341851(41)
B. Pharmacy 8th Semester
Examination April-May 2021
Branch: Pharmacy (PCI Scheme)
Biostatistics and Research Methodology
Time Allowed : Three Hours
Maximum Marks : 70

Note: This question paper consists of 3 parts namely A, B and C. Part A consists of 10 objective type choice questions of 2 mark each. Part B consists of long answer type question of 10 marks each. Part C consists of short answer type question of 5 marks each. All questions are compulsory in Part A. Attempt any two question from Part B. Attempt any seven question from Part C

Part A

1. Attempt all question. Each question carry 2 marks. 10x2=20
   i. Define mean and mode
   ii. What does standard deviation measures or indicates
   iii. Write two properties of Karl Pearson's coefficient
   iv. Write the importance of regression analysis
   v. Write definition of probability
   vi. What is null and alternative hypothesis
   vii. When Mann-Whitney U test and Kruskal-Wallis H test are applied
   viii. Enlist any four types of plagiarism
   ix. Write the number of factors and levels in 2^2 and 2^3 factorial design
   x. Write the formula in excel sheet to find average of number of observations

Part B

(Answer any two question from Part B)

2. Discuss procedure of hypothesis testing in detail.
3. The pulse rate of a man due to the effect of *Amtas AT* 25 mg on different days in a month were found to be

   66, 65, 69, 70, 69, 71, 70, 63, 64 and 68

   Find out whether the mean pulse rate of the man in the month is 65 using t-test. Tabulated value of t with 5% level of significance and at degree of freedom 9 is 2.262
4. Write a detailed note on Randomized Clinical Trials designs

Part C

(Answer any 7 question from Part C)

5. Find the mean of a sample of reported cases of mumps in school children

Blood LDL	52	58	60	65	68	70	75
No. of Patients	7	5	4	6	3	3	2

6. Write a note on Poisson's distribution
7. Explain type I and type II error with suitable example from Pharmaceuticals
8. Write a detailed note on need of research
9. Write a note on report writing
10. Write a detailed account on Central composite design
11. Write a note on concept of Factorial design and its advantages
12. Write a detailed note on Plagiarism
13. Write a detailed note Blocking and confounding system for Two-level factorials

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341852(41)

B. Pharmacy (Eighth Semester) Examination, April-May 2021

(PCI Scheme)

(Pharmacy Branch)

SOCIAL and PREVENTIVE PHARMACY

Time Allowed : Three hours

Maximum Marks : 75

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

Section-A

(Objective Type Questions) **20×1=20**

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

1. Multiple Choice Questions (MCQs) :

(i) The aim to limit the incidence of disease by controlling etiology and risk factors :

(a) Primary prevention

(b) Secondary prevention

(c) Tertiary prevention .

(d) Primordial prevention

(ii) An infected individual is less likely to infect a susceptible person when a large proportion of the members of the group are immune :

(a) Specific immunity

(b) Passive immunity

(c) Active immunity

(d) Herd immunity

(iii) Bleeding diseases is associated with the deficiency of .....

(a) Vitamin D

(b) Vitamin B

(c) Vitamin A

(d) Vitamin K

(iv) Following are the nutritional disorder due to over nutrition except :

(a) Obesity

(b) Osteomalacia

(c) Fluorosis

(d) All of the above

(v) Which of the following is benefit of good personal hygiene :

(a) Better health

(b) Improved self-esteem

(c) Other will have better perception of you

(d) All of the above

(vi) Full form of SARS :

(a) Severe Acute Respiratory Syndrome

(b) Serious Acute Respiratory Syndrome

(c) Secondary Acute Respiratory Syndrome

(d) Severe Acute Reproductive System

(vii) Mantoux test is used for diagnosis of :

(a) Leprosy

(b) Diphtheria

(c) Tuberculosis

(d) Typhoid

(viii) Which of the following is not a contagious disease :

(a) Polio

(b) AIDS

(c) Corona

(d) Leprosy

(ix) Which of the following dimensions is not included in the WHO definition of health :

(a) Physical well being

(b) Occupational well being

(c) Mental well being

(d) Social well being

(x) An ideal health indicator should be :

(a) Relevance

(b) Specific

(c) Sensitive

(d) All of the above

(xi) Following are the intestinal tract infection except :

