prognosis of disease

5B. Therapeutic classification of drugs for depression

5C. Signs/symptoms and symptomatic therapy of liver diseases

5D. Types of malaria and drug therapy

(5×4 = 20 marks)

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MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2013

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

(SPECIALIZATION: PHARMACOLOGY)

Friday, May 31, 2013

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

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

1A. Describe with suitable examples why drug discovery process is tortuous and treacherous.

1B. Describe the principle, instrumentation and pharmaceutical applications of HPLC.

(10+10 = 20 marks)

2A. i) A survey is being planned to determine what proportion of families in a certain area are medically indigent. It is believed that the proportion cannot be greater than 0.35. A 95% confidence interval is desired with p=0.05. What sample size of families should be selected?

ii) In a study of the effectiveness of a gluten-free diet in first degree relatives of patients with Type-I diabetes, Hummel et al placed seven subjects on a gluten-free diet for 12 months. Prior to the diet, they took baseline measurement of several antibodies and autoantibodies, one of which was the diabetes related insulin autoantibodies (IAA). The IAA levels were measured by RIA. The seven subjects had IAA Units of 9.7, 12.3, 11.2, 5.1, 24.8, 14.8, and 17.7. We wish to estimate from the data in this sample the variance of the IAA units in the population from which the sample was drawn and construct a 95% confidence interval for this estimate.

2B. Describe different methods recommended for euthanasia of laboratory animals.

((4+6)+10 = 20 marks)

3A. Discuss two methods each for chemically and electrically induced arrhythmia.

3B. Describe one in-vitro and three in-vivo methods for screening antidepressant drugs.

(10+10 = 20 marks)

4A. Describe in-vivo PK studies for determining absorption characteristics of a drug in a preclinical trial.

4B. Describe the objectives, methods and criteria of chronic toxicity studies.

(10+10 = 20 marks)

5. **Write short notes on:**

5A. Rat as an experimental animal

5B. Principles and applications of RT-PCR

5C. Intricacies of extrapolating pre-clinical data to humans

5D. Safety Pharmacology

(5×4 = 20 marks)

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MANIPAL UNIVERSITY

M. PHARM. PART–I DEGREE EXAMINATION – MAY/JUNE 2013

SUBJECT: CLINICAL DRUG DEVELOPMENT (PHA 605)

(SPECIALIZATION: PHARMACOLOGY)

Monday, June 03, 2013

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 constitution and responsibilities of Institutional Review Board.

1B. Ethics Committee Review Procedures – Discuss.

2A. Discuss Uncontrolled Trials and Cross-over Design in clinical trials.

2B. Describe the appendices I and II as per Schedule Y for clinical trials.

3A. Explain the various methods of Pharmacovigilance [E2E].

3B. Discuss the IPR related treaties and international agreements.

4A. Describe 'exploratory evaluation of time-invariant steady state pharmacokinetics'.

4B. Discuss the CONSORT (Consolidated Standards of Reporting Trials) statement.

5A. Explain the roles and responsibilities of a clinical trial sponsor.

5B. Significance of medical writing in clinical research.

5C. Alternative to in-house drug development.

5D. Advantages of Orphan drug development.