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SEAT No. :

P-1409

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[6019]-8011

Final Year B. Pharmacy

BP 801T : BIostatistics AND RESEARCH
METHODOLOGY

(2019 Pattern) (Semester - VIII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

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- 1) All questions are compulsory.
- 2) Neat labeled diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.

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Q1) Answer the following (Any Five) :

[15]

- a) Explain different types of errors in hypothesis testing.
- b) Discuss in brief about Mean as a measure of central tendency.
- c) What is the need for research design?
- d) Enumerate the steps needed to condense raw data to grouped data.
- e) What is 2^3 factorial design? <https://pharmacyindia.co.in/>
- f) Weights of 10 tablets in mg in a sample data are 210, 212, 215, 220, 224, 215, 218, 220, 225 and 221. Find out the sample mean.
- g) A first aid box contains 20 tablets of Paracetamol and 10 tablets of Aspirin. What is the probability of picking a Aspirin tablet from the box?

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Q2) Answer the following (Any Two) :

[20]

- a) Discuss about designing of clinical trials and phases of clinical trials.
- b) What is hypothesis testing? Explain in detail the procedure for hypothesis testing.
- c) What is optimization? Explain principle and steps involved in experimental design.
- d) What is statistical data? Explain in detail about collection, organization and presentation of data.

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Q3) Answer the following (Any Eight) :

[40]

- a) Define statistics. Write applications of statistics.
- b) Enlist the steps for constructing a frequency distribution.
- c) Write about Pie chart. <https://pharmacyindia.co.in/>
- d) Explain in brief about ANOVA.
- e) Write note on MINITAB.
- f) Write short note on Central Composite Design.
- g) Write a note on Plagiarism.
- h) What is statistical data? Explain in brief about types of data.
- i) Write a note on 'Student's test'. <https://pharmacyindia.co.in/>
- j) Find the mean, median and mode for the following data for weight of 12 tablets in mg :

X : 500, 520, 530, 540, 540, 520, 500, 550, 530, 540, 550, 560.

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[6019]-8011

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Total No. of Questions : 3]

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[6019]-8012

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Final Year B. Pharmacy
SOCIAL AND PREVENTIVE PHARMACY
(2019 Pattern) (Semester - VIII) (BP802T)

<https://pharmacyindia.co.in/>

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) Neat diagrams must be drawn wherever necessary.
- 2) Figures to the right indicate full marks.

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Q1) Answer any five (05 out of 07) :

[15]

- a) What is Marasmus?
- b) Explain community services for health promotion.
- c) Explain Prevention and control of deafness.
- d) Write significance of Health education in schools.
- e) Write the objectives of National Tuberculosis Programme
- f) What is Cholera? Write the measures for prevention of it.
- g) Explain the methods for diagnosis of Diabetes mellitus?

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Q2) Answer any Two. (02 out of 04) :

[20]

- a) Elaborate on need of nutrition and balanced diet. Explain the causes, and symptoms of malnutrition and its prevention.
- b) Explain prevention and control of Cancer.
- c) Explain Integrated disease surveillance programme (IDSP).
- d) What is SARS write its symptoms, prevention and control.

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Q3) Answer any eight. (08 out of 10) <https://pharmacyindia.co.in/> [40]

- a) What is influenza? Write its prevention and control.
- b) Explain prevention, and control of hypertension.
- c) What are the Socio cultural factors related to health and disease
- d) What is chicken guinea? Explain its treatment and prevention
- e) What are the objectives of the national family welfare program? <https://pharmacyindia.co.in/>
- f) Explain measures for improvement in rural sanitation.
- g) Write a note on drug addiction and drug substance abuse
- h) Write a note on relation of nutrition and health.
- i) Write objectives and implementation of the national tobacco control program.
- j) Define diabetes. Write its treatment and management

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P-891

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[6019]-8013

F.Y. B. Pharmacy

**BP803ET : PHARMA MARKETING MANAGEMENT
THEORY**

(2019 Pattern) (Semester - VIII)

Time : 3 Hours]

