Reg. No.: _____

# MANIPAL UNIVERSITY

**FIRST YEAR M. PHARM. DEGREE EXAMINATION - MAY 2017**
**SUBJECT: ADVANCES IN MOLECULAR PHARMACOLOGY AND CHEMOTHERAPY (PHA 601T)**
**(SPECIALIZATION: PHARMACOLOGY)**
**(2014 REGULATION)**
**Thursday, May 18, 2017 (10.00 - 13.00 Hrs.)**

**Duration: 180 mins.**

**Marks: 100**

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

1) Explain the various mechanisms of transport of biomolecules through plasma membrane. (10)

2) Describe the structure and signal transduction mechanism of ligand-gated ion channel. (10)

3) Describe various mechanisms of excision repair for a single stranded DNA damage. (10)

4) With a neat picture, describe various mechanisms that regulate the intracellular calcium levels. Explain how drugs could affect this. (10)

5) Discuss the molecular and cellular mechanisms of acetylcholine actions through muscarinic receptors. (10)

6) Discuss the signal transduction, location, functions, agonists and antagonists to $5HT_1$, $5HT_2$, $5HT_3$ and $5HT_4$ receptor subtypes. (10)

7) Discuss on rational and irrational antimicrobial drug combinations and their implications in chemotherapy. (10)

8) Discuss the etiology of cancer with a special reference to tumor viruses, giving examples. (10)

9) **Write short notes on:**
i) Mechanism of action and resistance to tetracycline.
ii) Restriction endo-nucleases. (10)

10) **Write short note on:**
i) Mechanisms of action of the first-line anti-tubercular drugs.
ii) Gene transfer techniques applied in gene therapy.

# MANIPAL UNIVERSITY

**FIRST YEAR M. PHARM. DEGREE EXAMINATION - MAY 2017**
**SUBJECT: DYNAMICS OF DRUGS AFFECTING MAJOR ORGAN SYSTEMS (PHA 602T)**
**(SPECIALIZATION: PHARMACOLOGY)**
**(2014 REGULATION)**
**Saturday, May 20, 2017 (10.00 - 13.00 Hrs.)**

**Marks: 100** **Duration: 180 mins.**

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

| | | |
|---|---|---|
| 1) | Discuss cardiac contractility and the mechanisms of action of inotropic drugs. | (10) |
| 2) | Discuss the role of RAAS in volume homeostasis. Explain how drugs interfere with this system to produce therapeutically beneficial effects. | (10) |
| 3) | Describe the mechanisms of action of drugs that inhibit gastric acid secretion. | (10) |
| 4) | Discuss the mechanisms of excitotoxicity. | (10) |
| 5) | Discuss the signal transduction mechanisms after insulin receptor activation. | (10) |
| 6) | Explain cellular immunity and mechanisms of action of drugs used as immunosuppressants. | (10) |
| 7) | Describe the biosynthesis of thyroid hormones and mechanisms of action of various antithyroid drugs. | (10) |
| 8) | Describe the pharmacology of eicosanoids and their metabolites. | (10) |
| 9) | **Write briefly on:**<br>i) Mechanism of action and ADR of Loop diuretics.<br>ii) Inhalational steroids. | (10) |
| 10) | **Write briefly on:**<br>i) Mechanism of adverse effects of traditional antipsychotics.<br>ii) Opioids and pain pathway. | (10) |

# MANIPAL UNIVERSITY

**FIRST YEAR M. PHARM. DEGREE EXAMINATION - MAY 2017**
**SUBJECT: APPLIED AND CLINICAL PHARMACOLOGY (PHA 603T)**
**(SPECIALIZATION: PHARMACOLOGY)**
**(2014 REGULATION)**
**Tuesday, May 23, 2017 (10.00 - 13.00 Hrs.)**

