

**UNIVERSITY OF SWAZILAND**

**Faculty of Health Science**

**Department of Environmental Health Sciences**

**Supplementary Examination 2013**

**Title of paper: INTRODUCTION TO TOXICOLOGY I**

**Course code: EHS 560**

**Time allowed: 2 HOURS**

**Marks allocation: 100 Marks**

**Instructions:**

- 1) Answer ANY FOUR (4) questions**
- 2) Each question is weighted 25 marks**
- 3) Write neatly and clearly**
- 4) Begin each question on a separate sheet of paper**

**This paper is not to be opened until the invigilator has granted permission**

## QUESTION 1

- a) If 2 chemicals are mixed together they produce different reactions that can either be more potent or even less than the parent one. Explain the following reaction (10)
  - i. Antagonism
  - ii. Synergism
  - iii. Additivity
  - iv. Potentiation
  - v. Covalent bonding
- b) Name the factors that affect absorption of toxicants through the dermal route (6)
- c) Write short notes on why the Blood Brain Barrier is vulnerable to toxicants (9)

## QUESTION 2

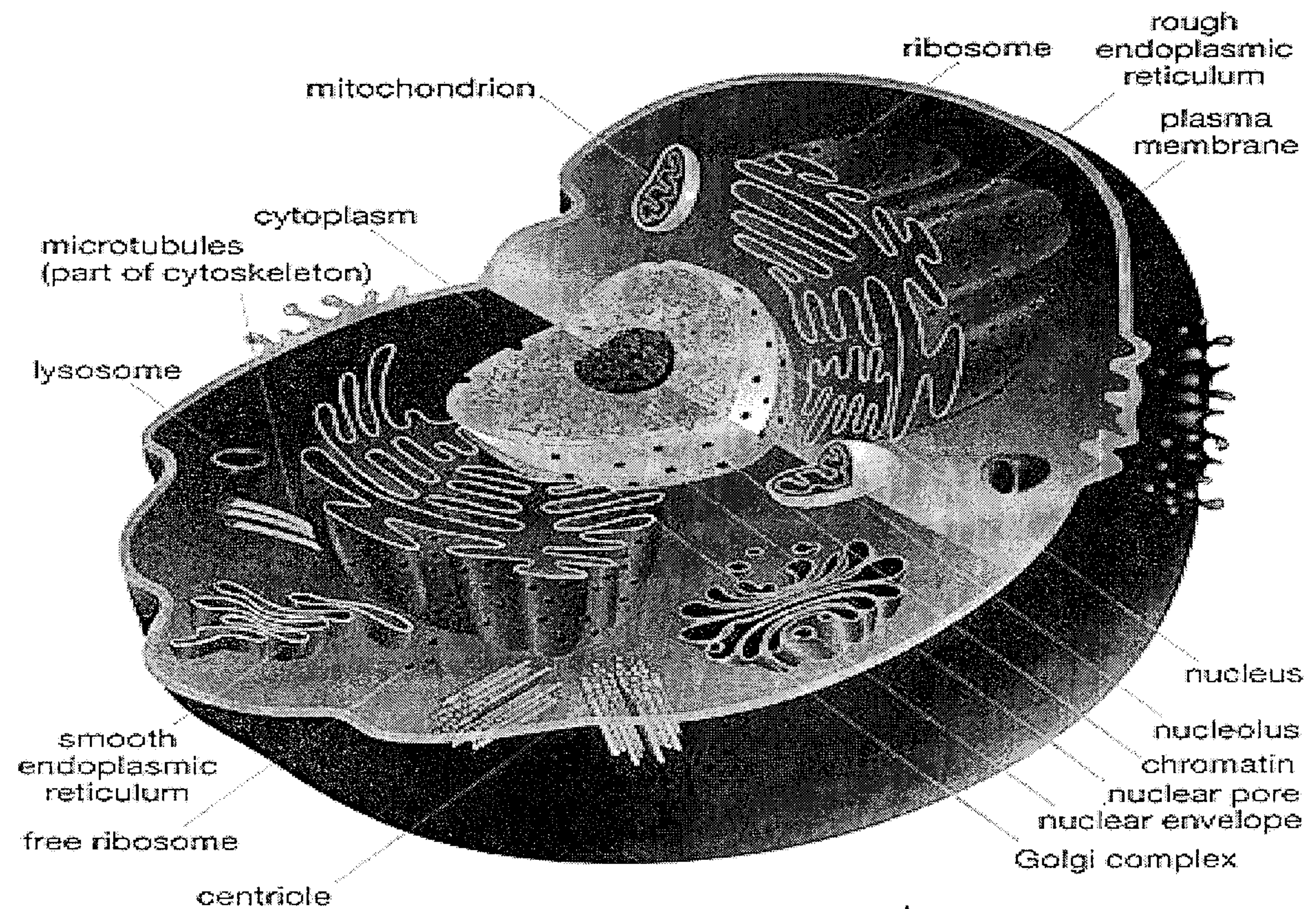
- a) Discuss dose fractioning and give an illustration thereof (10)
- c) What are the physiological features that make the Blood Placental Barrier vulnerable to toxic insults (10)
- d) Write short notes on (5)
  - i. Tolerance,
  - ii. RfD,
  - iii. Biologically effective dose
  - iv. Phagocytosis
  - v. Endocytosis

