Roll No. | | | | | | | | | | | |

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-8)

ADVANCED INSTRUMENTATION TECHNIQUES

Subject Code : BP811ET

M.Code : 79774

Date of Examination : 20-05-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. *Write briefly :*

a) What is Quadrupole broadening?

b) What is metastable ion?

c) What is the principal difference between DTA and DSC?

d) What are Bremsstrahlung interactions?

e) Name the standards used for calibration of IR and UV-Vis spectrophotometers.

f) Give any two elements used in Radioimmuno assays with their specific applications.

g) Define partition coefficient.

h) What is tandem mass spectrometry?

i) What are the characteristic signals for a -OCH_2CH_3 group in H-NMR spectrum?

j) Calculate the index of hydrogen deficiency for Benzoic acid.

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SECTION-B

2. What is the importance of extraction process in pharmaceuticals? Give a detailed account on solid phase extraction.

3. Define the term Chemical shift. What is its advantage over the frequency scale? Describe the various factors affecting chemical shift of protons with examples.

4. What is the principle of X-ray spectroscopy? Write a detailed description of various X-ray crystallographic methods.

SECTION-C

5. What is the various ionization techniques used in mass spectrometry? Write a detailed account on any one such technique.

6. Differentiate between *o*-Nitrophenol and *p*-Nitrophenol on the basis of NMR spectra.

7. Predict the mass spectrum of ethyl benzoate in EI mode.

8. What is the principle of TGA? Discuss its application taking the example of Calcium.

9. Write an account on ICH guidelines for method validation.

10. Elaborate on different methods of RIA.

11. What is the principle of LC-MS/MS? Give a descriptive diagram of a LC-MS/MS instrument.

12. Give an explanatory note on variables responsible for accuracy and precision of DTA.

13. Give a step-by-step procedure for calibration of Flame photometer.

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Total No. of Questions : 13 Total No. of Pages : 02

B.Pharmacy (Sem.-8)

PHARMA MARKETING MANAGEMENT

Subject Code : BP-803ET

M.Code. : 79766

Date of Examination : 25-05-23

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Write briefly :**

a) What are the main roles of market research?

b) What is brand equity?

c) What are online promotional techniques for OTC products?

d) What are the sources of product information?

e) Discuss the significance of Sampling in promotions.

f) Window display promotion.

g) What are OTC products?

h) Classify retailers.

i) What is Horizontal Marketing?

j) Write about basics involved in calculation of MRP.

SECTION-B

2. Define market research. Explain in detail the steps involved in a market research process.
3. What do you mean by PLC? Explain in detail the life cycle of a pharmaceutical product.
4. What are different channels of distribution? Explain in detail various factors influencing the choice of channel of distribution of Pharmaceutical product.

SECTION-C

5. Define product. Classify various product levels with examples.
6. Describe the different strategies of pricing.
7. Differentiate between me-too and augmented products giving suitable examples.
8. What are the 4 Ps of marketing? Discuss.
9. How do socio-psychological characteristics of consumer's influence market segmentation?
10. Discuss briefly the prescribing habits of a physician.
11. What are the non-pricing strategies adopted by pharmaceutical industries?
12. How is a retail pharmacist important as a source of information in marketing?
13. Discuss about packaging and labeling decisions.

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Total No. of Questions : 13 Total No. of Pages : 03

B.Pharma (Sem-8)

BIOSTATISTICS AND RESEARCH METHODOLOGY

Subject Code : BP-801T

M.Code : 79764

Date of Examination : 01-06-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. **Answer Briefly :**

a) Define Coefficient of correlation and coefficient of determination.

b) Give applications of Biostatistics.

c) Distinguish between paired and independent Student's t test.

d) Define Null Hypothesis and Level of Significance.

e) What do you understand by cohort studies?

f) Give major applications of R-Online statistical software in clinical trials.

g) Differentiate between parametric and non-parametric tests.

h) Write down advantages of Factorial Designs.

i) What are statistical errors?

j) Define power of a study.

SECTION-B

2. Discuss the need for design of experiments. Explain various experimental design techniques.

3. a) In elevated plus maze model, mean number of entries made by mice in open arms after treatment with vehicle (control) and test drug were recorded. Analyze whether significant difference exists between control and test drug.

Control	Test Drug
3.2	14.2
4.0	13.4
3.2	12.6
3.6	13.4
4.2	13.2
4.0	12.8
4.2	14.4
3.8	13.2
2.8	13.8
	12.4

b) Write a note on 'ANOVA'.

4. a) Given the bivariate distribution shown in Table, in which both X and Y are random variables

i) Compute the correlation coefficient;

ii) Test the sample correlation coefficient for statistical significance;

Number	X	Y
1	12	10
2	14	18
3	26	22
4	33	18
5	23	23
6	19	20
7	22	19

b) Explain various 'Measures of Dispersion'.

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SECTION-C

5. Write a note on Central Composite Design.

6. What are factorial Designs? How 2^2 and 2^3 designs help in analysis of experiments?

7. Explain blocking system for two level factorials.

8. Calculate mean, median and mode from the following data :

Marks	No. of Students
10-25	6
25-40	33
40-55	44
55-70	12
70-85	3
85-100	2

9. Write a note on Kruskal Wallis test.

10. Explain various steps in Report Writing.

11. What are different types of sampling? Explain non-probability sampling methods.

12. What is Multiple Regression? Describe its significance in analysis of clinical variables.

13. Write a detailed note on SPSS statistical software.

Roll No. [ ]

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-8)

PHARMACOVIGILANCE

Subject Code : BP805-ET

M.Code : 79768

Date of Examination : 07-06-23

Time : 3 Hrs. **Max. Marks : 75**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Write briefly :**

   a) Define and differentiate between ADR and ADE.

   b) Define individual case safety report.

   c) Describe the significance of post marketing surveillance.

   d) Define the term "daily defined doses".

   e) Expand and explain the term AEFI.

   f) Define de-challenge and re-challenge.

   g) Enlist the various study designs for detecting ADRs.

   h) What is the role of CIOMS in drug monitoring?

   i) Define pharmacogenetics.

   j) Enlist the various tertiary sources of drug information.

SECTION-B

2. Describe anatomical, therapeutic and chemical classification of drugs.

3. Describe the methods of generating safety data during pre-clinical, clinical and post approval phases of drugs, life cycle.

4. Describe the requirements for ADR reporting in India as per pharmacovigilance program of India.

SECTION-C

5. Describe the overview of various phases of pharmacovigilance process.

6. Describe the methods of seriousness and labelling assessment of ADR.

7. Describe the role of CROs in pharmacovigilance program.

8. Describe the methods of passive surveillance.

9. Describe the approaches of effective communication in Drug Safety Crisis management.

10. Describe the role of CIOMS working group in pharmacovigilance.

11. Describe the various phases of clinical trials.

12. Explain MedDRA hierarchy.

13. Explain the concept of drug safety evaluation in pregnancy and lactation.

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Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem-8)

PHARMACEUTICAL PRODUCT DEVELOPMENT

Subject Code : BP-813 ET

M.Code : 79776

Date of Examination : 08-06-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Write briefly :**

   a) Quality control

   b) Optimization technique

   c) QbD

   d) Excipients Give any two examples of it.

   e) Cyclodextrins

   f) Binders used in tablets

   g) Diluents used in capsules

   h) Solubilizers

   i) Packaging liner materials

   j) Emulsifying and wetting agents

SECTION-B

2. Explain the regulations related to Stability assessment.

3. Enumerate various optimization techniques for pharmaceutical product development with example of each.

4. Explain quality control tests for packaging materials for pharmaceutical product development.

SECTION-C

5. Explain regulation related to pre-formulation.

6. What are polyethylene glycols? Give examples.

7. What are the excipients used in making clear gels and creams.

8. Explain the excipientsused for making Large volume parenteral.

9. Enumerate excipients for NDDS.

10. Explain application of QbD.

11. What is factorial design. Give its applications.

12. What are the factors effecting selection of packaging materials during pharmaceutical Product development?

13. Write short note on coat materials.

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July-2023

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem-8)

SOCIAL AND PREVENTIVE PHARMACY

Subject Code : BP-802-T

M.Code : 79765

Date of Examination : 19-06-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Write briefly :**

a) Define balanced nutrition and malnutrition. Write components of balanced diet.

b) Name causative agents for poliomyelitis and chikungunya.

c) Define mental and social health.

d) Write the theme of National Leprosy Day - 2023.

e) Enlist the symptoms of Ebola virus disease and lymphatic filariasis.

f) Define and describe 'NIKSHAY'.

g) Write about the significance of Janani Suraksha Yojana'.

h) What are signs and symptoms of diabetes and hypertension?

i) Enlist various diseases caused by use of tobacco.

j) Enlist objective of pulse polio program.

SECTION-B

2. Describe the four major strategic priorities of WHO in Indian National program.

3. Describe the various community services provided under National Rural Health mission.

4. Describe the objectives, strategies and outcomes of National Mental Health Program.

SECTION-C

5. Describe the prevention and control of lymphatic Filariasis.

6. Describe the role of personal hygiene and social factors that affect health of people.

7. Describe the various functions of PHC.

8. Describe die objectives of National Program for Control of Blindness.

9. Describe the concept of Integrated Disease Surveillance Programme.

10. Discuss the significance of mother and child health protection card.

11. Describe the objectives and outcomes of National Program for the Health Care of Elderly.

12. Describe the initiatives taken by Govt. of India for promoting Health education in school.

13. Describe various TB control strategies.

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Roll No. | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 13

B.Pharma. (Sem.-8)

SOCIAL AND PREVENTIVE PHARMACY

Subject Code : BP-802-T

M.Code : 79765

Date of Examination : 04-01-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Write briefly :**

a) Define social and mental health.

b) Define integrated disease surveillance programme.

c) Write salient features of National tobacco control programme.

d) Write salient features of National programme for control of blindness.

e) Write the functions of primary health centres.

f) Write the community services in rural and urban health.

g) Write the steps involved in improving rural sanitization.

h) Define pulse polio programme.

i) Define drug addiction and drug substance abuse.

j) Write the mode of transmission and symptoms of pneumonia.

