

Birla Institute of Technology and Sciences Pilani, Pilani Campus

PHA G619 Screening Methods and Techniques in Pharmacology

Comprehensive Exam

Close Book

I Semester 2022-2023

Date: 26/12/2022

Duration: 90 min

Max. Marks: 20

Instructions:

1. Figures in parenthesis indicate maximum marks
 2. Draw Diagrams wherever necessary
 3. Write the correct question number on the answer sheet
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1. You are performing an experiment to calculate the cytotoxic potential of a new compound.
 - (i) How will you perform cell counting of cells grown in a T-25 flask? [3+3+2]=8
 - (ii) Suppose you got 56, 48, 76, and 92 cell counts in 4 quadrants, show the calculation required for making stock solution to seed the cell in a 96 well plate.
 - (iii) What is the principle of MTT assay?
2. Explain the UV-induced erythema experiment along with the evaluation of a hypothetical anti-inflammatory agent? [4]
3. What is the rationale for using the house dust mite model for asthma? How can you induce asthma in female BALB/c mice using house dust mites? [4]
4. Transgenic animal model development has emerged as a new foundation of animal model development. [1+3]=4
 - (i) Why male pronucleus is chosen for injecting the desired gene?
 - (ii) Why is F₀ generation chimeric when embryonic stem cells are used for developing transgenics?

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1. Diabetes mellitus refers to a group of diseases that affect how the body uses blood sugar (glucose). Glucose is an important source of energy for the cells that make up the muscles and tissues. The main cause of diabetes varies by type. But no matter what type of diabetes you have, it can lead to excess sugar in the blood. Animal models play a vital role in the understanding of diabetes pathogenesis as they allow the combination of genetic and functional characterization of the syndrome. [4+4]=8

(i) How Gold thioglucose induces diabetes?

(ii) Explain the development of diabetes in Zucker diabetic fatty rat.

2. COPD is characterized by an acceleration of progressive airflow limitation associated with aging process, which can leave patients disabled and in severe cases can lead to death.

[2+4]=6

(i) What are patho-physiological changes associated with COPD?

(ii) Describe the properties associated with cigarette smoke model of COPD. What are different limitations of this model?

3. Explain the following:

[2+2+2]=6

(i) What are the different mechanisms by which ethanol induces peptic ulcer?

(ii) Why cell counting is performed before cell seeding?

(iii) What is the advantage of MAD?