<https://pharmacyindia.co.in/>
[Max. Marks : 75

Instructions to the candidates :

- 1) *All questions are compulsory.*
- 2) *Neat labeled diagram must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

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Q1) Answer all the questions (Objectives) (Any 5 out of 7) : [5 × 3 = 15]

- a) Discuss the consumer buying behavior in marketing.
- b) Demonstrate product life cycle.
- c) Enumerate the factors to be considered for new product decisions.
- d) What are the role & responsibilities of Professional sales representative?
- e) Describe various ways of marketing a product. <https://pharmacyindia.co.in/>
- f) Correlate the factors affecting product pricing strategy.
- g) Write about designing pharmaceutical marketing channels.

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Q2) Long Answers (Any 2 out of 4) : [2 × 10 = 20]

- a) Explain with examples launching of new product.
- b) Describe the ways and means of marketing segmentation & targeting.
- c) What are different methods and determinants of promotional mix.
- d) Discuss in detail Primary and Secondary research state their importance.

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Q3) Short Answers (Any 8 out of 10) :

[8 × 5 = 40]

- a) Write about the role of market research.
- b) Discuss about factors regulating patient choice of physician.
- c) Write a note methods of determining budget for promotional expenditure. <https://pharmacyindia.co.in/>
- d) Discuss on OTC marketing strategies.
- e) Write in detail about conflicts in channels.
- f) Explain the objectives and importance of pricing.
- g) Address the issues in price management in pharmaceutical industry.
- h) Elaborate on importance of rural marketing.
- i) Describe the role of DPCO. <https://pharmacyindia.co.in/>
- j) Explain the need & importance of e-detailing.

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[6019]-8014

Fourth Year B.Pharmacy

PHARMACEUTICAL REGULATORY SCIENCE

(2019 Pattern) (Semester-VIII) (BP804ET)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw well labeled diagram whenever necessary.*

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Q1) Answer the following (any 5 out of 7)

[5×3=15]

- a) What is clinical trial?
- b) Explain the purple book.
- c) What is CTD? (Common Technical Documents)
- d) Explain about generic drug.
- e) Explain the role of regulatory affairs professionals.
- f) Explain federal register.
- g) What are the stages of drug discovery.

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Q2) Answer the following (Any 2 out of 4)

[2×10=20]

- a) Explain registration process for new drug approval in India.
- b) What is NDA and ANDA? Give approval process and timeline involved in investigational new drug IND.
- c) Explain organization structure and application of regulatory authorities of US.
- d) Explain procedure for development of protocol.

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Q3) Answer the following (Any 8 out of 10)

[8×5=40]

- a) What is orange book? Give its application. <https://pharmacyindia.co.in/>
- b) Write a note on DMF? (Drug Master File).
- c) Summarize ASEAN (ACTD) research.
- d) Give brief overview of guidelines for the export of drug issued by ministry of health and Family Welfare.
- e) Explain preclinical studies and non-clinical activities in drug development.
- f) Explain regulatory authority in Japan. <https://pharmacyindia.co.in/>
- g) Explain clinical trial protocol.
- h) Give brief account on electronic common technical document.
- i) Explain procedure of GCP of investigators, sponsors, and monitors.
- j) Explain import and export of pharmaceutical products in detail.

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Total No. of Questions : 3]

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[Total No. of Pages : 2

[6019]-8015

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Final Year B. Pharmacy

BP805ET : PHARMACOVIGILANCE

(2019 Pattern) (Semester - VIII)

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Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*

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Q1) Solve any FIVE :

[5 × 3 = 15]

- a) Write a note on cohort study.
- b) Define serious adverse event, side effect and adverse event.
- c) Enlist steps involved in vaccine pharmacovigilance.
- d) What is the role of post approval phase? <https://pharmacyindia.co.in/>
- e) Write about the importance of safety monitoring of medicines.
- f) What is under reporting of ADRs?
- g) What is periodic safety update reports?