SECTION-B

2. Explain in detail about malnutrition and its prevention. Discuss about balanced diet.

3. Discuss about National health programme. Discuss in detail about objectives, functioning and outcome of HIV and AIDS control programme.

4. Discuss and explain in detail about National health intervention programme for mother and child.

SECTION-C

5. Discuss about social causes of diseases and social problems of sick.

6. Discuss about various types of personal hygiene and health care and avoidable habits.

7. Describe the general principles of prevention and control of Cholera and SARS.

8. Describe the general principles of prevention and control of malaria and Dengue.

9. Discuss about National mental health programme.

10. Discuss about universal immunization programme.

11. Discuss about National programme for the healthcare for the elderly.

12. Discuss about the role of WHO in Indian National programmes.

13. Discuss about National urban health mission.

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-8)

PHARMA MARKETING MANAGEMENT

Subject Code : BP-803ET

M.Code. : 79766

Date of Examination : 11-01-2023

Time : 3 Hrs. **Max. Marks : 75**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Write briefly :**

   a) Demographic description

   b) Market Analysis

   c) Horizontal Marketing

   d) OTC products

   e) Sales Representative

   f) National Pharmaceutical Pricing Authority

   g) Physician

   h) Retail Pharmacist

   i) Global Marketing

   j) Distribution Channels.

SECTION-B

2. Enumerate emerging concepts in marketing.
3. Explain professional sales representative.
4. Explain DPCO.

SECTION-C

5. Explain issues in pricing management in pharmaceutical industry.
6. What is the analyzing the market?
7. **Write short note on :**

   a) Promotion via personal selling

   b) Market segmentation.

8. What is product poisoning?
9. Explain product portfolio analysis.
10. Explain product management in pharmaceutical industry.
11. Highlight determinants of promotional mix.
12. Explain pharmaceutical marketing channels.
13. Explain the motivational and prescribing habits of physician.

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DEC-2022

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Total No. of Questions : 13 Total No. of Pages : 02

B.Pharmacy (Sem.-8)

PHARMACEUTICAL PRODUCT DEVELOPMENT

Subject Code : BP-813 ET

M.Code : 79776

Date of Examination : 12-01-2023

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Write briefly :**

   a) Incremental products

   b) Roller compact

   c) Design space

   d) Similarity and dissimilarity factor in dissolution studies

   e) Quality Target Product Profile

   f) **Name any four** packages approved by FDA as tamper resistant packaging systems

   g) Why cyclodextrins take the shape of a truncated cone or torus rather than a perfect cylinder?

   h) Level 3 changes

   i) Spans

   j) Multiple emulsions.

SECTION-B

2. Discuss in detail the Directly compressible vehicles used for production of tablets.

3. What is the significance of QBD in new product development and discuss any one technique in detail.

4. Discuss the dissolution testing from regulatory point of view.

SECTION-C

5. Explain the process of new product development using a flow chart or through schematic representation.

6. Discuss quality control test of parenterals.

7. Discuss the non-ionic surfactants and their applications in pharma industry.

8. Classify emulsifying agents and discuss any one class in detail.

9. What are tonicity adjusters in parenterals? Discuss their significance and methods to adjust the tonicity.

10. Which excipients are used for formulation of nanoparticles, explain?

11. Discuss in brief the ICH Stability Testing Requirements for New Dosage Forms.

12. Discuss the quality control of rubber closures.

13. What are Pharmaceutical applications of binders?

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Dec-2022

Roll No. ☐☐☐☐☐☐☐☐☐☐

Total No. of Questions : 13

Total No. of Pages : 04

B.Pharma (Sem.-8)

BIOSTATISTICS AND RESEARCH METHODOLOGY

Subject Code : BP-801T

M.Code : 79764

Date of Examination : 24-12-22

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. Answer Briefly :

a) Distinguish between. Paired and Independent t test.

b) The percentage of herbal drug sector in different countries is given below table:

Country	India	China	Germany	Italy	The Netherland	Japan	America	UK	Total
Percentage of herbal drug sector	13	18	24	11	5	14	10	5	100

Represent this information using a pie-chart.

c) What is the need of design of experiment?

d) If two lines of regression are

$$4x - 5y + 30 = 0$$

$$20x - 9y - 107 = 0$$

Which of these lines, is the line of regression of x on y.

e) Define standard deviation and coefficient of variation.

f) Write down advantages of Minitab.

g) What are the strengths of 'R' Online Statistical software?

h) How can central composite design used to optimize factors?

i) What are the types of statistical errors?

j) What are the characteristics of an ideal Measure of Dispersion?

SECTION B

2. What is factorial design? Give its advantages. Elaborate various types of factorial designs.

3. a) Give a detailed note on MS-Excel.

   b) Calculate median and mode of the data

Marks less than	10	20	30	40	50	60
No. of students	8	23	45	65	75	80

4. Given the bivariate distribution shown in Table 1, in which both X and Y are 10 random variables.

   a) Compute the correlation coefficient;

   b) Test the sample correlation coefficient for statistical significance;

   c) If r is statistically significant, estimate the upper and lower limits of ρ and state your conclusion concerning the variability in X that is associated with the variability in Y.

Number	X	Y	Number	X	Y
1	50	20	6	49	21
2	54	19	7	52	18
3	36	23	8	58	17
4	63	18	9	46	16
S	53	20	10	45	25

DEC-2022

[illegible] methods were used to determine the concentration of prothrombin in plasma. Determinations were made on different subjects. Determine whether a significant difference exists between the two methods.

Method 1	Method 2
17	18
17	17
18	20
21	24
22	23
17	15
23	25
23	22
15	16
18	
21	

6. What are key features of SPSS?

7. The haemoglobin levels of three groups of children fed the three different diets are given in table. Test whether the means of three groups differ significantly.

Group I	Group II	Group III
10.2	9.6	10.7
9.7	11.4	8.9
12.0	10.7	9.5
11.3	8.8	9.8
10.5	11.9	10.2
10.8	10.3	10.2
11.6	10.2	9.6
	8.0	9.8
	11.0	10.6
	9.8	9.1

8. From the following data obtain the two lines of regression equations.

X	1	2	3	4	5	6	7	8	9
Y	9	8	10	12	11	13	14	16	15

9. Describe Cohort and Observational studies.

10. Two automatic filing machines A and B are used to fill tea in 500 gm cartons. A random sample of 100 cartons on each machine showed the following :

Tea content (in gms.)	A	B
485-490	12	10
490-495	18	15
495-500	20	24
500-505	22	20
505-510	24	18
510-515	4	13

Comment the performance of two machines.

11. Write a note on Kruskal Wallis test.

12. What is Probability? Differentiate between binomial and poisson distribution?

13. Write a detailed note on Plagiarism

SECTION-C

5. Two different methods were used to determine the concentration of prothrombin in plasma. Determinations were made on different subjects. Determine whether a significant difference exists between the two methods.

Method 1	Method 2
17	18
17	17
18	20
21	24
22	23
17	15
23	25
23	22
15	16
18	
21	

6. What are key features of SPSS?

7. The haemoglobin levels of three groups of children fed the three different diets are given in table. Test whether the means of three groups differ significantly.

Group I	Group II	Group III
10.2	9.6	10.7
9.7	11.4	8.9
12.0	10.7	9.5
11.3	8.8	9.8
10.5	11.9	10.2
10.8	10.3	10.2
11.6	10.2	9.6
	8.0	9.8
	11.0	10.6
	9.8	9.1
		9,4

8. From the following data obtain the two lines of regression equations.

X	1	2	3	4	5	6	7	8	9
Y	9	8	10	12	11	13	14	16	15

9. Describe Cohort and Observational studies.

10. Two automatic filing machines A and B are used to fill tea in .500 gm cartons. A random sample of 100 cartons on each machine showed the following :

Tea content (in gms.)	A	B
485-490	12	10
490-495	18	15
495-500	20	28
500-505	22	20
505-510	24	18
510-515	4	13

Comment the performance of two machines.

11. Write a note on Kruskal Wallis test.

12. What is Probability? Differentiate between binomial and poisson distribution?

13. Write a detailed note on Plagiarism

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-8)

PHARMACOVIGILANCE

Subject Code : BP-805-ET

M.Code : 79768

Date of Examination : 07-01-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. ***Write briefly :***

   a) Define Pharmacovigilance.

   b) Define passive surveillance and post-marketing surveillance.

   c) Define case report and case series.

   d) Give an example of immunization error related adverse reaction associated with vaccination.

   e) Define pharmacogenetics and pharmacogenomics.

   f) Define contract research organizations.

   g) Describe the significance of Vigimed and Vigiflow?

   h) Enlist tertiary sources of drug information.

   i) Define WHO drug dictionary.

   j) Define adverse drug reaction and adverse drug event.

DEC-2022

SECTION-B

2. Describe basic sources of drug information and specialized resources for adverse drug reactions.
3. Describe the detection, reporting and management of adverse drug reactions.
4. Describe pharmacogenetic variations attributed to CYP450 isoenzymes inhibition and induction.