(a) Cholera

(b) Filariasis

(c) Typhoid

(d) Hepatitis

(xii) Which of the following nutrient deficiency causes megaloblastic anemia :

(a) Cobalamine

(b) Ascrobic acid

(c) Niacin

(d) Pyridoxine

(xiii) In which year India became a member of WHO :

(a) 1948

(b) 1949

(c) 1950

(d) 1972

(xiv) IDSP stands for :

(a) Integrated Development Standard Programme

(b) Integrated Development Statement Programme

(c) Integrated Disease Surveillance Programme

(d) Integrated Disease Surveillance Project

(xv) The AIDS can be transmitted by which of the following :

(a) Courtship

(b) Sneezing

(c) Handshake

(d) Blood transfusion

(xvi) Ebola virus molecule contains :

(a) Positive sense ssRNA

(b) Negative sense dsRNA

(c) Negative sense ssDNA

(d) Negative sense ssRNA

(xvii) Which of the following is the cause of cancer :

(a) Cell rupture

(b) Uncontrolled mitosis

(c) Uncontrolled meiosis

(d) Loss of immunity

(xviii) The rich source of calcium is :

(a) Milk

(b) Fish

(c) Cheese

(d) All of the above

(xix) Influenza is prevented by using .....

(a) Antibiotics

(b) Vaccines

(c) Sera

(d) All of the above

(xx) Functions of WHO includes :

(a) Promote and contribute biomedical and health services research

(b) Strengthening of health services

(c) Promote technical cooperation

(d) All of the above

Section-B

(Long Answer Type Questions) **2×10=20**

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

2. Describe the general principle of prevention and control of disease.

3. What is IDSP? Elaborate the objectives, functioning and outcome of IDSP.

4. Write notes on "Health promotion and education in school".

Section-C

(Short Answer Type Questions) **7×5=35**

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

5. What is balanced diet? How it can be achieved?

6. Describe the nutritional deficiencies and its prevention.

7. Write notes on personal hygiene and health care.

8. What is chiken guinea? How it can be prevented or control?

9. What are the role of WHO in Indian National Program?

10. What are the functions of PHC?

11. Write notes on socio cultural factors related to health and disease.

12. What is drug abuse? Explain with examples.

13. Write notes on National Tobacco Control Programme.

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341871(41)

B. Pharmacy (Eighth Semester) Examination, April-May 2021

(PCI Scheme)

(Pharmacy Branch)

PHARMA MARKETING MANAGEMENT

(Theory : BP 803 ET)

Time Allowed : Three hours

Maximum Marks : 75

Note : Attempt any five quesitons. All questions carry equal marks.

1. Define Marketing Management. Explain designing, conflict and role of marketing channels.

2. Explain the significance and role marketing research. Discuss various techniques of pharmaceutical marketing research.

3. Explain the significance, goals, approaches and pricing techniques in depth. Give a Drug Price Control Order Summary (DPCO).

4. Discuss Product Branding's Value. Explain the pharmaceutical industry principle of product management.

5. What are the various OTC items Online Advertising Techniques? Assess modern publicity and sales promotion practices.

6. What do you mean by PSR? Discuss duties, selection, training and future prospects of PSR.

7. Write short notes on any **three** of the following :
   (a) Motivation and prescribing habits of the physician
   (b) National Pharaceutical Pricing Authority (NPPA)
   (c) New product decisions
   (d) Market segmentation and targeting

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341872(41)

B. Pharmacy (Eighth Semester) Examination, April-May 2021

(PCI Scheme)

(Pharmacy Branch)

PHARMACEUTICAL REGULATORY SCIENCE

Time Allowed : Three hours

Maximum Marks : 75

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

Part-A

(Objective Type Questions) **20×1=20**

***Note** : Attempt all questions, each carries 1 mark.*

1. Multiple Choice Questions (MCQs) :

(i) Stages of drug development include :

(a) Preclinical Research

(b) Clinical Research

(c) FDA Review

(d) All of the above

(ii) The identification of the biological origin of a disease, and the potential targets for intervention is called :

(a) Target identification

(b) Target validation

(c) Genetic manipulation of target genes

(d) Chemical genomics

(iii) Preclinical studies does not include :

(a) Genetic toxicology

(b) Carcinogenicity

(c) Teratogenic studies

(d) Phase 1 trials

(iv) Micro-dosing trials are also known as :

