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OM—10—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Pharm (First Year) (Second Semester) EXAMINATION

July, 2026

MOLECULAR AND PHARMACEUTICS

(MPH201T)

(Nanotech Targelted DDS)

(Thursday, 2-7-2026) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Answer to the point only.

(*iii*) Figures to the right indicate full marks.

(*iv*) Draw the digrams wherever necessary.

1. Answer the following questions : 10×2=20

(*a*) Define targeted drug delivery.

(*b*) What are liposomes ?

(*c*) What are microcapsule and microsphere ?

(*d*) Define phytosomes.

P.T.O.

(e) Enlist the types of delivery system used for intranasal route.

(f) Define propellants.

(g) What is non-viral gene transfer ?

(h) What is nucleic acid based therapeutic delivery system ?

(i) What are aquasomes ?

(j) What is the significance of nanotechnology in dosage farm development ?

2. Solve any *two* : 2×10=20

(a) Describe the methods used for the preparation and evaluation of nanoparticles.

(b) Explain the concept of tumour targetting and its challenges.

(c) Discuss in detail liposomal gene delivery system.

3. Solve any *seven* of the following : 7×5=35

(a) Discuss the role of aptamers as drugs of the future.

(b) Write a note on pulmonary drug delivery system.

(c) Explain the concept of electrosomes and their potential application.

(d) Write a note on microspheres.

(e) Explain the methods used for brain targeted drug delivery.

(f) Differentiate between Nanoparticles and Liposomes.

(g) Explain in detail about evaluation of aerosols.

(h) Differentiate between ex-vivo and in-vivo gene therapy.

(i) Write a note on miosomes.

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OM—24—2026

FACULTY OF PHARMACEUTICAL SCIENCE AND TECHNOLOGY

M.Pharmacy (First Year) (Second Semester) EXAMINATION

July, 2026

ADVANCED BIOPHARMACEUTICS AND PHARMACOKINETICS

MPH-202-T

(Saturday, 4-7-2026) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Answer to the point only.

(*iii*) Figures to the right indicate full marks.

1. Answer the following : 10×2=20

(*a*) Define Bioavailability.

(*b*) State the Noys-Whitney equation.

(*c*) Define permeability.

P.T.O.

(*d*) Mention any *two* factors affecting drug dissolution rate.

(*e*) What is two-compartment model ?

(*f*) Define Michaelis-Menten kinetics.

(*g*) What is a crossover study design ?

(*h*) Define biosimilar product.

(*i*) Give significance of drug release study.

(*j*) Define targeted drug delivery.

2. Answer any *two* of the following : 2×10=20

(*a*) Explain the mechanism of drug absorption from GIT.

(*b*) Describe one-compartment phamacokinetic models for IV bolus.

(*c*) Explain methods for assessing bioavailability.

3. Answer any *seven* of the following : 7×5=35

(*a*) Explain pH-partition theory and give its role in drug absorption.

(*b*) Describe influence of formulation factors on drug dissolution.

(*c*) Explain causes of non-linearity in pharmacokinetics.

(*d*) Describe cytochrome P450 based drug interactions.

(*e*) Write the role of dissolution testing in evaluating drug product performance.

(*f*) Explain methods of permeability determination.

(*g*) Describe relative and absolute bioavailability.

(*h*) Explain gene therapy as a biotechnological product.

(*i*) Describe Biopharmaceutical Classification System (BCS) with examples.

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OM—38—2026

FACULTY OF SCIENCE AND TECHNOLOGY

M.Pharm. (Second Semester) EXAMINATION

July, 2026

COMPUTER AIDED DRUG DELIVERY SYSTEM

(MPH–203T)

(Tuesday, 7-7-2026) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 Hours *Maximum Marks—75*

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Answer to the point only.

(*iii*) Figures to the right indicate full marks.

1. Solve the following : 10×2=20

(*a*) Write a short note on CFD.

(*b*) Define the term Robotics and AI.

(*c*) What is factorial design ?

(*d*) What is population modeling ?

(*e*) Write a short note on nucleoside transporters.

P.T.O.

(f) What is Biowaiver consideration ?

(g) What is meant by optimization ?

(h) Write a short note on mechanistic modeling.

(i) What is computer simulation ?

(j) What about Fed *vs* Fasted state ?

2. Solve any *two* of the following : 2×10=20

(a) Discuss the optimization parameters and different optimization techniques in formulation development.

(b) Explain in detail role of computers in market analysis and research and development.

(c) Describe in detail about development of pharmaceutical emulsion and microemulsion drug carriers.

3. Solve any *seven* of the following : 7×5=35

(a) Explain the significance of robotics and write down its applications.

(b) Describe *in-vitro* dissolution and explain *in-vitro in-vivo* correlation.

(c) Write down pharmaceutical applications of artificial intelligence.

(d) Explain the parameter sensitivity analysis.

(*e*) Write in detail about concept of optimization and its parameters.

(*f*) Describe quality-by-design in pharmaceutical development.

(*g*) Give regulatory and industry views on quality-by-design.

(*h*) Write down the history of computers in pharmaceutical research and development.

(*i*) Explain statistical modeling in pharmaceutical research and development.