SECTION-C

5. Describe the mission and objectives of WHO international drug monitoring programme.
6. Classify adverse drug reactions.
7. Describe the principles for assigning daily defined doses.
8. Describe the classification and significance of adverse events following immunization programme.
9. Describe the concept of post marketing surveillance.
10. Briefly describe safety evaluation at pre-clinical and clinical trial phase.
11. Describe the anatomical, therapeutic and chemical classification of drugs.
12. Describe the issues of drug safety evaluation in paediatric population.
13. Describe the process of establishment of pharmacovigilance Programme in a hospital.

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-8)

ADVANCED INSTRUMENTATION TECHNIQUES

Subject Code : BP811ET

M.Code : 79774

Date of Examination : 10-01-2023

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Write briefly :**

   a) Define the Braggs law.

   b) What is Spin-Spin coupling?

   c) Define coupling constant.

   d) Give applications of DTA.

   e) Enlist the ICH guidelines.

   f) Enlist the different X-ray Diffraction techniques.

   g) What is MALDI?

   h) Write about analyzer Time of flight.

   i) Explain significance of solid phase extraction.

   j) What is hyphenated technique LC-MS/MS?

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SECTION-B

2. Explain the principle and working of TGA. (Thermal Gravimetric Analysis).

3. Discuss background and principles of analytical method validation as per USFDA guidelines.

4. Explain the fundamental principles and instrumental arrangements of NMR.

SECTION-C

5. Explain chemical shift and factors influencing on Chemical shift.

6. Write a note on single crystal diffraction and powder diffraction.

7. Discuss the instrumentation and application of DSC.

8. Write limitations and application of RadioImmuno Assay.

9. Write a comparative account on calibration and validation.

10. Describe the rules for fragmentation of molecules in Mass Spectrometry with suitable examples.

11. Describe instrumentation and applications of C-NMR.

12. Explain the principle and procedure involved in the liquid-liquid extraction.

13. Enlist different ionizers used in Mass Spectrometry and explain any one detail.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.

Roll No. | | | | | | | | | | |

Total No. of Questions : 13 Total No. of Pages :03

B.Pharma.(Sem.-8)

BIOSTATISTICS AND RESEARCH METHODOLOGY

Subject Code :BP-801T

M.Code :79764

Date of Examination : 01-07-22

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carryingTEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. **Write briefly :**

   a) What is the need for Research?

   b) Distinguish between correlation and regression analysis.

   c) Give properties of normal distribution curve.

   d) Define null hypothesis and alternate hypothesis.

   e) Compare observational and experimental studies.

   f) Give importance of sample size determination.

   g) Calculate arithmetic mean of given data

X	20	30	40	50	60	70
F	5	8	9	11	12	15

   h) Give advantages of SPSS.

   i) Blood serum cholesterol levels of 10 persons are 240, 260, 290, 245,255, 288, 272, 263, 277,251. Calculate standard deviation.

   j) What are the advantages of Factorial Designs?

SECTION-B

2. a) Explain Binomial and Poisson's distribution. (5)

   b) A new drug was tested on two groups of boys and girls gave following results :

	Mean	S.D.	N
Girls	75	15	150
Boys	70	20	250

   Is there a significant difference in effectiveness of drug in boys and girls? (5)

3. a) Explain 2^2 and 2^3 factorial designs. (5)

   b) Describe compounding system for two level factorials. (5)

4. Describe designing and various phases of clinical trial. (10)

SECTION-C

5. An investigator tests a drug which he has reason to believe will increase hemoglobin content in grams/100 ml. The hemoglobin content of eight subjects is measured before and after administration of the drug. Analyze the following data in terms of the effectiveness of the drug. (Test at 5% level of significance)

Subject	Before	After
1	10	12
2	9	11
3	11	13
4	12	14
5	8	9
6	7	10
7	12	12
8	10	14

6. Write a note on Non-random sampling techniques.

7. Describe Wilcoxon Rank Sum test.

8. Four different drugs (A, B, C and D) cause alteration in the brain tissue concentration of acetylcholine (ng/mg). The control group (E) received only the vehicle. Is there any significant difference observed between the treatment groups?

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Treatments	Control	Brain tissue concentrations of acetylcholine			
	E	Drugs			
	17	A	B	C	D
	21	19	18	20	24
	19	22	16	23	28
	11	25	17	25	29
		18	13	20	25

9. Compute correlation coefficient and test for statistical significance at 5% level of significance for following data :

Subject	Weight (lbs)	Cholesterol (mg/100 ml)
1	146	181
2	205	228
3	157	182
4	165	249
5	184	259
6	153	201
7	220	339
8	281	224
9	151	112
10	188	241
11	181	225
12	163	223
13	198	257
14	193	337
15	157	197

10. Write a detailed note onMultiple Correlation and Regression Analysis.

11. What are different optimization techniques? Give detail about their implementation in research.

12. Calculate the value of mean, median and mode from the following :

Variable	10-25	25-40	40-55	55-70	70-85	85-100
Frequency	6	50	44	26	3	1

13. Explain R-online Statistical software.

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Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (Sem.–8)

PHARMACEUTICS-IX (DOSAGE FORM DESIGN)

Subject Code : BPHM-801

M.Code : 72296

Date of Examination : 01-07-22

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.**

SECTION-A

1. **Answer briefly :**

   a. Name any two drugs prone to Oxidation.

   b. Explain Hydrates and Solvates.

   c. Define pKa.

   d. Define sustained release formulation.

   e. Give examples of dosage forms exempted from Bioequivalence testing.

   f. Name any two approaches for Solubility enhancement.

   g. Define Quality audit.

   h. Define Enteric coated tablets. Give Examples of polymers used.

   i. Define Intrinsic solubility.

   j. Discuss the importance of Student's T test.

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   k. Define Angle of Repose.

   l. Define Absolute and Relative bioavailability.

   m. Define GLP.

   n. Define Osmotic tablets.

   o. Define Therapeutic index.

SECTION-B

2. Write a note on evaluation of controlled release formulation.

3. Discuss various factors affecting the oxidation of drugs.

4. Explain IVIVC. Also, discuss each level of IVIVC.

5. What is BCS? Discuss various classes along with suitable example.

6. Discuss major federal guidelines for extended release products.

SECTION-C

7. Discuss the prospective validation of the method of manufacture of suspension.

8. Discuss in detail the various physicochemical properties of drug affecting a formulation.

9. Explain in details the various factors invented in the absorption of drug from GIT.

10. Discuss the role ofprodrug in site specific drug delivery system.

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Roll No. [ ]

Total No. of Questions : 13 Total No. of Pages : 02

B.Pharma. (Sem.-8)

SOCIAL AND PREVENTIVE PHARMACY

Subject Code : BP-802-T

M.Code : 79765

Date of Examination : 05-07-22

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. Write briefly :
   A. Define malnutrition and diseases associated with it.
   B. Define Beriberi and Night Blindness.
   C. Write sources and harmful effects of Tobacco.
   D. Define hygiene and health.
   E. Define drug addiction and drug substance abuse.
   F. Define universal immunization programme.
   G. Mention any four factors which have impact on urban health.
   H. Write salient features of National programme for prevention and control of deafness.
   I. Write salient features of health promotion and education in schools.
   J. Write the mode of transmission and symptoms of Ebola virus.

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SECTION-B

2. Discuss about different types of vitamin deficiency disorders and their prevention.
3. Discuss about integrated disease surveillance programme.
4. Discuss in detail the objectives, functions and outcomes of National Malaria prevention programme.

SECTION-C

5. Explain the concept of prevention and control of disease and social causes of diseases.
6. Discuss about concepts and evaluation of public health.
7. Describe the general principles of prevention and control of *Diabetes Mellitus*.
8. Describe the general principles of prevention and control of acute respiratory infections and influenza.
9. Discuss about National tuberculosis control programme.
10. Discuss about National programme for control of blindness.
11. Discuss about National health intervention programme for mother and child.
12. Discuss about National tobacco control programme.
13. Discuss about functioning of PHC and improvement of rural sanitation.

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June 2022

Roll No. [ ]
Total No. of Questions : 13 Total No. of Pages : 02
B.Pharma. (Sem.-8)
SOCIAL AND PREVENTIVE PHARMACY
Subject Code : BP-802-T
M.Code : 79765
Date of Examination : 05-07-22
Time : 3 Hrs. Max. Marks : 75
INSTRUCTIONS TO CANDIDATES :
1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.
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B. Define Beriberi and Night Blindness.
C. Write sources and harmful effects of Tobacco.
D. Define hygiene and health.
E. Define drug addiction and drug substance abuse.
F. Define universal immunization programme.
G. Mention any four factors which have impact on urban health.
H. Write salient features of National programme for prevention and control of deafness.
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J. Write the mode of transmission and symptoms of Ebola virus
1 | M-79765
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3. Discuss about integrated disease surveillance programme.
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12. Discuss about National tobacco control programme.
13. Discuss about functioning of PHC and improvement of rural sanitation.
NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.
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June 2022

Roll No.

Total No. of Questions : 10 Total No. of Pages : 02

B.Pharma (Sem.-8)
PHARMACOLOGY-IV (Clinical Pharmacy & Drug Interaction)
Subject Code : BPHM-804
M.Code : 72239
Date of Examination : 11-07-22

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :
1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any THREE questions.**
3. **SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.**

SECTION-A

1. **Write briefly :**
   a) Differentiate between Type-1 and Type-2 diabetes mellitus.
   b) Define pharmacodynamic interactions.
   c) What is gout?
   d) What is the clinical significance of therapeutic drug monitoring?
   e) What is essential drug list?
   f) Give two characteristics of cancer cells.
   g) Ulcerative colitis.
   h) Name the enzymes that are estimated in liver function test.
   i) Why mannitokinet is used as bronchial asthma?
   j) What are the common adverse effects of antipsychotic drugs?
   k) Name two drugs used in obesity.
   l) Why all drugs are not prescribed in elderly?
   m) What is pernicious anemia?