(a) Phase 1

(b) Phase 2

(c) Phase 3

(d) Phase 0

(v) Post-marketing surveillance trials involving safety surveillance (pharmacovigilance) and ongoing technical support after approval are called :

(a) Phase 1

(b) Phase 2

(c) Phase 3

(d) Phase 4

(vi) A pharmaceutical drug that is equivalent to a brand-name product in dosage, strength, route of administration, quality, performance and intended use is :

(a) Generic product

(b) Testing standards

(c) Reference standards

(d) None of these

(vii) Drug regulatory body in India is :

(a) Central Drug Standards and Control Organization (CDSCO)

(b) EMEA

(c) Health Canada

(d) USFDA

(viii) Policy existing in India for promoting generic medicine available at affordable prices for all :

(a) Jan Aushadhi Medical Stores

(b) EMEA

(c) Health Canada

(d) USFDA

(ix) Under the Hatch-Waxman Act, the first company to submit and Abbreviated New Drug Application (ANDA) to the FDA has the exclusive right to market the generic drug for how many days :

(a) 180

(b) 220

(c) 18

(d) 345

(x) Hatch Waxman Act and Amendments is also known as :

(a) The Drug Price Competition

(b) Patent Term Restoration Act

(c) Both (a) and (b)

(d) None of these

(xi) Japanese regulatory agency is called :

(a) Pharmaceuticals and Medical Devices Agency

(b) USFDA

(c) CDSCO

(d) Health Canada

(xii) CTD is organized into how many modules :

(a) 4

(b) 5

(c) 1

(d) 9

(xiii) eCTD navigates by :

(a) XML backbone

(b) PDF

(c) Word

(d) Excel

(xiv) Nonclinical overview and summaries include :

(a) Pharmacology

(b) Pharmacokinetics

(c) Toxicology

(d) All of the above

(xv) Schedule that describes guidelines for Clinical trial :

(a) Drugs & Cosmetics Act

(b) CDSCO

(c) ICMR

(d) Poison Act

(xvi) An Institutional Review Board (IRB), also known as an :

(a) Independent ethics committee (IEC)

(b) Indian review board

(c) Independent immergency committee

(d) All of the above

(xvii) In United States of America listing of approved generic drugs with therapeutic equivalency to brand produts is done in :

(a) Orange Book

(b) Purple Book

(c) White Book

(d) Black Book

(xviii) A compendium of FDA-approved biological products and their biosimilar is called :

(a) Orange Book

(b) Purple Book

(c) White Book

(d) Black Book

(xix) Responsibility of an clinical trial investigator include :

(a) Familiar with investigational products and their use.

(b) Aware and comply GCP and applied regulatory requirements.

(c) Make appropriate life of : Qualified persons to whom he has delegated significant trial related duties.

(d) All of the above

(xx) A sponsor of a clinical trial may include :

(a) Commercial companies

(b) Government funding agencies

(c) Private foundations or individuals

(d) All of the above

Part-B

(Long Answer Type Questions) **2×10=20**

Note : *Attempt any **two** questions out of 3 questions. Each question carries 10 marks.*

2. Elucidate Institutional Review Board.

3. Write in detail about regulatory authorities of United States.

4. Elaborate on Generic drug product development.

Part-C

(Short Answer Type Questions) **7×5=35**

Note : *Attempt any **seven** questions out of nine questions. Each question carries 5 marks.*

5. Write in brief about Drug Master Files.

6. Differentiate between Common Technical Document (CTD) and electronic Common Technical Document (eCTD).

7. Write short note on Purple Book.

8. Write short note on Pharmacovigilance.

9. Discuss in brief about GCP obligations of Investigators.

10. Write short note on Pharmacovigilance.

11. Differentiate between regulations, laws and acts.

12. Give an overview of Drug Regulatory Authority of Japan.

13. Discuss various requirements of New Drug Application (NDA).

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B. Pharmacy (Eighth Semester) Examination, April-May 2021

(BP805T)

(Branch : Pharmacy)

PHARMACOVIGILANCE - THEORY

Time Allowed : Three hour

Maximum Marks : 75

Min Pass Marks 25

Note : *Attempt questions of all section as directed.*

Section-A

1. Objective Type Questions : All questions are compulsory. 2×10=20

(i) What is Pharmacovigilance?

(ii) What is an Adverse Drug Event (ADE)?

(iii) What is Daily defined doses?