## QUESTION 3

- a) Selection of test organisms is guided by certain favorable criteria on the experiment to be performed. What are these criteria? (6)
- b) Name the reactions that are undergone by both Phases 1 and II reactions (8)
- c) What are the conditions that you may need in order to measure exposure in a more precise manner? (4)
- d) Which four (4) primary systems enzymes are responsible for impeding the first pass effect of a drug? (7)

## QUESTION 4

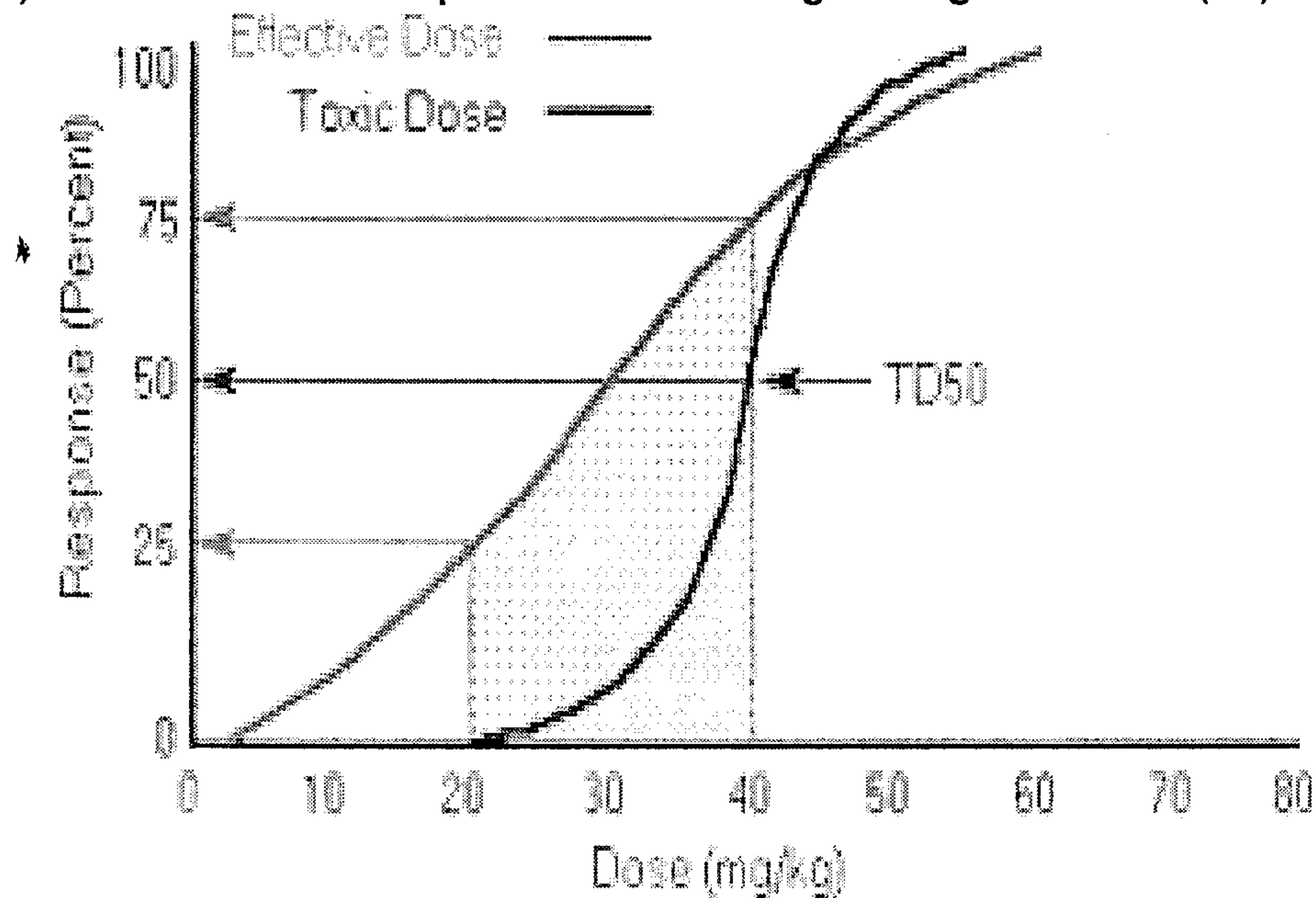
The diagram below shows the different parts of the human cell, outline how the cell partakse in the transfer of xenobiotics using the labels indicated (25).





## QUESTION 5

a) Discuss the therapeutic index using the figure below (10)



b) Why is a bird used as a vertebrate model for toxicity testing? (7)

c) What is the required label/symbol with regards to toxicity rating scale & labeling requirements for pesticides as shown below (8) E.g. A ---- Ribosomes

CATEGORY	SIGNAL WORD REQUIRED ON LABEL	LD <sub>50</sub> ORAL mg/kg(ppm)	LD <sub>50</sub> DERMAL mg/kg(ppm)	Probable oral lethal dose
1. HIGHLY TOXIC	A	Less than 50	Less than 200	A few drops to a tsp
2. MODERATELY TOXIC	B	51 - 500	200 - 2,000	Over 1 tsp to 1 ounce
3. SLIGHTLY TOXIC	C	OVER 500	OVER 2000	OVER 1 OUNCE
4. PRACTICALLY NON - TOXIC	D			