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   n) Define congestive heart failure.
   o) What is the need for individualization of drug therapy?

SECTION-B

2. Discuss the following
   a) Drug induced diseases
   b) Pernicious anemia
3. Write a note on pharmacokinetic drug interactions.
4. Describe briefly
   a) Epilepsy
   b) Malaria
5. Describe the following
   a) Rational drug use
   b) Anemia
6. Enlist the various drugs used for the treatment of Parkinson's disease and their rationale.

SECTION-C

7. Discuss the pathophysiology of Parkinson's disease. Classify Anti- Parkinson's drugs.
8. Give an account of thyroid disorders and their pharmacotherapy.
9. Write a note on pharmacotherapy of following
   a) Diabetes mellitus
   b) Depression

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Roll No.

Total No. of Questions : 13 Total No. of Pages : 02

B.Pharmacy (Sem.-8)
PHARMACOVIGILANCE
Subject Code : BP-805-ET
M.Code : 79768
Date of Examination : 11-07-22

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :
1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

SECTION-A

1. Write briefly :
   a) Define Pharmacovigilance and enlist its various objectives.
   b) Define spontaneous and mandatory reporting.
   c) Describe the significance of Vigimed and Vigiflow?
   d) Define the term *'Daily defined doses'*.
   e) Define adverse events following immunization.
   f) Define active and passive surveillance.
   g) Define Eudravigilance.
   h) Enlist the major roles of CDSCO (India) in pharmacovigilance.
   i) Define pharmacogenomics.
   j) Enlist primary and secondary sources of drug information.

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SECTION-B

2. Describe the process of establishment of pharmacovigilance Programme in a hospital
3. Describe the design and methodology of retrospective and prospective observational studies.
4. Describe the ICH guidelines for Pharmacovigilance.

SECTION-C

5. Describe the components and functioning of Pharmacovigilance Program of India.
6. Describe the various methods of causality assessment of ADR.
7. Describe the advantages and limitations of International Classification of Diseases (ICD).
8. Describe the specialized resources for adverse drug reactions.
9. Describe the ways of effective communication in pharmacovigilance system.
10. Explain the differences in Indian and Global pharmacovigilance requirements.
11. Describe the GCP guidelines for conducting pharmacovigilance studies.
12. Draw and explain MedDRA hierarchy.
13. Explain the concept of drug safety evaluation in geriatrics.

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-8)

PHARMACEUTICAL PRODUCT DEVELOPMENT

Subject Code : BP-813 ET

M.Code : 79776

Date of Examination : 15-07-22

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. Write briefly :
   a) Breakthrough products
   b) Direct compression
   c) Critical process parameters.
   d) Disintegration of effervescent tablets.
   e) Flash test
   f) Full forms of ICH and SUPAC.
   g) Level 1 changes
   h) F1 and F2 factors.
   i) Tweens
   j) Hardness.

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SECTION-B

2. Discuss in detail the cyclodextrins and their application in pharmaceutical product development.
3. Enumerate different computer assisted techniques of QBD and discuss factorial design in detail.
4. Discuss the dissolution apparatus I and II along with testing of uncoated tablets mentioned in different pharmacopeias from regulatory point of view.

SECTION-C

5. Explain the significance of new product development.
6. Discuss quality control test of ointments or creams.
7. Discuss the propellents as excipient in aerosols.
8. Which excipients are used for formulation of niosomes, explain?
9. Discuss bracketing and matrixing designs for stability testing of drug substances and drug products.
10. Discuss the labeling requirement on packages according to WHO.
11. Discuss the regulatory aspect of preformulation studies.
12. Discuss the quality assurance aspect of packaging from regulatory point of view.
13. Discuss the solvents and solubilization.

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Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-8)

PHARMACEUTICAL PRODUCT DEVELOPMENT

Subject Code : BP-813 ET

M.Code : 79776

Date of Examination : 15-07-22

Time : 3 Hrs. Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

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   a) Breakthrough products
   b) Direct compression
   c) Critical process parameters.
   d) Disintegration of effervescent tablets.
   e) Flash test
   f) Full forms of ICH and SUPAC.
   g) Level 1 changes
   h) F1 and F2 factors.
   i) Tweens
   j) Hardness

1 |M-79776

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13. Discuss the solvents and solubilization.

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NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-8)

PHARMA MARKETING MANAGEMENT

Subject Code : BP-803ET

M.Code. : 79766

Date of Examination : 16-07-22

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. Write briefly :
   a. Advertising
   b. Industry
   c. Budget
   d. OTC products
   e. Drug Price Control order
   f. Marketing Management
   g. Management
   h. Pharmacist
   i. Retailing
   j. Marketing channels.

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SECTION-B

2. Differentiate between :
   a. Marketing and selling.
   b. Industrial and Global marketing.
   c. Vertical and Horizontal marketing.
   d. Retail Pharmacist and sales representative.
3. Enumerate different promotion techniques for the marketing of pharmaceuticals.
4. Explain NPPA.

SECTION-C

5. Write short note on pricing methods and strategies.
6. What is marketing environment?
7. Enumerate consumer buying behaviour and industrial buying behaviour.
8. What is the role of marketing research?
9. Explain product life cycle with example.
10. What is the role of product branding and labeling decisions on marketing?
11. Highlight duties of professional sales representatives.
12. Explain physical distribution management.
13. What is motivation and prescribing habits of physician?

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Roll No.

Total No. of Questions : 13

Total No. of Pages : 02

B.Pharmacy (Sem.-8)

ADVANCED INSTRUMENTATION TECHNIQUES

Subject Code : BP811ET

M.Code : 79774

Date of Examination : 18-07-22

Time : 3 Hrs.

Max. Marks : 75

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.
3. SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.

SECTION-A

1. Write briefly :
   (a) Write the importance of Radioimmuno Assay.
   (b) What is Chemical shift? Write its significance.
   (c) What is HPTLC-MS?
   (d) Give applications of TGA.
   (e) Enlist the USFDA guidelines.
   (f) What is chemical ionization?
   (g) What is FAB?
   (h) Write about analyzer quadrupole.
   (i) Explain significance of liquid phase extraction.
   (g) State and derive an equation for Brogge law.

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SECTION-B

2. Explain the principle and working of DSC (Differential Scanning Calorimetry).
3. Discuss background and principles of analytical method validation as per ICH guidelines.
4. Explain the fundamental principles and instrumental arrangements of Mass spectrometry.

SECTION-C

5. Explain the fragmentation pattern rules used in Mass spectroscopy.
6. Write a note on single crystal diffraction and powder diffraction.
7. Discuss the instrumentation and application of DTA.
8. Enlist the different X-ray diffraction techniques and explain any one in detail.
9. Write a comparative account on H-NMR and C-NMR.
10. Explain validation parameter for electronic balance.
11. Explain Spin-Spin coupling and coupling constant.
12. Explain the principle and procedure involved in the solid phase extraction.
13. How are X-ray produced? What are the modifications of X-ray tube?

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Roll No.

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma. (Sem.–8)
PHARMACOGNOSY-VI
Subject Code : BPHM-803
M.Code : 72298
Date of Examination : 07-07-22

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.**

SECTION-A

1. **Answer briefly :**

(a) Draw structure of menthol and eucalyptol.

(b) Write uses of sandalwood oil and solasodine.

(c) What is suspension culture? How it is different from callus culture?

(d) Define biotransformation and give it application.

(e) Write the source and importance of geranium and lemon grass oil.

(f) Give two examples of fungal toxins.

(g) Give complete biological source of two natural allergens.

(h) Draw chemical structures of diosgenin and scopolamine.

(i) Name two institutions and industries involved in the research on medicinal and aromatic plants in India.

(j) Define herbs and nutraceuticals. Also give two examples.

(k) Write full form of EMEA. Also, name the committee in EMEA that frame guidelines for herbal drugs.

(l) What are HS and SITC codes?

(m) Draw structure of podophyllotoxin and name two semisynthetic anticancer drugs developed from podophyllotoxin.

(n) Name two anticancer agents from marine sources.

(o) Give complete source, uses and HS code of Valerian.

SECTION-B

2. Write a note on photosensitizing agents.
3. Discuss the requirements for registering and marketing a plant based product in India.
4. Write the utilization and production of calcium ammonides.
5. Write a note on healthy foods.
6. Write a brief note on the trade of tanal.

SECTION-C

7. Write a detailed note on chemotaxonomy of medicinal plants.
8. Write an elaborated note on herbal cosmetics.
9. Elaborate on various requirements for performing plant tissue culturing.
10. Discuss various anti-inflammatory and antimicrobial agents obtained from marine sources.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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Roll No.

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2012 to 2016) (Sem.–8)
PHARMACEUTICAL CHEMISTRY – VIII
(MEDICINAL CHEMISTRY – III)
Subject Code : BPHM-805
M.Code : 72300

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.**

SECTION-A

1. **Answer briefly :**

(a) Classified structure of Cephalosporins.

(b) Name two synthetic progesterone.

(c) Give any two structures of drugs used as antifungal.

(d) Write out the mechanism of action of Vinca alkaloids.

(e) Oral hypoglycemic agents.

(f) Sketch the structure and medicinal uses of Thiabendazole.

(g) Name two semisynthetic cephalosporin derivatives.

(h) Name and mechanism of antithyroid drug.