<https://pharmacyindia.co.in/>

Q2) Solve any TWO :

[2 × 10 = 20]

- a) Define pharmacovigilance. Discuss in detail reporting and management of ADRs along with causality assessment scales.
- b) Discuss in detail the drug information sources and give specialized resources for ADR. <https://pharmacyindia.co.in/>
- c) Discuss in detail about ICH and GCP guidelines in Pharmacovigilance.
- d) What are different pharmacovigilance methods? Explain in detail different types of pharmacovigilance methods used for passive and active surveillance.

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Q3) Solve any EIGHT :

[8 × 5 = 40]

- a) Write a importance of Communication in pharmacovigilance.
- b) Write the role of pre-clinical and clinical phase in safety data generation.
- c) Write a note on Schedule Y. <https://pharmacyindia.co.in/>
- d) Explain Narinjo scale.
- e) Explain Vaccine safety surveillane.
- f) Write a short note on ICH guidelines
- g) Discuss WHO drug dictionary and coding in pharmacovigilance.
- h) Write a short note on WHO causality assessment.
- i) Discuss adverse effects after immunization. <https://pharmacyindia.co.in/>
- j) What is the role of preclinical and clinical phase in safety data generation?

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[6019] - 8016

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Fourth Year B. Pharmacy

QUALITY CONTROL AND STANDARDIZATIONS OF HERBALS

(2019 Pattern) (Semester - VIII) (Theory) (BP806ET)

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Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicates full marks.*
- 3) *Draw well labelled diagram whenever necessary.*

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Q1) Solve the following. (Answer 5 out of 7)

[5x3=15]

- a) Brief physical evaluation of crude drugs.
- b) Write about 'personnel' from GACP. <https://pharmacyindia.co.in/>
- c) Write in short 'Record of market complaints' as per schedule T.
- d) Note on biological evaluation of crude drugs.
- e) What are basic tests for identification in herbal dosage forms.
- f) Note on 'Foaming Index' as per WHO for quality control of crude drugs.
- g) Write in short 'Stores' as per schedule T.

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Q2) Solve long answers (Answer 2 out of 4)

[2x10=20]

- a) Write in detail research guideline for evaluating safety of herbal drugs.
- b) Elaborate list of recommended machinery, equipment and space requirement of premises required for manufacturing of herbal medicines as per schedule T.
- c) Explain stability testing of herbal drugs in detail. <https://pharmacyindia.co.in/>
- d) Write in detail regulatory requirement for herbal medicines.

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Q3) Solve Short answers (Answer 8 out of 10)

[8x5=40]

- a) What are post harvesting processing as per GACP? <https://pharmacyindia.co.in/>
- b) Brief parameters of quality control of herbal drugs as per EU guidelines.
- c) Write about cultivation parameter as per GAP for medicinal plants.
- d) Write a note on comparison of monograph studies of herbals in Indian Herbal pharmacopoeia and American herbal pharmacopoeia.
- e) Brief safety in laboratories as per GLP. <https://pharmacyindia.co.in/>
- f) Explain application of TLC & HPTLC for standardization of herbals.
- g) Write ICH guidelines for quality control of herbal drugs.
- h) Explain WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems. <https://pharmacyindia.co.in/>
- i) Write in detail about various types of licensing forms needed for herbal drug industry for regulation aspects under D & C Act.
- j) Discuss on preparation of documents for new drug application.

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[6019]-8017A

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Fourth Year B.Pharmacy
COMPUTERAIDED DRUG DESIGN
(2019 Pattern) (Semester-VIII) (BP807ET) (Theory)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

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- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.

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Q1) Objective types questions (Answer 5 out of 7) [5×3=15]

- a) Write a note on Taft steric constant,
- b) Write a note on Lipinski Rule of 5.
- c) Compare SAR and QSAR. <https://pharmacyindia.co.in/>
- d) Write a note on chemoinformatics in the drug discovery process.
- e) Define Bioinformatics. Mention applications of bioinformatics.
- f) Discuss the role of molecular and quantum mechanics in drug discovery
- g) Applications of QSAR.

