

**BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI**  
**DEPARTMENT OF PHARMACY**  
**Mid Semester Examination**

**Principles of Toxicology PHA G624 (Closed Book)**

**Weightage: 30%**

**Duration: 90 Mins**

**Date: 14/10/2023**

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**Instructions:**

- ✓ **Write correct and precise answers.**
- ✓ **No spelling mistakes.**
- ✓ **Marks will only be given to correct and well-explained answers and not to partial answers.**
- ✓ **Write in clear and legible handwriting.**
- ✓ **Answer the questions in exact sequence. Write each question on a separate sheet.**

1. Define and distinguish "toxicant", "Venom," "Toxin," and "poison" with suitable examples. **(0.5M+0.5M+0.5M+0.5M)**
  
2. Classify toxicants with two examples of each category specifying the mechanism of that particular toxicant. **5M**
  
3. A trainee toxicology scientist at BITS Pilani follows OECD Guideline 420 for acute toxicity testing. The scientist used a 25 mg/ml solution of the test compound based on LD<sub>50</sub> data of similar compounds (LD<sub>50</sub> ≈300 mg/kg). His initial experiments with an oral dose of 300 mg/kg resulted in the death of all three 10-12-week-old male rats. Subsequent experiments using 50 mg/kg showed no mortality in all three rats. The scientist categorized the compound as GHS Category 3 for toxicity. As a senior lab member of the department, critically review the study and write a detailed report. **4M**
  
4. What is 3T3 NRU assay? Provide information regarding the origin of the 3T3 cell line in this assay. Discuss the impact of positive results of this test in clinical settings. Finally, specify the regulatory classification by OECD and ICH for this assay. **5M**
  
5. In an experiment, you are tasked to determine the phase of the estrous cycle in a cohort of your breeding pair of rats. If you lack information about the estrous cycle phase, specify the minimum duration for which you would advise keeping your breeding pairs together. Additionally, discuss the observable mating signs that could help confirm successful mating. **5M**

**(PTO)**

6. Answer the following **6M**
- a) A 43-year-old woman from a rural area was hospitalized in a tertiary care facility after developing a sudden rash all over her body. During the examination, the patient appeared alert and had normal vital signs. She had been taking allopurinol for four days to alleviate joint pain she had been experiencing for a few months prior to the rash's onset. Identify the ADR in this case and report the type of ADR.
- b) A 24-year-old boy has been referred to the city hospital from a primary care hospital of a village due to his suicidal tendencies and depression. He was an obese individual with a BMI of 35. Due to his depression and other medical conditions, he has also started smoking cannabis and cigarettes. He has been taking Olanzapine, Sertraline, Gabapentin, and Mirtazapine for the past year since the onset of his medical condition. After a careful examination at the city hospital, the physician prescribed metformin and clozapine, along with gradually discontinuing the other medications. The physician also recommended a weekly check-up for the Absolute Neutrophil Count (ANC). In your opinion, why did the physician suggest ANC? In this case, is there a predictable risk of Adverse Drug Reactions (ADRs), and if so, what type of ADR could this be?
7. Describe the hypersensitivity reactions with suitable examples **3M**