(i) Antifilarial agents.

(j) Give full form and use of T4.

(k) Mode of action of quinolone antibacterials.

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(l) Define transcription and Translation.

(m) What is term diagnostic agents, give example?

(n) What do you mean by pharmaceutical aids?

(o) Explain reductive example giving suitable example.

SECTION-B

2. Write the structure, synthesis and uses of Primaquine.
3. Give detailed classification of antibacterial drugs with examples.
4. Illustrate the structure, synthesis, and uses of Isoniazid.
5. What is fungal infection? Add a note on imidazole antifungals.
6. Give a diagrammatic presentation showing biosynthesis and secretion of Insulin.

SECTION-C

7. Give a detailed account on Diagnostic agents.
8. Elaborate the medicinal chemistry aspects of anti-malarials with emphasis on history, chemical classification with examples, mechanism of action of each class and synthesis of any two drugs
9. Discuss the various types of Phase-I biotransformation pathways and the role of Cytochrome P450 enzyme system in Phase-I biotransformation
10. Write structure, IUPAC name, synthesis and mechanism of action of the following :
    a. Metronidazole
    b. p-aminosalicyclic acid

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Roll No. [ ]

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2012 to 2016) (Sem.–8)
PHARMACOLOGY-IV
(Clinical Pharmacy & Drug Interaction)
Subject Code : BPHM-804
M.Code : 72299

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.**

SECTION-A

1. **Write briefly :**
   a) Clinical Pharmacy
   b) Bioavailability
   c) Pharmacokinetics
   d) Half life
   e) Drug interaction
   f) TDM
   g) Rational use of drugs
   h) Hypertension
   i) Parkinsonism
   j) Obesity
   k) Goiter
   l) UTIs
   m) Gout

1 |

Dec 19

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n) Cancer
o) Asthma

2 |

SECTION-B

2. Write short notes on
   a) Essential drugs
   b) Thyroxine
3. Discuss the following
   a) Clinical toxicology
   b) Nitrates in angina
4. Discuss the drugs for management hypertension in pregnancy
5. Classify drugs used for treatment of depression and discuss pharmacology of SSRIs
6. Explain mechanism of action, therapeutic uses and adverse effects of high- ceiling diuretics.

SECTION-C

7. Write notes on the following
   a) Atypical antipsychotics
   b) Beta agonists
8. Discuss the following
   a) Anemias
   b) Anti-malarial drugs
9. Discuss the principles of drug therapy in pediatrics with suitable examples
10. Classify anti-epileptic drugs. Explain in detail the pharmacology and therapeutic indications of newer drugs along with their side-effects

NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC case against the student.

Roll No. | | | | | | | | | | |

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2012 to 2016) (Sem.–8)

PHARMACOLOGY-IV

(Clinical Pharmacy & Drug Interaction)

Subject Code : BPHM-804

M.Code : 72299

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION-A

1. **Write briefly :**

   a) Clinical Pharmacy

   b) Bioavailability

   c) Pharmacokinetics

   d) Half life

   e) Drug interaction

   f) TDM

   g) Rational use of drugs

   h) Hypertension

   i) Parkinsonism

   j) Obesity

   k) Goiter

   l) UTIs

   m) Gout

Dec 19

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   n) Cancer

   o) Asthma

SECTION-B

2. Write short notes on :

   a) Essential drugs

   b) Thyroxine

3. Discuss the following :

   a) Clinical toxicology

   b) Nitrates in angina

4. Discuss the drugs for management hypertension in pregnancy.

5. Classify drugs used for treatment of depression and discuss pharmacology of SSRIs.

6. Explain mechanism of action, therapeutic uses and adverse effects of high- ceiling diuretics.

SECTION-C

7. Write notes on the following :

   a) Atypical antipsychotics

   b) Beta agonists

8. Discuss the following :

   a) Anemias

   b) Anti-malarial drugs

9. Discuss the principles of drug therapy in pediatrics with suitable examples.

10. Classify anti-epileptic drugs. Explain in detail the pharmacology and therapeutic indications of newer drugs along with their side-effects.

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Roll No.

Total No. of Questions : 10 Total No. of Pages : 02

B.Pharma (2012 to 2016) (Sem.–8)
PHARMACOGNOSY-VI
Subject Code : BPHM-803
M.Code : 72298

Time : 3 Hrs. Max. Marks : 80

INSTRUCTION TO CANDIDATES :
1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION-A

1. Answer briefly :

(a) Draw structure of podophylltoxin and diosgenin.

(b) What do you understand by SITC and HS codes? Also give their full form.

(c) Give complete source and commercial use of vetiver oil.

(d) Define Macro- and micro-nutrients. Give two examples of each that are used in plant tissue culture.

(e) Name two anti-inflammatory agents (with complete biological source) obtained from marine sources.

(f) Name two institutions and industries involved in the work on medicinal and aromatic plants in India.

(g) Define Nutraceuticals. Name the regulatory body in India that regulate food products.

(h) Give complete biological source, importance and HS code of cinchona.

(i) What is an explants? Enlist the characters of explants that affects the culture growth.

(j) What are photosensitizing agents? Give two examples.

(k) Give commercial applications of sennosides and geranium oil.

(l) What are fungal toxins? Give two examples.

(m) Name two anti-microbial agents from marine sources.

(n) Give sources of taxol. Also write the name of its major precursor obtained from plants.

(o) Give HS code for aloe and its commercial uses.

SECTION-B

2. Discuss about chemotaxonomy and its importance in the field of medicinal plants.

3. Discuss importance and world-wide trade of Licorice.

4. Write a note on hairy root culture and its importance in medicinal plant research.

5. Discuss various natural allergens.

6. What are the various steps involved in registration of a herbal product.

SECTION-C

7. Discuss in detail the utilization and production methods of tropane alkaloids and quinine.

8. (a) Give an account of anti-cancer agents obtained from marine sources.

(b) Give utilization of lemon grass oil and its products.

9. Discuss various steps involved in performing plant tissue culture.

10. Define Herbal Cosmetics and give a detail view about plants and/or phytoconstituents used in herbal cosmetics.

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Roll No.

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2012 to 2016) (Sem.–8)

PHARMACEUTICAL ANALYSIS – III

Subject Code : BPHM-802

M.Code : 72297

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION-A

1. **Answer briefly :**

   a. Define auxochrome

   b. Give full form of MALDI

   c. Define Wood ward Fischer rules for dienes

   d. What do you mean by term chromophores?

   e. Define coupling constant

   f. Single and double beam UV

   g. Prism

   h. Space lattice.

   i. Relation between energy and wavelength

   j. Monochromators

   k. Name two UV detectors

   l. Time of Flight

   m. Difference between hysochromic and hyperchromic shifts

   n. What do you mean by molecular Ion peak in Mass spectra?

   o. Deutrium exchange and its application

SECTION-B

2. Briefly describe the sample handling in IR.

3. Powder X ray crystallography.

4. Discuss the instrumentation of UV 1.

5. Short note on atomic absorption spectroscopy.

6. Brief overview of applications of mass spectrophotometry.

SECTION-C

7. Discuss in detail Fluorometric detectors.

8. Give a detailed account on Raman Spectroscopy.

9. Give the principle, working and application of Flame photometry.

10. Discuss general fragmentation pattern in Mass spectrophotometer for identification of organic compounds.

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Roll No.

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2012 to 2016) (Sem.–8)
PHARMACEUTICS-IX (DOSAGE FORM DESIGN)
Subject Code : BPHM-801
M.Code : 72296

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION-A

1. **Answer briefly :**

a. Describe the role of solubility in preformulation studies.

b. Define bioequivalence.

c. Define polymorphism.

d. Define dissolution.

e. Define bioavailability.

f. Name any two drugs prone to hydrolysis.

g. Define solvates.

h. Name any two drugs prone to oxidation.

i. Explain hydrates.

j. Define prodrugs.

k. Discuss the importance of student's T test.

l. Name any two approaches for solubility enhancement.

m. Define absolute and relative bioavailability.

n. What are controlled release dosage forms?

o. What are biodegradable polymers?

SECTION-B

2. What are the polymers used for enteric coated tablets? Discuss the in vitro testing of enteric coated tablets.

3. Discuss various factors affecting the oxidation of drugs.

4. What is BCS? Discuss various classes along with suitable example.

5. What are the prominent features of quality assurance?

6. Explain the rationale for retrospective validation. Also, discuss the process briefly.

SECTION-C

7. Discuss preformulation studies. Enlist the various properties of the drugs to be considered while performing the preformulation studies.

8. Discuss the ICH guidelines for accelerated stability studies.

9. Classify oral controlled release drug delivery system.

10. Explain the application of prodrugs in various pharmaceutical fields.

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Roll No. | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 10

B.Pharma (2011 to 2016) (Sem.–8)

PHARMACEUTICAL CHEMISTRY – VIII

(MEDICINAL CHEMISTRY – III)

Subject Code : BPHM-805

M.Code : 72300

Max. Marks : 80

Time : 3 Hrs.

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION-A

1 I. Give structure, IUPAC name and one specific use of following drugs :

a. Isoniazid

b. Methicillin

c. Proguanil

d. Ornidazole

e. Mebendazole

f. Fluconazole

g. Abacavir

h. Docetaxel

i. Temoxifen

j. Methimazole

II. Attempt the following :

a. What is biotransformation?

b. Draw structures of two drugs that undergoes sulphonation by glutathione-S-transferase?

c. What are meglitinides?

d. Draw structures of T4 and T3 thyroid hormones?

e. Draw the structures of two aminopyrimidine derivatives used in combination therapy with sulphonamide.