**Duration: 180 mins.**

**Marks: 100**

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

| | | |
|---|---|---|
| 1) | Drug-drug interaction can arise from pharmacokinetic properties. Discuss. | (10) |
| 2) | Describe the pathogenesis and pharmacotherapy of AIDS. | (10) |
| 3) | Describe the type-B adverse drug reaction. Discuss the methods used for ADR detection and monitoring. | (10) |
| 4) | Explain the etiopathogenesis and pathophysiology of bronchial asthma and explain its stepwise management in adults. | (10) |
| 5) | Describe the pathophysiology and pharmacotherapy of Parkinson's disease. | (10) |
| 6) | Discuss the pathophysiology and pharmacotherapy of diabetes mellitus. | (10) |
| 7) | Discuss the disease management of diarrhea. | (10) |
| 8) | Discuss the pathophysiology and management of UTI in all age groups. | (10) |
| 9) | **Wirte short notes on:**<br>i) Orders of drug elimination kinetics.<br>ii) Drug used for management of hypertension in pregnancy. | (10) |
| 10) | **Write briefly on following:**<br>i) Principles of anti-tubercular therapy.<br>ii) Treatment of amoebiasis. | (10) |

# MANIPAL UNIVERSITY

**FIRST YEAR M. PHARM. DEGREE EXAMINATION - MAY 2017**
**SUBJECT: PRECLINICAL DRUG DISCOVERY AND ANALYTICAL TECHNIQUES (PHA 604T)**
**(SPECIALIZATION: PHARMACOLOGY)**
**(2014 REGULATION)**
**Thursday, May 25, 2017 (10.00 - 13.00 Hrs.)**

**Marks: 100** **Duration: 180 mins.**

**Answer ALL the questions.**

1) Outline the process of drug discovery and development. (10)

2) Describe the principle, instrumentation and pharmaceutical applications of IR spectroscopy. (10)

3) Following are the data for total cholesterol (mg/dl) of three groups of animals who received vehicle, standard (50 mg/kg) and test drug (25 mg/kg), respectively in the following order. (10)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Vehicle treated (G1) | 225 | 220 | 210 | 200 | 175 | 168 | 155 | 180 |
| Standard drug (G2) | 125 | 148 | 128 | 130 | 132 | 134 | 142 | 121 |
| Test drug (G3) | 201 | 198 | 181 | 199 | 180 | 184 | 172 | 191 |

With the help of suitable statistical test, answer the following questions:
i) Do the standard and test drugs have any influence on dyslipidemia?
ii) Which of the two treatments is more efficacious in its action?

4) Explain the methods of arrhythmia induction in experimental animals. (10)

5) Explain the despair swim and tail suspension tests for screening anti-depressant drugs. (10)

6) Describe the various records to be maintained as per CPSCEA guidelines. How do these records ensure ethics of animal experimentation? (10)

7) Explain the primary cell culture technique in cell based experiments. List the various cell lines used. (10)

8) Describe any five tests to detect chromosomal aberrations. (10)

**Write short notes on:**

9A) Hamster as an experimental animal. (5)

9B) Basic principles and applications of Western blotting. (5)

**Write briefly on the following:**

10A) Limitations of cell based assays. (5)

10B) Endpoints for detecting toxicities on female reproductive system. (5)

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# MANIPAL UNIVERSITY

**FIRST YEAR M. PHARM. DEGREE EXAMINATION - MAY 2017**
**SUBJECT: CLINICAL DRUG DEVELOPMENT (PHA 605T)**
**(SPECIALIZATION: PHARMACOLOGY)**
**(2014 REGULATION)**
**Saturday, May 27, 2017 (10.00 - 13.00 Hrs.)**

**Marks: 100** **Duration: 180 mins.**

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

| | | |
|---|---|---|
| 1) | Describe the ICH guidelines for clinical investigation of medicinal products in children. | (10) |
| 2) | Explain the general principles of ethical guidelines for biomedical research on human participants listed in ICMR code. | (10) |
| 3) | Write a note on the use of tables and figures for data representation in clinical trials. | (10) |
| 4) | Discuss the USFDA guideline on the preparation of investigational new drug product. | (10) |
| 5) | Write a note on exploratory assessment of drug dose linearity and its use in study optimization. | (10) |
| 6) | Elaborate the purpose of dose response information to support drug registration. | (10) |
| 7) | Explain the different methods of randomization. | (10) |
| 8) | Describe the functioning of a clinical research organization. | (10) |
| 9) | i) Write a note on the roles and responsibilities of sponsor in the conduct of clinical trials.<br>ii) Explain Phase I and Phase II clinical trials. | (10) |
| 10) | i) Explain the terms cross over and factorial study designs.<br>ii) Emphasize upon the status of orphan drugs. | (10) |