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Q2) Long answer (Answer 2 out of 4) [2×10=20]

- a) What is QSAR? Explain in detail the history and development of QSAR Explain the Hansch analysis and Free Wilson analysis and the relationship between them. <https://pharmacyindia.co.in/>
- b) What do you mean by Drug Discovery & Development? Explain various steps & approaches to lead discovery.
- c) Explain in detail Ligand -based & Structure-based drug design by taking suitable examples. <https://pharmacyindia.co.in/>
- d) What is Molecular docking? Enlist various types of Molecular docking and explain any one of them. Write a note on the concept of Virtual screening.

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Q3) Short answers (Answer 8 out of 10) [8×5=40]

- a) Write a note on molecular mechanics. <https://pharmacyindia.co.in/>
- b) Classify the bio-isosterism approach with examples. Discuss of bioisosteric replacement strategy with one case study.
- c) Discuss various databases used in drug design and discovery.
- d) Explain in detail Quantum mechanics. <https://pharmacyindia.co.in/>
- e) Physicochemical parameters involved in QSAR.
- f) Write a note on databases used in bioinformatics.
- g) Discuss COMFA & COMSIA. <https://pharmacyindia.co.in/>
- h) Explain different methods in the determination of energy minimization.
- i) Write a note on docking and explain about docking-based virtual screening.
- j) 2D-QSAR

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[6019]-8018

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Final Year B. Pharmacy

BP-808ET : CELL AND MOLECULAR BIOLOGY

(2019 Pattern) (Semester - VIII)

Time : 3 Hours]

<https://pharmacyindia.co.in/>

[Max. Marks : 75

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 2) Draw well labeled diagrams wherever necessary.

Q1) Attempt any Five :

<https://pharmacyindia.co.in/> **[15]**

- a) Write functions of cell membrane
- b) Define the term meiosis
- c) What do you mean by catabolism
- d) Elaborate cell adaptation
- e) Explain the structure of protein
- f) Draw double helical structure of DNA
- g) Write the types of RNA

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Q2) Attempt any Two :

[20]

- a) Write different types of receptors. Describe G-Protein coupled receptor in detail.
- b) What are the different steps involved in translation process?
- c) What is cell signaling? Explain the mechanism of cell signaling in detail.
- d) Discuss cellular reproduction process in ova and sperm formation.

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Q3) Attempt any Eight : <https://pharmacyindia.co.in/> [40]

- a) What are the steps of GPCR signal transduction pathway?
- b) What are the different checkpoints in the cell cycle?
- c) What are the applications of proteomics in disease?
- d) Define cell organelles and write its functions. <https://pharmacyindia.co.in/>
- e) What is the mechanism of DNA replication in eukaryotes?
- f) Explain the principles of gene expression?
- g) What means by meiosis? What are the four process of meiosis?
- h) Why is it important to regulate protein synthesis?
- i) What is the division of somatic cells to form gametes?
- j) Write the functions of GPCRs?

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SEAT No. :

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[Total No. of Pages : 2

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[6019]-8019

Final Year B. Pharmacy
BP809ET : COSMETIC SCIENCE
(2019 Pattern) (Semester - VIII)

Time : 3 Hours]

<https://pharmacyindia.co.in/>

[Max. Marks : 75

Instructions to the candidates:

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- 1) All questions are compulsory.
- 2) Neat labeled diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.

Q1) Attempt any five out of seven of the following :

[15]

- a) Discuss the formulation of Hair oils.
- b) Compare antiperspirants and deodorants. <https://pharmacyindia.co.in/>
- c) Define SPF, Give Classification of sunscreen.
- d) Discuss the causes for the hair fall.
- e) Discuss the role of antioxidants in cosmetic products.
- f) Explain the role of fluoride in toothpaste formulations and its benefits for dental health. <https://pharmacyindia.co.in/>
- g) Discuss applications of Amla in hair care.

Q2) Answer any two out of four of the following.

[20]

- a) Define cosmetics and cosmeceuticals and outline their classification.
- b) Discuss the cosmetic problems for skin and add a note on products prepared to address these problems. <https://pharmacyindia.co.in/>
- c) Discuss the formulation aspects of oral care products.
- d) Discuss in detail formulation aspects of antidandruff shampoo and add a note on its evaluation.

