

**Birla Institute of Technology and Science, Pilani,  
Pilani-Campus (Rajasthan)**

**Comprehensive Examination: 1st Sem, 2022-2023**

Course No: PHA G 624

Course Title: Principle of toxicology

Max. Marks: 40 (25+15)

Date: 24/12/2022

Closed Book

Duration: 120 Min.

Instructions: Short and precise answer with flowchart will be preferred

**PART-A Open Book**

**Max Marks:25**

**Max Time: 110 Minutes**

Q-1: Comments with suitable reasoning on the following: 10.0 M

- a) In case of renal chronic disease- most of the drug doses need to be adjusted but a few antibiotics (ceftriaxone) do not, why?
- b) In aspirin poisoning, how will its excretion from the body be increased?
- c) Benztropine, reverse anti-parkinsonism drug-induced dystonias, how?
- d) Why, pallidotomy may be suggested in some clinical conditions?
- e) Reproductive study is not normally required for vaccine toxicity studies?
- f) During Covid-19, the toxicity to steroids was related to self-administration/excessive use of dexamethasone/ prednisone sudden stoppage of steroids- not advised and may pose a greater risk for health?
- g) A group of researchers has developed -NCE that did not cross BBB but found significant antiemetic activity?
- h) If you encountered -with a neuro-toxin that is structurally similar to MPTP during your NCE development, what will be the expected –selected neuronal toxicity it may have and why?

Q-2: Hemophilia B is a congenital disease and most commonly found in men, why? 3.0 M

ii. US FDA approved gene-based therapy recently, suggests how do gene-based approach be used to manage Hemophilia B?

iii. Likewise, NLX-P101, completed its landmark Phase 2 trial of gene therapy for PD -201, how does it may work in PD?

Q-3: If your group developed –NCE (NO-donor), how do you assess cardiac toxicity? (7.0)

ii) Why does ganglion blocker not prefer to treat cardiac arrhythmia?

iii) If your NCE be targeted for unstable angina pectoris, will it be useful or not, explain with suitable reasoning?

iv) What do you mean by the cardiac remodeling process?

v) Covid -19 infection reported, blood clotting and other toxicities problem for many organs including the heart. If you want to make and evaluate the drugs targeting different drugs/ classes of drugs i.e blood clotting prevention and dissolving the clot, how will you evaluate the toxicity based on the mechanism of these classes of drugs? Explain with the help of an example for both classes.

Q-4: What do you mean by the aging of enzymes that sometime may result in difficulty in treating nerve gas agents poisoning? 1.0 M

Q-5: Toxicity in some patients may have resulted when combined with other drugs that can inhibit CYP 450 enzyme for e.g-Grape fruit juice. Muscle relaxant-like Atracurium besylate is not having a metabolizing problem, by contrast, succinylcholine may results- apnoea in some patients, why?

2.0 M

Q-6: Why most of the 1<sup>st</sup> generation antipsychotic do not respond well to control –ve symptoms and associated with toxicities? (2.0 M)

ii) Some toxins may resulted in neurological toxicity, How do neurosis and psychosis be diagnosed?

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**Comprehensive Examination: 1st Sem, 2022-2023**

Course No: PHA G 624  
Course Title: Principle of toxicology  
Max. Marks: 40  
Date: 24/12/2022

Closed Book  
Duration: 60 Min.

Instructions: Short and precise answer with flowchart will be preferred

**PART-A Closed Book Max Marks:14 Max Time: 70 Minutes**

Q-1: The conventional acute oral toxicity test-OECD Test Guideline 401 is the most heavily criticized test in terms of animal welfare and this concern was the driving force behind the development of three alternative tests for acute oral toxicity including OECD-425.

What are the advantages OECD 425 guidelines offers over OECD 420? 2.0 M

Q-2: What do you mean and how do you conduct the oxixity assay for: Carcinogenic and mutagenic, the Clastogenic and Aneugenic agents ? 2.0 M

Q-3: What do you mean by stabilization of the patient with-ABCDEs measures: during the Emergency management of poisoning of Opioids? 1.5 M

ii) How does kappa receptor agonist be useful to avoid to toxicity? 1.0 M

iii) How, opioidergic agent-methadone be useful to control opioid addiction? 1.0 M

Q-4: In September 2009 the OECD validated many alternatives methods for avoiding animals uses i.e to the

- i) Draize eye test: the bovine cornea opacity test and the isolated chicken eye test
- j) Likewise- the L5178YTK+/- mouse lymphoma-TK assay, NRU phototoxicity test have been developed.

What are the principle of each assay, explain with the help of suitable reasoning? 4.0 M

**Q-5:** Explain with the help of ECG representation (ECG tracing) taking into consideration of arrhythmia. How does Brugada syndrome and MI be identified based on ECG, explain by drawing representative tracing of ECG for both conditions? 2.0 M

**b)** Which ICH guidelines used for preclinical safety evaluation of biotechnology-derived pharmaceuticals ? 0.5 M

Q-6: Why, in Chromosomal aberrations test, cytochalasin B is used ? 1.0 M

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