

SEAT No. _____

No. of Printed Pages : 2

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SARDAR PATEL UNIVERSITY

M.Sc. IInd semester Biotechnology Examination (CBCS)

Friday, 20th April, 2018

Time: 2.00 p.m. to 5.00 p.m.

PS02EBIT02 Toxicology

PS01EMIC12

Note: Numbers in parenthesis indicate marks

Max marks: 70

Q.1 Choose the correct options for the following questions.

(08)

1. When toxicity of a toxicant hinders its own metabolism, which organ would have been affected most
(a) Skin (b) Brain (c) Liver (d) all of the above
2. Which of the following toxicants causes rapid lethality by affecting cytochrome aa3 in the mitochondrial electron transport chain
(a) Paracetamol (b) Carbon monoxide (c) Cyanide (d) Cycasin
3. When one substance decreases the toxic effect of another toxic agent, it is due to
(a) tolerance (b) reduced responsiveness (c) antagonism (d) coalitive effect
4. Which of the following about the Dose-response relationship curve is true
(a) It is always sigmoidal in shape and with a fixed slope
(b) Its shape and slope varies for each toxicant
(c) It is always in sigmoidal shape and varies in slope for each toxicant
(d) none of the above
5. Which of the following effects of two substances are important in the action of antidotes
(a) potentiation (b) synergism (c) antagonism (d) coalitive effect
6. The traditional lethality test in which the LD50 is determined has now been largely replaced with one in which toxicity is determined, because
(a) toxicity determination is more detailed, gived insight into mechanism of action
(b) LD50 value has variability depending upon a number of biochemical and physiological processes of the test organism
(c) both a and b
(d) none of the above
7. Itai-Itai - skeletal deformities with severe pain is by
(a) Cadmium toxicity (c) lead toxicity
(b) Arsenic toxicity (d) Mercury toxicity
8. Ames test is used to check _____ of the substances
(a) toxicity (b) mutgenicity (c) teratogenicity (d) carcinogenicity

C.P. T. O.)

Q.2 Answer ANY SEVEN of the following questions in brief:

(7x2=14)

1. Out of two main phases, toxicokinetics and toxicodynamics, in which phase metabolism of toxic substances occur in our body?
2. List types of acid rain.
3. Give any two common examples of occurrence of microbial toxins in food.
4. How can we study interactive effect of two toxicants?
5. Give any two examples of each of acute and chronic toxicants.
6. Explain the toxic effect caused by Reactive Oxygen Species (ROS) in cells.
7. Differentiate between pharmacokinetics and pharmacodynamics.
8. Which antidotes are used to treat lead poisoning?
9. Narrate the effects due to acute cadmium toxicity.

Q.3 (a) Draw a dose response curve and show NOEL, LD50 and maximum toxicity levels in the graph (06)

(b) Explain the metabolism of paracetamol and toxicity that occur due to its over dosage. (06)

OR

(b) Explain the metabolism of methanol and its toxicity and antidote. (06)

Q.4 (a) Classify the following enzymes as Phase I or Phase II reaction enzymes and explain their importance in brief. (06)

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|------------------------------|--------------------------|-----------------------------|
| (i) Cytochrome P 450 oxidase | (iii) Methyl transferase | (v) Glutathione transferase |
| (ii) Epoxide hydrolase | (iv) Sulphotransferase | (vi) Alcohol dehydrogenase |

(b) Explain how calcium homeostasis is maintained in the body and what happens in case of altered calcium homeostasis? (06)

OR

(b) Give examples and explain how the effect of toxicants depends upon route of exposure. (06)

Q.5 (a) Explain the environmental consequences of pesticide toxicity. (06)

(b) Explain the toxicity of organophosphorous insecticides with suitable examples. (06)

OR

(b) Write an explanatory note on toxicology of food additives. (06)

Q.6 (a) Write an explanatory note on common air pollutants and their effect on environment. (06)

(b) Explain any two manifestations of plumbism. (06)

OR

(b) Explain the causes and symptoms of arsenic poisoning. (06)

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