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Q3) Answer in brief on any eight of the following. [40]

- a) What are the different types of surfactants used in cosmetic formulations? Discuss the examples and function of each type.
- b) Write a note on formulation aspects of mouthwash.
- c) Discuss the analytical methods for toothpaste. <https://pharmacyindia.co.in/>
- d) Discuss in detail BIS Specifications and analytical methods for skin cream. <https://pharmacyindia.co.in/>
- e) Explain the role of polymers and thickeners in cosmetics.
- f) Write a note on evaluation of sunscreen products.
- g) Describe the formulation and manufacturing process of a hair dye product. <https://pharmacyindia.co.in/>
- h) Write a note on neem and clove in oral care products.
- i) Write a note on soap and syndet bars. <https://pharmacyindia.co.in/>
- j) Write in brief about formulation of hair conditioners.



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[6019]-8020

Final Year B. Pharmacy
BP810ET : EXPERIMENTAL PHARMACOLOGY
(2019 Pattern) (Semester - VIII)

<https://pharmacyindia.co.in/>

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Draw neat and well labelled diagram wherever necessary.*
- 3) *Figures to the right side indicate full marks.*

Q1) Solve any Five out of seven questions : [15]

- a) Explain principle and working of Eddy's hot plate method for evaluation of analgesic activity. <https://pharmacyindia.co.in/>
- b) Discuss animal models for evaluation of nootropic activity.
- c) Explain the principle of screening methods for anti-dyslipidemic drugs .
<https://pharmacyindia.co.in/>
- d) Elucidate 3 'R' principles of CPCSEA.
- e) Enlist the methods and discuss any one method for evaluation of skeletal muscle relaxant activity. <https://pharmacyindia.co.in/>
- f) Define epilepsy and explain evaluation of anti-epileptic activity in experimental animals.
- g) Discuss euthanasia techniques for laboratory animals.

<https://pharmacyindia.co.in/>

Q2) Solve any Two out of Four : [20]

- a) Discuss the evaluation of anti-diabetic activity in laboratory animals.
- b) Explain preclinical evaluation of anti-hypertensive activity.
- c) Describe preclinical methods for evaluation of anti-ulcer activity.
- d) Elucidate evaluation of anti-depressant activity of compound in experimental animal. <https://pharmacyindia.co.in/>

P.T.O.

Q3) Solve any Eight out of Ten :

[40]

- a) Explain preclinical data analysis using students 't' test.
- b) Describe acute oral toxicity as per OECD guidelines.
- c) Explain evaluation of sympatholytic activity in experimental animals.
- d) Discuss preclinical screening of coagulants. <https://pharmacyindia.co.in/>
- e) Explain preclinical evaluation of sedative and hypnotics.
- f) Discuss evaluation of anti-inflammatory activity.
- g) Discuss any two methods for screening anti-arrhythmic drugs.
- h) Explain evaluation of local anesthetics in experimental animals.
- i) Discuss methods for making transgenic animals. <https://pharmacyindia.co.in/>
- j) Explain screening methods for anti-pyretic activity.



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Total No. of Questions : 3]

SEAT No. :

P-3375

<https://pharmacyindia.co.in/>

[Total No. Of Pages : 2

[6019]-8021

Final Year B.Pharmacy

BP811ET: ADVANCED INSTRUMENTATION

TECHNIQUES

(Semester-VIII) (2019 Pattern)

<https://pharmacyindia.co.in/>

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates :

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw well labelled diagrams wherever necessary.*
- 4) *Do not write anything on question paper except seat number.*

<https://pharmacyindia.co.in/>

Q1) Answer following questions (Any Five) :

[15]

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a) What is Chemical Shift? How it is measured?

<https://pharmacyindia.co.in/>

b) Explain Spin-Spin splitting rule with reference to NMR.

c) Enlist names of matrix used in MALDI along with their functions.

d) How system Precision is evaluated for calibration of HPLC?