(iv) What is the minimum criterion required for a valid case?

(v) What is WHO drug dictionary?

(vi) Give the full form of following abbreviations

- ✓ SUSAR
- ✓ SAE
- ✓ CIOMS
- ✓ SSAR

(vii) What is the difference between an ADE and ADR?

(viii) What is Pharmacovigilance planning?

(ix) What is preclinical phase?

(x) What is real-time vaccine safety surveillance?

Section-B

Long Answer : (Any two) **10×2**

2. What are cohort and cross sectional studies? Discuss the types of cohort studies with their advantages and disadvantages.

3. Describe the role of ethics committee in clinical trials?

Write in detail about amendments in schedule Y regarding compensation.

4. Explain exhaustively the role of pharmaceutical industries in the imporvement of pharmacovigilance system.

Section-C

5. Write short notes on : (any **Seven**) 5×7

(i) Effective communication in Pharmacovigilance

(ii) Adverse events following immunization

(iii) Contract Research Organizations (CROs)

(iv) Standardized MedDRA queries

(v) Discuss about the preparation of clinical trial protocol of India

(vi) Write a note on spontaneous reporting system

(vii) International classification of diseases

(viii) Pharmacovigilance Program of India (PvPI)

(ix) Importance of safety monitoring of medicine

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341874(41)

B. Pharmacy (Eighth Semester) Examination, April-May 2021

(PCI Scheme)

QUALITY CONTROL and STANDARDIZATION of HERBALS

Time Allowed : Three hours

Maximum Marks : 75

Note : *Attempt all questions. Question no. 1 is compulsory.*

Section-'A'

(Multiple Choice Questions) 20×1=20

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

1. Choose the correct answer :

(i) Which of the following is physical evaluation parameter of Crude drugs?

(a) Ash value

(b) Extractive value

(c) Moisture content

(d) All of the above

(ii) Organoleptic evaluationi includes :

(a) Histological characters

(b) Chemical nature

(c) Pharmacological uses

(d) Impressions on organs of senses

(iii) Ash value of the drug determine the :

(a) Organic Constituent

(b) Primary Metabolite

(c) Inorganic Constituent

(d) Secondary Metabolite

(iv) Stomatal Index is calculated by :

(a) $\frac{S \times 100}{E + S}$

(b) $\frac{E \times 100}{E + S}$

(c) $\frac{E \times S}{E + S}$

(d) $\frac{E + S}{S \times 100}$

(v) Frozen herbal materials should be stored below :

(a) $-18^\circ C$

(b) $-10^\circ C$

(c) $0^\circ C$

(d) None of these

(vi) Quality assurance of herbal medicinal product is the responsibility of :

(a) Manufacturers

(b) Regulatory bodies

(c) Both (a) and (b)

(d) None of these

(vii) Homeopathy was founded by which country?

(a) India

(b) England

(c) German

(d) America

(viii) ..... drying is preferred to maintain or minimize loss of colour of leaves and flowers.

(a) Shade

(b) Microwave

(c) Lyophilization

(d) All of the above

(ix) Swelling index in used to determine amount of the following in the crude drugs :

(a) Moisture

(b) Volatile oil

(c) Crude fibres

(d) Mucilage

(x) Climate conditions like length of day, rainfall and field temperature significance influence ..... qualities of medicinal plants.

(a) Physical

(b) Chemical

(c) Biological

(d) All

(xi) The control tests on the finished product should allow the ..... determination of the composition of the active substances.

(a) Qualitative

(b) Quantitative

(c) Both (a) and (b)

(d) None of these

(xii) Research on animals must be carried out with

respect for their welfare and consideration must be given to using ..... laboraory methods.

(a) In-vitro

(b) In-vivo

(c) Both (a) and (b)

(d) None of these

(xiii) Stress testing help in identification of ..... .

(a) Active substances

(b) Degradation products

(c) Both (a) and (b)

(d) None of these

(xiv) ..... was the common method of choice for herbal analysis.

(a) TLC

(b) IR spectroscopy

(c) Paper chromatography

(d) UV Spectroscopy

(xv) Review copy is divided into ..... sections.

(a) 2-3

(b) 3-4

(c) 4-5

(d) 5-6

(xvi) Herbal drug are regulated under the Drug and Cosmetic Act :

(a) 1940

(b) 1960

(c) 1950

(d) 1930

(xvii) The Indian Herbal Pharmacopoeia has ..... monographs published by IDMA in collaboration with RRL, Jammu.