SECTION-B

2. Discuss SAR of 4-aminoquinolines for anti-malarial activity.

3. What are anthelmintics? Give synthesis of Nicolsamide.

4. Draw structures of imidazole derivatives used for treatment of fungal infection. Give synthesis of any one of them.

5. Give an account of antithyroid drugs.

6. Give structures and mechanism of action of purine analogues used as antiviral agents.

SECTION-C

7. Describe various types of reactions involved in phase I of drug metabolism citing suitable example of each.

8. a) Discuss the SAR of thyroid hormones.

   b) Discuss structure of insulin.

9. Classify antineoplastic drugs with two structural examples of each class. Give synthesis of chlorambucil.

10. What are (β-lactam antibiotics? Describe various classes of penicillins.

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May – 2019

Roll No. | | | | | | |

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2011 to 2016) (Sem.–8)

PHARMACOLOGY-IV

(Clinical Pharmacy & Drug Interaction)

Subject Code : BPHM-804

M.Code : 72299

Time : 3 Hrs. **Max. Marks : 80**

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
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SECTION-A

1. **Answer briefly :**

a) Write briefly about bioavailabilty.

b) Write briefly about first pass metabolism.

c) Write briefly about clearance.

d) Write briefly about pernicious anaemia.

e) Write briefly about torse de pointes.

f) Write briefly about myocardial infaction.

g) Write briefly about individualization of drug therapy.

h) Write briefly about ankylosing spondylitis.

i) Write briefly about hepatitis.

j) Write briefly about enteric infection.

k) Write briefly about ulcerative colitis.

l) Write briefly about juvenile rheumatoid arthritis.

m) Write briefly about acute leukemia.

n) Define primary and secondary hypertension.

o) Define bradycardia and tachycardia.

SECTION-B

2. Discuss about drug induced diseases.
3. Discuss about various liver function tests and their clinical significance..
4. Discuss about angina and its management.
5. Discuss about gout and hyperuricemia and its management.
6. Discuss about principles of drug therapy in pediatrics and geriatrics.

SECTION-C

7. Discuss in detail about clinical symptoms, clinical laboratory diagnostic tests and pharmacological management of congestive heart failure.
8. Discuss in detail about clinical symptoms, clinical laboratory diagnostic tests and pharmacological management of diabetes mellitus.
9. Discuss in detail about clinical symptoms, clinical laboratory diagnostic tests and pharmacological management of tuberculosis.
10. Discuss in detail about clinical symptoms, clinical laboratory diagnostic tests and pharmacological management of asthma.

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May – 2019

Roll No.

Total No. of Questions : 10

Total No. of Pages :02

B.Pharma (2011 to 2016) (Sem.–8)

PHARMACOGNOSY-VI

Subject Code : BPHM-803

M.Code : 72298

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
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SECTION-A

1. Answer briefly :

   a) Mention 2 advantages and 2 limitations of drugs of natural origin.

   b) Mention 2 problems faced by the medicinal plant industry.

   c) Give complete biological sources of 2 drugs of marine origin.

   d) Mention 2 industries and 2 institutes involved with medicinal and aromatic plants.

   e) Enumerate 4 requirements for plant tissue culture.

   f) Medicinal plants can be obtained from wild and cultivated sources. Which is better?

   g) Who are the major producers and consumers of medicinal plants?

   h) Give the basic structure of tropane alkaloids. Give 2 commercial sources of tropane alkaloids.

   i) Give complete source and uses of 2 plants used in cosmetics.

   j) What is the ideal temperature and pH for plant tissue culture?

   k) Give the source and structure of a natural photosensitizing agent.

   l) Give the commercial sources and structure of diosgenin.

   m) What is totipotency?

   n) Mention 2 medicinal and 2 aromatic plants that India exports.

   o) Mention the different international and national agencies regulating aspects for herbal products.

SECTION-B

2. What are the differences between cosmetics and herbal cosmetics? Name 2 industries producing herbal cosmetics internationally and in India

3. Compare callus and suspension culture.

4. Describe the production and utilization of mentha oil and its by-products.

5. How can the production of secondary metabolites be increased in plant tissue culture?

6. Describe the WHO requirements for using medicinal plants.

SECTION-C

7. The trade in medicinal and aromatic plants is the backbone of a nation's economy. Justify with suitable examples.

8. Explain the following :

   a) Importance of chemotaxonomy.

   b) Natural allergens.

9. Write notes on :

   a) Trade in natural laxatives.

   b) Commercial production and utilization of lemon grass oil.

10. What are the advantages and limitations of plant tissue culture? What are the applications of plant tissue culture in Pharmacognosy?

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May-2019

Roll No. | | | | | | | | | | |

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2011 to 2016) (Sem.–8)

PHARMACEUTICAL ANALYSIS – III

Subject Code : BPHM-802

M.Code : 72297

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
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SECTION-A

Q1 Answer briefly :

(a) What is the function of grating monochromators in spectrophotometer?

(b) What are electromagnetic radiations?

(c) Explain allowed transition versus forbidden transition.

(d) Define bathochromic shift.

(e) Define spectroscopy.

(f) Explain triplet excited state of molecule giving diagram.

(g) Define vibrational frequency.

(h) Define interplanar spacing in crystal system.

(i) Explain nuclear magnetic moments.

(j) Define chemical shift.

(k) Explain nitrogen rule in mass spectrometry.

(l) Define atomization. State two methods that are used to atomize a sample.

(m) Explain purpose of Hollow Cathode lamp in atomic absorption spectroscopy.

(n) Define molecular ion peak in mass spectrum

(o) What are Miller indices?

SECTION-B

2. Explain the Beer's law. Describe factors responsible for deviation from Beer's law.

3. Discuss structure requirement for fluorophore. What are the factors affecting fluorescence?

4. Explain principle of infrared spectroscopy. What information can be obtained from IR spectroscopy?

5. Discuss principle and applications of polarimeter.

6. What is the principle of NMR spectroscopy? Discuss spin-spin splitting.

SECTION-C

7. Describe instrumentation and application of flame photometry.

8. Give an account of principle and applications of atomic absorption spectroscopy.

9. What is diffraction of x-ray by crystals? Discuss in detail Bragg's equation and its applications.

10. Explain construction and analytical applications of mass spectrometry.

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May – 2019

Roll No. | | | | | | | | | | |

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2011 to 2016) (Sem.–8)
PHARMACEUTICS-IX (DOSAGE FORM DESIGN)
Subject Code : BPHM-801

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
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SECTION-A

1. Answer briefly :

   a) What is meant by pharmaceutic equivalent?

   b) What is retrospective validation?

   c) What is racemization? Give two examples.

   d) Give two examples of BCS III drugs.

   e) What should be the disintegration time of dispersible tablets IP?

   f) Mention the stability testing conditions for Zone II.

   g) Propyl gallate and EDTA are used for which purposes?

   h) Give examples of two drugs that are formulated in micronized state.

   i) Mention the methods that can be used for enhancing the solubility of poorly water soluble drugs.

   j) Differentiate between controlled and delayed release.

   k) Why is DOSS added to dissolution media?

   l) What is absolute availability?

   m) What is the difference between excretion and elimination?

   n) Enumerate different types of particle diameters.

   o) What is meant by sedimentation volume of suspensions?

SECTION-B

2. Write briefly about the impact of particle size and shape in influencing the stability of suspensions.

3. Giving examples of prodrugs that have proven advantage over their parent molecular forms, explain the reasons thereof.

4. What is BCS? Briefly describe the different classes of drugs giving examples.

5. Give examples of drugs that are highly prone to oxidation and suggest methods to make them stable.

6. Write a brief note on Quality Audit.

SECTION-C

7. Enlist the physicochemical properties of drugs that are evaluated during preformulation phase. Discuss the importance of particle size, shape and density in influencing dosage form development.

8. What is validation? Explain the different types of validations and mention the conditions for which they are carried out.

9. Discuss the key features of a Bioequivalence trial. Discuss the ICH requirements for establishing Bioequivalence of drug products.

10. Discuss the IVIVC requirements according to ICH guidelines.

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May-2019

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Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2011 to 2016) (Sem.–8)

PHARMACEUTICAL ANALYSIS – III

Subject Code : BPHM-802

Paper ID : [72297]

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION-A

Q1 Answer briefly :

a) What is red shift in UV?

b) What is dismagnetic anisotropy?

c) Explain the terms fluorescence and phosphorescence.

d) Explain circularly polarized light.

e) Write down the significance of finger print region in IR.

f) Why symmetric stretch of CO_2 molecule is inactive in IR?

g) Define base peak and molecular ion peak in MS.

h) What is the use of TMS in NMR spectroscopy?

i) Explain the term optical rotatory dispersion.

j) Write down the basic principle of polarimetry.

k) What is mull method in IR?

l) Why $CDCl_3$ is used as a solvent in NMR spectroscopy instead of $CHCl_3$?

m) Is flame photometry emission spectroscopy? Comment.

n) Write two pharmaceutical applications of AAS.

o) Explain the term space lattice.

SECTION-B

Q2 What is an electromagnetic spectrum? Name the various spectroscopic methods based on electromagnetic radiations.

Q3 Derive Beer-Lambert law for quantification of compounds by UV spectroscopy.

Q4 Discuss the applications of X-ray spectroscopy in pharmaceutical analysis.

Q5 Describe working of a Quadrupole Mass analyser.

Q6 Explain Spin-spin coupling in ^{1}HNMR with appropriate examples.

SECTION-C

Q7 Write an account of diffraction of X-ray by crystals.

Q8 Explain the working principle of flame photometer by drawing its block diagram. Give quantitative pharmaceutical applications of flame photometry.

