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Roll No. :

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**B. Pharmacy (Seventh Semester) Examination,
Nov.-Dec. 2021**

(PCI Scheme)

(Pharmacy Branch)

**INSTRUMENTAL METHODS
of ANALYSIS**

(Theory : BP701T)

Time Allowed : Three hours

Maximum Marks : 75

Note : Question paper is of three parts i.e. Part (A) consist of 20 MCQs each of 1 mark. All questions are compulsory. Part (B) consist of 3 long answer questions of which attempt any two. Each of 10 marks. Part (C) consist of 9 short answer questions, attempt any seven question. Each of 5 marks.

Part-'A'

(Multiple Choice Questions) 20×1=20

Note : Attempt all questions. Each question carries 1 mark.

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1. Choose the correct answer :

(i) In which region of the electromagnetic spectrum does an absorption at 177 nm comes?

- (a) Infrared
- (b) Near-UV
- (c) Visible
- (d) Vacuum-UV

(ii) What is a chromophore?

- (a) A group of atoms in a coloured compound
- (b) A coloured compound
- (c) A group of atoms in a compound responsible for the absorption of electromagnetic radiation
- (d) A group of atoms in a compound responsible for electromagnetic radiation.

(iii) Which of the following absorption maxima is not in the visible range of the electronic spectrum?

- (a) $\lambda_{\max} = 550 \text{ nm}$
- (b) $\lambda_{\max} = 250 \text{ nm}$

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(c) $\lambda_{\max} = 480 \text{ nm}$

(d) $\lambda_{\max} = 750 \text{ nm}$

(iv) The probability of phosphorescence is due to which of the following transitions :

(P) $n \rightarrow \pi^*$

(Q) $\sigma \rightarrow \sigma^*$

(R) $n \rightarrow \sigma^*$

(S) $\pi \rightarrow \pi^*$

(a) (P)

(b) Both (P) and (S)

(c) Q

(d) R

(v) Which of the following source is continuous source for fluorometry?

(a) Deuterium discharge lamp

(b) Xenon arc lamp

(c) Mercury vapor lamp

(d) Hollow cathode lamp

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- (vi) Which of the following type of samples required multiple path length for a significant absorption in IR.
- Solid samples
 - Liquid samples
 - Gaseous samples
 - All the above
- (vii) Which of the following bending vibration takes place in different planes.
- Asymmetric stretching
 - Rocking
 - Scissoring
 - Twisting
- (viii) Which of the following is used as a source in Atomic Absorption spectroscopy?
- Tungsten halogen lamp
 - Hollow cathode lamp
 - Xenon arc
 - Globar

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- (ix) Bleeding is :
- Loss of analyte
 - Loss of stationary phase
 - Loss of mobile phase
 - Loss of supporting material
- (x) Which of the following is a cationic exchanger resin :
- Sulfonate resin
 - Quaternary ammonium resin
 - Silica resin
 - Sephadex
- (xi) The technique used for analysis of small nonionic, polar molecules :
- Adsorption
 - Partition
 - Ion-exchange
 - Exclusion
- (xii) The Height Equivalent to Theoretical Plate (HETP) is expressed by :

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- (a) Vander wall equation
 - (b) Van deemter equation
 - (c) Beer-Lambert equation
 - (d) Bragg's equation
- (xiii) The band broadening is expressed by :
- (a) Vander waal equation
 - (b) Van deemter equation
 - (c) Beer-Lambert equation
 - (d) Bragg's equation
- (xiv) The efficiency of separation decreases due to all of the following except.
- (a) Eddy depression
 - (b) Very high flow rates
 - (c) Very low flow rates
 - (d) Increase in number of theoretical plates
- (xv) Efficiency of separation is :
- (a) Directly proportional to HETP
 - (b) Indirecting proportional to HETP

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- (c) Does not depend on HETP
 - (d) Equal to square root of HETP
- (xvi) Which of the following can be used as stationary phase in gel chromatography :
- (a) Polystyrene-divinyl benzene
 - (b) Sephadex
 - (c) Activated silica
 - (d) Silica
- (xvii) The ion pair chromatography involves the separation of ions :
- (a) by interchanging with similarly charged ions
 - (b) by interchanging with oppositely charged ions
 - (c) by combining with similarly charged ions
 - (d) by combining with oppositely charged ions
- (xviii) Which of the following is not a carrier gas in Gas Chromatography?
- (a) Helium
 - (b) Nitrogen

