BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
FIRST SEMESTER 2022-2023
PHA G617: Advanced Drug Delivery Systems
Comprehensive Examination

Maximum marks: 70 Weightage: 35% Duration: 180 min Date: 21/12/2022

Note:
- Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
- All parts of a question should be answered consecutively.
- Assumptions made if any, should be stated clearly at the beginning of your answer.

No. of Pages = 1
No. of Questions = 8

CLOSED BOOK

Q1. What are different cell based assays that could be performed for the evaluation of a nano-formulation. **[8 M]**

Q2. Explain the third order targeting giving suitable examples. **[8 M]**

Q3. Write a note on the following: **[8 M]**

a. Fluorescence spectroscopy for proteins
b. PEGylated proteins

Q4. An advanced drug delivery formulation is being developed for the treatment of lung cancer. The formulation is ought to be given via pulmonary route. What considerations you need to take for the development process. **[6 M]**

OPEN BOOK

Q5. In a drug discovery program, a new therapeutic agent has been synthesized by the drug discovery scientist (Dr. X) with a potential application in diabetes management. As a formulation scientist, you have been asked to take the molecule further for its development. Elaborate on the key questions you would like to ask Dr. X before initiating the development process. Assume the answers provided by Dr. X, identify the approach you will follow for the formulation development. **[12 M]**

Q6. An in vivo assessment of a nanoparticulate formulation containing anticancer molecule for oral drug delivery has to be performed. Your supervisor has asked you to plan the experiments and outline the expected results. Explain the experiments you will perform and the expected data/graphs that you may obtain after the experiments. Assume the results obtained are as per the expectations then interpret and justify the results in line with the current knowledge in the subject. **[12 M]**

Q7. A novel formulation has been prepared for a drug molecule that showed a release within 12 h. However, a controlled release for several days is required for its therapeutic application. Elaborate on various solutions that you could provide for improving the release characteristics. (You can make assumptions, wherever necessary) **[8 M]**

Q8. Differentiate/compare the SLNs, polymeric micelles and liposomes. **[8 M]**

XXXXXXXXXXXXXXXXXXX