Q9 Explain the following in MS

a) McLafferty rearrangement

b) Tropyliumion

c) Isotope peaks

Q10 What are the various instruments used in infrared spectroscopy? Why a double beam spectrophotometer is preferred? Draw a schematic diagram of such instrument. Explain its working describing functioning of individual parts.

Roll No. [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

Total No. of Questions : 10

Total No. of Pages : 02

B.Pharma (2011 to 2016) (Sem.–8)

PHARMACEUTICS-IX (DOSAGE FORM DESIGN)

Subject Code : BPHM-801

Paper ID : [72296]

Time : 3 Hrs.

Max. Marks : 80

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
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SECTION-A

1. Answer briefly :

a. Define bioavailability.

b. Define angle of repose.

c. Define enantiotropic polymorph.

d. Define solvates.

e. Name any two drugs prone to oxidation.

f. Explain hydrates.

g. Define pKa.

h. Discuss the importance of student's T test.

i. Define sustained release formulation.

j. Give examples of dosage forms exempted from bioequivalence testing.

k. Name any two approaches for solubility enhancement.

l. Define absolute and relative bioavailability.

m. Define osmotic tablets.

n. Define therapeutic index.

o. Define implants.

SECTION-B

2. What are the polymers used for extended release tablets? Discuss the *in vitro* testing of extended release tablets.

3. Explain the rationale for retrospective validation. Also, discuss the process briefly.

4. Discuss various factors affecting the oxidation of drugs.

5. What is BCS? Discuss various classes along with suitable example.

6. What are the prominent features of quality assurance?

SECTION-C

7. Discuss importance of pH and pka at the site of absorption. Enlist the various properties of the drugs to be considered while performing the preformulation studies.

8. Discuss the ICH guidelines for accelerated stability studies.

9. What are implants? Discuss implants with few commercialised examples.

10. Discuss the prominent features of cGMP related to manufacturing of tablets.

Dec 2018

Roll No.

Total No. of Questions : 10

Total No. of Pages :02

B.Pharma (2011 to 2016) (Sem.–8)

PHARMACOGNOSY-VI

Subject Code : BPHM-803

Paper ID : [72298]

Time : 3 Hrs.

Max. Marks ; 80

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION-A

Q.1 Answer briefly :

(a) Define chemotaxonomy.

(b) Write two uses each for mentha oil and diosgenin.

(c) Give the full from of HS and SITC codes.

(d) What are photosensitizing agents?

(e) Give structure of quinine and glycyrrhizin.

(f) Name two institutions involved in the research on medicinal and aromatic plants in India

(g) Write full form of EMEA

(h) Give complete biological source of geranium oil

(i) Define elicitors

(j) Write four macro nutrients required for preparation of media in plant tissue culture

(k) Give the source and commercial utilization of vetiver oil

(l) Give complete source, importance and HS code of Ipecac

(m) What are multiple shoot cultures?

(n) Draw structure of reserpine and give its complete biological source

(o) Define health foods. Also give two examples

SECTION-B

Q.2 What are nutraceuticals? Write a brief note on the importance of nutraceuticals in drug market.

Q.3 Discuss the world-wide trade of laxative plants

Q.4 Write the utilization of sandal wood oil and its derived products.

Q.5 Discuss the role of chemotaxonomy in the field of medicinal plants

Q.6 Write a brief note on the utilization and production of podophyllotoxin

SECTION-C

Q.7 What are herbal cosmetics? Discuss in detail various plants and phytoconstituents used in herbal cosmetics.

Q.8 Write an elaborated note on Natural Allergens

Q.9 Discuss various medicinal agents obtained from marine sources

Q.10 How will you differentiate between callus and suspension cultures? What are the requirements for developing both types of cultures?

Roll No. [ ]

Total No. of Questions: 10

Total No. of Pages: 02

B.Pharma (2011 & Onwards) (Sem. – 8)

PHARMACOGNOSY-VI

M Code: 72298

Subject Code: BPHM-803

Paper ID: [72298]

Time: 3 Hrs.

Max. Marks: 80

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION A

1. Answer the following briefly:
   a) Biological source of Papain.
   b) Commercial sources of tropane alkaloids.
   c) Two drugs from marine source.
   d) Two photosensitizing agents.
   e) Complete biological source of two plant laxatives.
   f) What is the ideal temperature and pH for plant tissue culture?
   g) Mention the commercial uses of lemon grass oil.
   h) Mention two plants that India exports.
   i) What are neutraceuticals?
   j) Growth hormones essential for plant tissue culture.
   k) Source of podophyllotoxin.
   l) Source and uses of Eucalyptus oil.
   m) Examples of plants used in cosmetics.
   n) Trade in taxol.
   o) What is micropropagation?

SECTION B

2. Write a note on production and utilization of Mentha oil and its by-products.
3. What are the different regulatory aspects for herbal products?
4. The sea is a source of novel medicinal agents. Justify this statement.
5. Write a note on world wide trade in Aloe or Ginseng.
6. Describe the ideal media requirements for plant tissue culture.

SECTION C

7. Discuss in detail the applications of plant tissue culture in Pharmacognosy. Explain how secondary metabolite production can be increased in plant tissue culture.
8. Write a detailed account on India's role in the trade of medicinal and aromatic plants.
9. Write descriptive note on: (5+5)
   a) Commercial utilization of Aromatic plants.
   b) Importance of chemotaxonomy for study of medicinal plants.
10. Explain the following: (5+5)
    a) Requirements for improving trade in medicinal plants.
    b) Plants are the backbone of the steroid industry.

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Total No. of Questions: 10

Total No. of Pages: 02

B.Pharma (2009-2010 Batch) (Sem. – 8)

PHARMACEUTICAL CHEMISTRY-VIII

(Medicinal Chemistry-III)

M Code: 46242

Subject Code: PHM-483

Paper ID: [D1147]

Time: 3 Hrs.

Max. Marks: 80

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.**

SECTION A

1. a) Draw structure and uses of an antiretroviral agent.

   b) Give structure and chemical name of an antiprotozoal drug.

   c) Write mechanism of action of 4-aminoquinoline based antimalarial agents.

   d) Give structure and mechanism of action of a drug used in cestode infection.

   e) Write the structure and IUPAC name of Thiacetazone.

   f) Name two antithyroid drugs and write their medicinal uses.

   g) What is the significance of mixed sulphonamides?

   h) Write the structure and medicinal uses of silver sulphadiazine.

   i) Give the structure and chemical name of metronidazole? What is its use?

   j) Draw structure of an anti-AIDS agent.

   k) Write structure and chemical name of Chlorambucil.

   l) Give example of an amino acid conjugation reaction.

   m) Discuss mode of action of hormone agonist as anticancer agent.

   n) Give structure and uses of any one sulphonamide used for intestinal infections.

   o) Name two antibiotics derived from sugars and enlist their main side effects.

SECTION B

2. Describe SAR of various suiphonamides as antibacterial agents.
3. Write synthesis and mechanism of action of Primaquine.
4. Give the classification of antiprotozoal agents in the form of a flow-sheet giving one example each. Give the synthesis of metronidazole.
5. Write a note on Vinca alkaloids as antineoplastic agents.
6. Classify Penicillins? Discuss the mechanism of action and adverse effects of Penicillins?

SECTION C

7. Describe phase-II drug metabolism reactions. Give examples.
8. What is crystalluria? Discuss various ways to prevent this problem when a patient is on sulphonamide therapy.
9. Provide a detailed account of Polypeptide antibiotics and tetracyclins as antibacterial agents
10. Write notes on the following:-

    a) Antifilarial agents

    b) Antiretroviral agents

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Total No. of Questions: 10

Total No. of Pages: 02

B.Pharma (2011 & Onwards) (Sem. – 8)

PHARMACEUTICAL CHEMISTRY – VIII / MEDICINAL CHEMISTRY – III

M Code: 72300

Subject Code: BPHM-805

Paper ID: [72300]

Time: 3 Hrs. **Max. Marks: 80**

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.**

SECTION A

1. Write briefly:

a) Name two Barbiturates that undergo oxidative metabolic degradation.

b) Name two enzyme systems involved in reductive metabolism of drugs.

c) Comment on stereochemistry present in penicillinase resistant penicillin.

d) Draw structure of two organic flavoring agents.

e) Define bactericidal agents.

f) Draw structure of two aromatic carboxylic acid used as preservatives.

g) What is the difference between cinchonidine and cinchonine?

h) Give synthesis of Thiacetazone.

i) Draw the structure of two anti-filarial agents.

j) Define term schizonticides.

k) Name two second generation anti-TB drugs.

l) How many intra-disulphide bridges are present in structure of proinsulin?

m) What is Grave's disease?

n) Draw structure and use of ketoconazole.

o) What are radio opaques?

SECTION B

2. Comment on second generation quinolones as antibacterial agents.
3. Discuss SAR of Tertracyclin.
4. Write note on glutathione conjugation in Phase-II metabolic pathway.
5. Outline synthesis and mode of action of metronidazole.
6. Describe the structure of insulin.

SECTION C

7. Describe the chemistry and salient features of cephalosporin's antibiotics.
8. Describe the structure and mode of action of nitrogen mustard antineoplastics.
9. Classify oral hypoglycemic agents with suitable structure examples. Discuss the SAR of sulphonyl urea.
10. Discuss the important structural features of 8-amino quinolones necessary for antimalarial activity. Give synthesis of primaquine.