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- (c) Bromine
- (d) Hydrogen

(xix) Which of the following detection in Gas Chromatography works based on the change in the thermal conductivity :

- (a) Flame ionisation detector
- (b) Electron capture detector
- (c) Atomic absorption detector
- (d) Katharometer

(xx) All of the following are used as spraying reagent in TLC, except :

- (a) Calcium Sulfate
- (b) Iodine
- (c) Sulfuric acid
- (d) Ninhydrin

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Part-'B'

(Long Answer Type Questions) 2×10=20

Note : Attempt any two out of Ques. 2,3,4.

2. Explain in brief about Beer-Lambert Law with the help of mathematical derivation. Discuss about its limitations and deviations.
3. Discuss in brief about principle, construction and working of various Gas chromatography detectors.
4. Write the principle, Instrumentation and application of Atomic absorption spectroscopy.

Part-'C'

(Short Answer Type Questions) 7×5=35

Note : Attempt any seven out of nine questions from Ques.-5 to 13.

5. Write in brief about various detectors of UV-Visible spectroscopy.

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6. Discuss the concept of singlet, doublet & triplet electronic state.
7. Explain various factors affecting quenching in fluorimetry.
8. Write the principle and uses of various IR detectors.
9. Write the theory and Instrumentation of Nepheloturbidometry.
10. Explain the brief about Van deemeter equation giving emphasis on HETP.
11. Write the principle, methodology and development techniques of TLC.
12. Write a short note on Gel electrophoresis.
13. Write a short note on Ion Exchange chromatography.

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**B. Pharmacy (Seventh Semester) Examination,
Nov.-Dec. 2021**

(New and PCI Scheme)

INDUSTRIAL PHARMACY - THEORY

(BP702T)

Time Allowed : Three hours

Maximum Marks : 75

***Note : Read all the instruction carefully given in
Section A, B and C.***

Section-A

(Multiple Choice Questions) 20×1=20

***Note : Attempt all the questions. Each question
carries 1 mark.***

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1. Choose the correct answer :

- (i) Small-scale production systems used to practically test and validate a production technology before commercialization is called :
 - (a) Pilot plant
 - (b) Analytical Laboratory
 - (c) Pathology Laboratory
 - (d) None of these
- (ii) The residual shell moisture content of finished capsules will be in the range of :
 - (a) 6-10%
 - (b) 12-78%
 - (c) 0-1%
 - (d) 100%
- (iii) Q.C. Testing of suppositories include :
 - (a) Breaking test (Hardness)
 - (b) Melting range test
 - (c) Viscosity
 - (d) Both (a) and (b)

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- (iv) Which of these is not Indian regulatory authority :
 - (a) CDSCO
 - (b) USFDA
 - (c) NPA
 - (d) IPC
- (v) SUPAC stands for :
 - (a) Scale Up and Post Approval Changes
 - (b) Scale Up and Pre Approval Changes
 - (c) Scale Upto and Post Approval Changes
 - (d) Scale Up and Post Approval Changes
- (vi) DCGI is advised by :
 - (a) DCC
 - (b) NPA
 - (c) DTAB and DCC
 - (d) IPC
- (vii) Regulatory Agencies of USA :
 - (a) Food and Drug Administration (FDA)
 - (b) Medicines and Healthcare Products Regulatory Agency (MHRA)

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- (c) Therapeutic Goods Administration (TGA)
- (d) Central Drug Standard Control Organization (CDSCO)
- (viii) Drug regulatory authorities are governed by :
 - (a) Central Government
 - (b) State Government
 - (c) Both of the above
 - (d) None of the above
- (ix) Common Technical Document was developed by :
 - (a) Europe
 - (b) USA
 - (c) Japan
 - (d) All of the above
- (x) Therapeutic Goods Administration (TGA) is the regulatory authority of :
 - (a) USA
 - (b) UK
 - (c) Denmark
 - (d) Australia

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- (xi) CoPP expires in :
 - (a) 2 Yrs
 - (b) 5 Yrs
 - (c) 10 Yrs
 - (d) 20 Yrs
- (xii) The ICH receives support from the following organizations :
 - (a) EMEA, European Union
 - (b) FDA, United State
 - (c) MHLW, Japan
 - (d) All of the above
- (xiii) Stability testing for new drug substances are given in :
 - (a) Q1B (R1)
 - (b) Q1A (R2)
 - (c) Q1B (R2)
 - (d) Q1C (R1)
- (xiv) APCTT is :
 - (a) Andhra Pradesh Corporation of Tour and Travel