<https://pharmacyindia.co.in/>

e) Discuss procedure to evaluate accuracy of Electronic balance.

f) What are applications of Thermogravimetric Analysis?

g) Differentiate between Proton NMR and ^{13}C NMR

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P. T. O

Q2) Answer following questions in detail (Any Two) : [20]

- Discuss exhaustively on RIA with its applications.
- Suggest suitable chemical structure for following spectroscopic data:
Molecular Formula C_7H_5N <https://pharmacyindia.co.in/>
IR : 3100 cm^{-1} , 2200 cm^{-1} , 1600 cm^{-1} , 1400 cm^{-1}
Proton NMR: $\delta 7.2$ (m, 5H)
Mass (m/z): 103,77
- Give an exhaustive account of Differential Thermal Analysis.
- Write in detail about different components of Mass Spectrophotometer.

<https://pharmacyindia.co.in/>

Q3) Write short notes on following (Any Eight) : [40]

- Time of Flight Mass Analyzer <https://pharmacyindia.co.in/>
- LC-MS
- Differential Scanning Calorimetry
- Calibration of UV Spectrophotometer
- <https://pharmacyindia.co.in/>
Solid Phase Extraction
- Fragmentation pattern in Alcohols <https://pharmacyindia.co.in/>
- Gel Electrophoresis
- Chemical Ionization
- ^{13}C NMR <https://pharmacyindia.co.in/>
- Powder Crystal method

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[6019]-8021

Total No. of Questions : 3]

SEAT No. :

P897

[Total No. of Pages : 2

<https://pharmacyindia.co.in/>

[6019]-8022

Fourth Year.B.Pharmacy

BP812ET : DIETARY SUPPLEMENTS & NUTRACEUTICALS

(2019 Pattern) (Semester - VIII)

Time : 3 Hours]

[Max. Marks : 75

Instructions to the candidates:

<https://pharmacyindia.co.in/>

- 1) *All questions are compulsory.*
- 2) *Neat labelled diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

<https://pharmacyindia.co.in/>

Q1) Objective Type Questions (Answer 5 out of 7)

[5×3=15]

- a) What food standards does AGMARK specify?
- b) What are reactive oxygen species? Give examples.
- c) What are complex carbohydrates? Give examples.
- d) Enlist factors that reduce endogenous antioxidant enzymes.
- e) Write health benefits of Xanthophylls. <https://pharmacyindia.co.in/>
- f) Define functional foods. Give examples.
- g) List out nutraceuticals for child health.

<https://pharmacyindia.co.in/>

Q2) Long Answers (Any 2 out of 4)

[2×10=20]

- a) Define Functional foods and Classify Nutraceuticals. Explain in detail the significance of Nutraceuticals in prevention & management of heart disease and hypertension. <https://pharmacyindia.co.in/>
- b) Explain in detail the role of free radicals in Diabetes. Comment on the role of α - Lipoic acid and tocopherol in management of free radicals.
- c) Explain in detail the GMP in manufacturing of nutraceuticals and food.
- d) Explain in detail the regulation of FSSAI and FDA.

<https://pharmacyindia.co.in/>

P.T.O.

Q3) Short Answers (Any 8 out of 10)

[8×5=40]

- a) Explain the biological source, phytoconstituents and medicinal benefits of Flaxseed.
- b) Add a note on Biological Source, chemical composition and medicinal application of Sea foods. <https://pharmacyindia.co.in/>
- c) Explain in detail the damaging effects of free radicals on protein.
- d) Role of free radicals in causing Diabetes.
- e) Explain the documents and requirements for obtaining FDA approval.
- f) Add a note on Biological Source, chemical composition and medicinal application of Lycopene and Lutein.
- g) Explain the biological source, phytoconstituents and medicinal benefits of Soybean. <https://pharmacyindia.co.in/>
- h) Explain in detail the damaging effects of free radicals on Lipids.
- i) Comment on the role and concentration of BHT and BHA in food products.
- j) Significance and Role of minerals as functional food.

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