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Total No. of Questions: 10

Total No. of Pages: 02

B.Pharma (2009-2010 Batch) (Sem. – 8)

PHARMACOLOGY-IV (Clinical Pharmacy & Drug Interactions)

M Code: 46062

Subject Code: PHM-485

Paper ID: [D0141]

Time: 3 Hrs.

Max. Marks: 80

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.**

SECTION A

1. Briefly discuss the following:
   a) Clinical Pharmacokinetics
   b) Gray baby syndrome
   c) Management of epilepsy in children
   d) COMT inhibitors
   e) Iron supplements
   f) SGLT-2 Inhibitors
   g) Radioactive iodine
   h) Cardio selective calcium channel blockers
   i) AT1 blockers
   j) Vasodilators
   k) SSRIs
   l) PDE 4 Inhibitors
   m) Leukemia
   n) Hodgkin's disease
   o) Anti-arrhythmic

SECTION B

2. Write short notes on:
   a) Principles of clinical toxicology
   b) Interpretation of liver function tests
3. Discuss the following:
   a) Management of hepatitis
   b) Drug therapy for gout
4. Briefly discuss drug therapy for tuberculosis.
5. Discuss clinical status of proton pump inhibitors.
6. Describe erectile dysfunction. Discuss its management.

SECTION C

7. Write notes on the following:
   a) Essential drugs
   b) Clinical management of epilepsy
8. Discuss the following:
   a) Soft steroid for asthma
   b) Drug induced diseases
9. Discuss the principles of drug therapy during pregnancy
10. Give your views on clinical management of hypertension

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Total No. of Questions: 10

B. Pharma (2011 & Onwards) (Sem. – 8)

PHARMACEUTICS-IX (DOSAGE FORM DESIGN)

M Code: 72296

Subject Code: BPHM-801

Paper ID: [72296]

Time: 3 Hrs. Max. Marks: 80

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION A

1. a) What is meant by intragranular porosity?

   b) What is polymerization and how does it influence dosage form performance.

   c) What are the advantages and limitations associated with micronization of drugs.

   d) What is a wetting agent? Give examples and the considerations while using them.

   e) What are pro-drugs? Give two examples with their advantages.

   f) Mention the limit for disintegration time of hard gelatin capsules.

   g) Name two drugs which are photosensitive and enumerate the approaches employed to prevent it.

   h) Classify the BCS with two examples of each class.

   i) Define bioavailability.

   j) What is meant by biopharmaceutics?

   k) Illustrate with the help of a graphical representation, the difference between drug release from conventional tablet, sustained release tablet and delayed release tablet.

   l) What is simulated gastric fluid and when is it used?

   m) What is meant by retrospective validation.

   n) Differentiate between absolute and relative bioavailability.

   o) Mention the stability indicating parameters for suspensions.

SECTION B

2. Give a brief account of the importance of oxidation and hydrolysis in influencing stability of pharmaceutical products.
3. Giving examples of pro-drugs and explain their role in enhancing the stability and performance of drugs.
4. Discuss CGMP norms for a pharmaceutical plant.
5. Differentiate between prospective, retrospective and concurrent validation? Also mention the criteria for selecting a validation method.
6. What is dielectric constant? Discuss its importance in formulation development.

SECTION C

7. Explain how the solid state characteristics of drugs influence the dosage form design and performance.
8. What is meant by quality assurance? Briefly write about the components of quality assurance in an industry.
9. Discuss BCS (giving examples of drugs) highlight the approaches for enhancing the solubility and permeability of drugs.
10. Discuss the IVIVC according to FDA requirements.

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B.Pharma (2009-2010 Batch) (Sem. – 8)

PHARMACEUTICAL ANALYSIS-III

M Code: 46241

Subject Code: PHM-482

Paper ID: [D1146]

Time: 3 Hrs. Max. Marks: 80

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.**

SECTION A

1. Explain in brief:

a) Bragg's Law

b) Auxochrome

c) Braggs equation

d) Full form of MALDI is

e) Finger print region

f) Wood ward Fischer rules for dienes

g) Hysochromic shift

h) Miller indices

i) Relation between energy and wavelength.

j) Number of peaks in NMR spectra for Ethyl alcohol.

k) Monochromators

l) Base peak

m) Name of two detectors used in UV.

n) Molar extinction coefficient

o) Time of Flight

SECTION B

Write short note on any four:

2. Mc Lafferty rearrangement
3. Raman Spectroscopy
4. Absorption spectroscopy
5. Instrumentation of NMR
6. Factors effecting fluorescence of a compound

SECTION C

7. Explain the basic principle of NMR spectroscopy, Why it is differeat from ESR? Discuss the nuclear over Hauser effect in NMR.
8. What is Hooks law and how it can be useful to determine the frequency of various types of bands.
9. Explain single and powder crystal X ray diffraction technique.
10. Give the principle and application of Polarimetry

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Total No. of Questions: 10

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B.Pharmacy (2011 & Onwards) (Sem. – 8)

PHARMACEUTICAL ANALYSIS – III

M Code: 72297

Subject Code: BPHM-802

Paper ID: [72297]

Time: 3 Hrs.

Max. Marks: 80

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.**

SECTION A

1. Explain the terms:

a) Space lattice

b) Isotopic peak

c) Relation between energy and wavelength.

d) Number of peaks in NMR spectra for Ethyl alcohol

e) Monochromators

f) Base peak

g) Name of two detectors used in UV

h) Molar extinction coefficient

i) Time of Flight

j) Define Beer lamber's law.

k) What are hysochromic and hyperchromic shifts?

l) Coupling constant

m) Molecular Ion peak

n) Wagging in IR

o) Deutrium exchange

SECTION B

Write notes on:

2. Raman Spectroscopy
3. Affect of hydrogen bonding in IR
4. Spin Spin coupling and coupling constant
5. Application of Flourimetry
6. Principle of polarimetry

SECTION C

7. Explain Powder and Single crystal X ray diffraction techniques in detail. Derive expression for Bragg equation and give its application.
8. Explain the basic principle and sample handling of IR spectroscopy. Explain different types of stretching and bending vibrations.
9. Discuss the instrumentation of UV in detail.
10. Detailed account of Atomic absorption spectroscopy.

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B.Pharma. (2011 & Onwards) (Sem. – 8)

PHARMACOLOGY-IV

(Clinical Pharmacy & Drug Interaction)

M Code: 72299

Subject Code: BPHM-804

Paper ID: [72299]

Time: 3 Hrs.

Max. Marks: 80

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION A

1. Write briefly:
   a) Write four major factors affecting individualization of drug therapy.
   b) Define the terms 'narrow therapeutic index' & 'therapeutic window phenomenon'.
   c) Write the importance of estimating serum BUN and creatinine.
   d) Write names and describe the importance of estimating hepatic function tests.
   e) Write mechanism of action of glipizide.
   f) Write mechanism of action of methotrexate.
   g) Write clinical features of rheumatoid arthritis.
   h) Classify drugs for peptic ulcers.
   i) Write the major adverse effects of anti-malarial drugs.
   j) 'What are the adverse effects of beta-blockers'?
   k) Explain the basis of rational drug use.
   l) Define the terms LD_{50} and ED_{50}.
   m) Define and write the formula for calculating BMI.
   n) Define and explain the term rheumatoid factor.
   o) Write applications of clinical pharmacy.

SECTION B

2. Describe the clinical symptoms/features of Schizophrenia.
3. Briefly describe the importance and course of DOTS therapy for tuberculosis.
4. Describe the clinical indications and major adverse effects of Quinolones and calcium channel blockers.
5. Briefly describe the mechanisms of action of the following drugs:
   a) Insulin sensitizers
   b) Throxine
6. Describe therapeutic management of gout.

SECTION C

7. Explain with suitable examples the pharmacokinetic aspects of drug interactions. Discuss also various methods for prevention of drug-drug interactions.
8. Write short notes on the following:
   a) Essential drugs
   b) Factors affecting drug use in the elderly.
9. Describe the patho-physiology and therapeutic management of Rheumatoid arthritis.
10. Define and Classify stages of Angina pectoris and describe therapeutic management of Angina.

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Total No. of Questions: 10

Total No. of Pages: 02

B.Pharma (2009-2010 Batch) (Sem. – 8)

PHARMACEUTICS-IX

(Dosage Form Design)

M Code: 46055

Subject Code: PHM-481

Paper ID: [D0137]

Time: 3 Hrs.

Max. Marks: 80

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of FIFTEEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains FOUR questions carrying TEN marks each and students have to attempt any THREE questions.

SECTION A

1. a) Define bioequivalence.

   b) Define angle of repose.

   c) Define dissolution.

   d) Define intrinsic solubility.

   e) Name any two drugs prone to hydrolysis.

   f) Explain polymorphism.

   g) Define shelf life.

   h) Write BCS classification.

   i) Define controlled release formulation.

   j) Give examples of dosage forms exempted from bioequivalence testing.

   k) Name any two approaches for solubility enhancement.

   l) Define enteric coated tablets. Give Examples of polymers used.

   m) Define GMP.

   n) Define quality audit.

   o) Define implants.

SECTION B

2. What are the polymers used for enteric coated tablets? Discuss the in vitro testing of enteric coated tablets.
3. Explain the rationale for retrospective validation. Also, discuss the process briefly.
4. What is BCS? Discuss various classes along with suitable example.
5. What are the prominent features of quality assurance?
6. Write a brief note on accelerated stability studies?

SECTION C

7. Discuss preformulation studies. Enlist the various properties of the drugs to be considered while performing the preformulation studies.
8. Explain in details the various factors involved in the Bio-Waiver.
9. What are controlled release formulations? Discuss control release polymers in detail.
10. Explain IVIVC. Also discuss each level of IVIVC