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- (b) Air Particulate control testing
 - (c) Asia and Pacific Centre for transfer of technology
 - (d) Andhra Pradesh Centre for transfer for technology
- (xv) NRDC is :
- (a) National Research Development Corporation
 - (b) Novel Research Development Corporation
 - (c) North Research Development Corporation
 - (d) New Research Development Corporation
- (xvi) TQM and ISO both focus on :
- (a) Supplier
 - (b) Customer
 - (c) Employee
 - (d) All of the above
- (xvii) BCIL is promoted by :
- (a) Department of Science and Technology
 - (b) Department of Biotechnology

- (c) Ministry of health and family welfare
 - (d) Defence Ministry
- (xviii) TBSE is a joint initiative of :
- (a) BCIL and APCTT
 - (b) TIFAC and APCTT
 - (c) SIDBI and APCTT
 - (d) SIDBI and BCIL
- (xix) TBSE is :
- (a) Terminology Bureau for Small Enterprises
 - (b) Technology Bureau for Small Enterprises
 - (c) Tamilnadu Bureau for Small Enterprises
 - (d) None of the above
- (xx) Confidentiality agreements are also known as :
- (a) Mutual Agreement
 - (b) Non Disclosure Agreement
 - (c) Bilateral Agreement
 - (d) Unilateral Agreement

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Section-B

(Long Answer Type Questions) 2×10=20

Note : Attempt any two questions. Each question carries 10 marks.

2. Define and elucidate in brief the objective of Investigator's Brochure.
3. What should be the requirements for transfer technology project team?
4. Describe the six sigma concept.

Section-C

(Short Answer Type Questions) 7×5=35

Note : Attempt any seven questions. Each question carries 5 marks.

5. Describe the concept and applications of total quality management.
6. Explain the regulatory requirements for drug approval.

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7. Write a note on Central drug control organization.
8. Enlist responsibilities of regulatory affair professional
9. Explain non clinical drug development.
10. Give brief introduction to management of clinical studies.
11. Describe SUPAC guidelines.
12. What do you understand by technology transfer protocol.
13. Describe briefly confidentiality agreement, licensing, licensing, MoUs.

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Nov.-Dec. 2021
(PCI Scheme)
(Pharmacy Branch)**

PHARMACY PRACTICE (Theory)

(BP703T)

Time Allowed : Three hours

Maximum Marks : 75

***Note : Read all the instruction carefully given in
Section A, B and C.***

Section-A

(Multiple Choice Questions) 20×1=20

***Note : Attempt all the questions. Each question
carries 1 mark.***

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1. Choose the correct answer :

- (i) The time period between placing an order and its receipt in stock is known as :
 - (a) Lead time
 - (b) Carrying time
 - (c) Shortage time
 - (d) Over time
- (ii) Patients not occupying beds in hospital or in clinics are termed as :
 - (a) Out patient
 - (b) In patient
 - (c) Both of them
 - (d) None of these
- (iii) Selection of drugs in various wards is decided by :
 - (a) PTC (Pharmacy and Therapeutic Committee)
 - (b) Nurse
 - (c) Pharmacist
 - (d) Doctor

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- (iv) Interviewing a patient/in collecting the data medical history is called :
 - (a) Personal interview
 - (b) Medication history interview
 - (c) Patient counseling
 - (d) None of them
- (v) Drugs suitable for Therapeutic Drug Monitoring include :
 - (a) Drugs with narrow therapeutic index
 - (b) Drugs with significant pharmacokinetic variability
 - (c) A reasonable relationship between plasma concentrations and clinical effect/response
 - (d) All
- (vi) Increase in eosinophils is indicative of :
 - (a) Bronchial asthma
 - (b) Food allergy
 - (c) Leprosy
 - (d) All of the above

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- (vii) Which of the following is NOT needed for an investigational new drug application :
- Animal pharmacology and toxicology
 - Manufacturing information
 - Phase III trial data
 - Clinical protocol and investigator information
- (viii) The following classes of costs are usually involved in inventory decisions except :
- Cost of ordering
 - Carrying cost
 - Cost of shortages
 - Machine cost
- (ix) Techniques of inventory control includes :
- ABC analysis
 - VED analysis
 - EOO
 - All of these
- (x) How are prescription medicines different from OTC ones :

- They contain much smaller amounts of active ingredients
 - They don't contain dyes or preservative
 - They're unsafe for use without medical supervision
 - They can be toxic
- (xi) Given of the following are secondary sources of information except :
- Formulary
 - Pharmacopoeia
 - Text books
 - Research papers
- (xii) Give are the composition of universal antidote except :
- Tannic acid
 - Activated charcoal
 - Magnesium
 - Chloride
- (xiii) MEDLARS stands for :

- (a) Medical Literature Automatic and Retrieval System
- (b) Medical List Analysis and Retrieval System
- (c) Medical Literature Analysis and Retrieval System
- (d) None
- (xiv) Teratogenic drug effect occurs in :
- (a) Adult
- (b) Fetus
- (c) Children
- (d) All of these
- (xv) If the bed size is 201-300, then how many pharmacists should be there :
- (a) 10
- (b) 05
- (c) 01
- (d) 03
- (xvi) How much floor space is required for the compounding and dispensing area in a 50 bed hospital :

- (a) 205 sq. feet
- (b) 320 sq. feet
- (c) 435 sq. feet
- (d) None of these
- (xvii) Which type of antidote is used when the nature of ingested poison is not known :
- (a) Chemical antidote
- (b) Physical antidote
- (c) Physiological antidote
- (d) Universal antidote
- (xviii) Which factors contributing to non compliance :
- (a) Unpleasant test of medication
- (b) Fear of becoming drug dependent
- (c) Side effects of drugs
- (d) All of them
- (xix) serves as a link between the medical staff and hospital pharmacist :
- (a) Modern Dispensing Aspects
- (b) Pharmacy Therapeutic Committee

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- (c) Patient counseling
(d) None of these
- (xx) Thrombocytosis is :
- (a) Increase in number of thrombocytes
(b) Decrease in thrombocytes
(c) Decrease in platelet count
(d) All of these

Section-B

(Long Answer Type Questions) $2 \times 10 = 20$

Note : Attempt any two questions. Each question carries 10 marks.

2. What are the various objective of inventory control? Discuss in detail about the various types of inventory control.
3. What is patient counseling? What is its importance? Write various rules for designing a good counseling session.

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4. Discuss organization and structure of retail and wholesale drug store with legal requirement for establishment and maintenance of a drug store.

Section-C

(Short Answer Type Questions) $7 \times 5 = 35$

Note : Attempt any seven questions. Each question carries 5 marks.

5. Define the term clinical pharmacy. Give in detail various function and responsibilities of clinical pharmacist.
6. Give classification for investigational drugs and principles involved in the use of investigational drugs.
7. Discuss factors to be considered during the therapeutic drug monitoring.
8. Define hospital pharmacy. Give an organizational chart of a hospital pharmacy service.
9. Briefly discuss the importance of drug information service in a hospital.

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10. Write in detail about the composition and function of PTC. Explain its role in drug safety.
11. Write an exhaustive note on OTC drugs and their sale with example.
12. Discuss in detail about budget preparation and implementation.
13. What is hospital formulary? Explain the role and significance of hospital formulary system in a hospital.

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**B. Pharmacy (Seventh Semester) Examination,
Nov.-Dec. 2021**

(PCI Scheme)

(Pharmacy Branch)

NOVEL DRUG DELIVERY SYSTEM-THEORY

(BP704T)

Time Allowed : Three hours

Maximum Marks : 75

Note : Answer all questions from Section-‘A’.

Attempt any two questions from Section-‘B’

and seven questions from Section-‘C’.

Section-‘A’

(Multiple Choice Questions) 20×1=20

***Note : Attempt all questions from MCQs. All
questions carry 1 mark.***

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1. Choose the correct answer :

- (i) Drugs having transport mechanism is suitable candidate for controlled release drug delivery system.
- (a) Concentration independent
 - (b) Concentration dependent
 - (c) Both (a) and (b)
 - (d) Neither (a) nor (b)
- (ii) Controlled release drug delivery system can be formulated for drugs having dose.
- (a) High
 - (b) Any
 - (c) Low
 - (d) Both (a) and (c)
- (iii) Cellulose is an example of polymer.
- (a) Synthetic
 - (b) Natural
 - (c) Semi synthetic
 - (d) Artificial

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- (iv) Which among the following can act as both permeable and impermeable polymer.
- (a) Chitosan
 - (b) Polystyrene
 - (c) Silicon
 - (d) Polyethylene glycol
- (v) To perform solvent evaporation method of micro-encapsulation, polymer and drug must be soluble in :
- (a) Aqueous solvent
 - (b) Organic solvent
 - (c) Both (a) and (b)
 - (d) Mixture of aqueous and organic solvent
- (vi) Interfacial polymerization involves interaction of two :
- (a) Immiscible liquids
 - (b) Miscible liquids
 - (c) Both (a) and (b)
 - (d) None of the above

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- (vii) With increase in molecular weight, bioadhesive force
- (a) Increases
 - (b) Decreases
 - (c) Remains unaffected
 - (d) Increases upto a limit
- (viii) Implantable drug delivery system can achieve delivery of drugs.
- (a) Controlled
 - (b) Targeted
 - (c) Pulsatile
 - (d) All of the above
- (ix) Immunization implants contain :
- (a) Antibodies
 - (b) Antigens
 - (c) Osmogens
 - (d) Drug
- (x) Which among the following is not a component of transdermal drug delivery system :

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- (a) Drug
 - (b) Backing membrane
 - (c) Release liner
 - (d) Preservatives
- (xi) Which among the following DO NOT affect transdermal permeation :
- (a) Temperature
 - (b) Partition coefficient
 - (c) Drug dose
 - (d) pH of skin
- (xii) Which among the following is NOT an approach of GRDDS :
- (a) Drug in adhesive
 - (b) Floating
 - (c) Swelling
 - (d) High density
- (xiii) In mucoadhesive drug delivery, which polymers are used :

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- (a) Mucoadhesive polymer
 - (b) Hydrophilic polymer
 - (c) Enteric coated polymer
 - (d) Hydrophobic polymer
- (xiv) Which among the following is used as preservative in nasal spray :
- (a) Paraben
 - (b) PEG
 - (c) Acetone
 - (d) Glycerine
- (xv) is also called is respiratory airways.
- (a) Nasopharyngeal region
 - (b) Pulmonary region
 - (c) Alveolar region
 - (d) Both (a) and (c)
- (xvi) The drug release from osmotic ocuserts is controlled by :
- (a) Diffusion

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- (b) Dissolution
 - (c) Erosion
 - (d) Osmosis
- (xvii) Cyclodextrin is useful to increase of drug in eye.
- (a) Permeability
 - (b) Solubility
 - (c) Contractibility
 - (d) All of the above
- (xviii) Which of the following hormone is present in intra-uterine drug delivery system?
- (a) Testosterone
 - (b) Progesterin
 - (c) Corticosteroids
 - (d) LH
- (xix) Which among the following is intrauterine device :
- (a) Copper T
 - (b) Hormonal IUD

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(c) Contraceptive implants

(d) Both (a) and (b)

(xx) Devices made using polymers can be broken down into smaller fragments that will be subsequently excreted by the body.

(a) Biodegradable

(b) Non-biodegradable

(c) Synthetic

(d) Semi synthetic

Section-B

(Long Answer Type Questions) 2×10=20

Note : Attempt any two questions. Each question carries 10 marks.

2. Write a detailed account on concept and approaches for targeted drug delivery systems using examples and flowchart wherever applicable.
3. Discuss various basic components of transdermal drug delivery system with suitable examples.

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4. Discuss various physicochemical and biological properties of drugs affecting design of controlled release formulations.

Section-'C'

(Short Answer Type Questions) 7×5=35

Note : Attempt any seven questions. Each question carries 5 marks.

5. Classify Polymers. Write a note on application of polymers in formulation of controlled release drug delivery systems.
6. Discuss air suspension method of microencapsulation with the help of a diagram.
7. Write a detailed note on theories of mucoadhesion.
8. Write a brief note on basic ingredients of osmotic pumps with suitable examples.
9. Write a note on applications of Gastroretentive drug delivery systems.

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10. Write a brief note on dry powder inhalers.
11. Write a brief note on intra ocular barriers.
12. Write a note on application of intrauterine drug delivery system.
13. Write a brief note on floating drug delivery system with suitable diagram or flowchart.