(a) 40

(b) 70

(c) 50

(d) 90

(xviii) WHO International Drug Monitoring Programme Currently Comprises a network of more than ..... national Pharmacovigilance centers that operate independently.

(a) 55

(b) 60

(c) 70

(d) 75

(xix) HPTLC technique is widely employed in pharmaceutical industry in ..... of herbal products.

(a) Process development

(b) Identification

(c) Detection

(d) All

(xx) The size of Lycopodium spore is :

(a) 5 µm

(b) 15 µm

(c) 25 µm

(d) 50 µm

Section-'B'

(Short Answer Type Questions) 7×5=35

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

2. Explain DNA markers and it's application.

3. Write the functions of National Pharmacovigilance Centre.

4. Add a note on NDA technical sections.

5. Explain approval steps for ayurvedic drug manufacturing licence.

6. Write a note on storage conditions for active substances.

7. Briefly explain about traditional system of medicine.

8. Write a short note on stability test.

9. Define drug evaluation and explain Microscopic evaluation with example.

10. Discuss Physicochemical parameters for quality control of herbal drugs.

Section-'C'

(Long Answer Type Questions) **2×10=20**

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

11. Explain the application of various chromatographic technique in standardization of herbals.

12. Discuss about research guidelines for evaluating the safety and efficiency of herbal medicines.

13. Elaborate Good Agricultural Practices (GAP) for medicinal plants.

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341877(41)

B. Pharmacy (Eighth Semester) Examination, April-May 2021

(PCI Scheme)

(Pharmacy Branch)

COSMETIC SCIENCE-THEORY

(BP809ET)

Time Allowed : Three hours

Maximum Marks : 75

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

Section-A

(Multiple Choice Questions) **20×1=20**

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

1. Choose the correct answer :

(i) Which surfactant is most widely used in the preparation of washing power but not in cosmetics :

(a) Lauryl sulphate

(b) Alkyl benzene sulphonate

(c) Myristyl sulphate

(d) None of the above

(ii) Chemically all humectants have something in common that is :

(a) Hydroxyl group

(b) Amino group

(c) Ether group

(d) Acid group

(iii) Non-ionic surfactant is :

(a) Poly alkoxylated derivative

(b) Fatty acid alkanolamides

(c) Alpha-Olefin sulphate

(d) Both (a) and (b)

(iv) Which of the following is used as a humectants :

(a) Diethylene glycol

(b) Triethylene glycol

(c) Polyethylene glycol

(d) All of the above

(v) Which thickners commonly used in the skin moisturizing productsd :

(a) Xanthan gum

(b) Cellulose derivatives

(c) Acrylic polymers

(d) All of the above

(vi) Which of the following is not preservative :

(a) Methyl paraben

(b) Butyl paraben

(c) Phenol

(d) Magnesium stearate

(vii) Following silicones form a thin film on the hair without creating a appearance of greasy and limp hair, Except :

(a) Cyclomethicone

(b) Dimethicone

(c) Propylmethicone

(d) Amidomethicone

(viii) A factor, lower hygral fatigue, can damage hair due to :

(a) Repeated swelling and drying hair

(b) Enhancing lubrication

(c) Excess formation of dandruff

(d) None of the above

(ix) Different surfactants are often combined in cleansers to minimize the irritating potential of the cleansers :

(a) True

(b) False

(c) Surfactant are not combined with cleanser

(d) None of the above

(x) Most important naturally found structural element of intracellular lipids in the SC which regulating body homeostasis is :

(a) Proteins

(b) Ceramides

(c) Glucose

(d) None of the above

(xi) Following statements are true for para-phenylenediamine, except :

(a) An aromatic amine with a chemical formula $C_6H_8N_2$

(b) Oxidizes in the air turning from red to brown and finally black

(c) Known to cause allergic contact dermatitis

(d) Has not able to penetrate hair shaft and follicle

(xii) A hydroalcoholic solution in which flavours, essential oils, and other agenta are combined to provide long term breath deodoriazation is :

(a) Mouthwash

(b) Deodorant

(c) Toothpaste

(d) None of the above

(xiii) Triclosan is ..... agent that has widely used in toothpastes, deodorants, and soaps.

(a) Surfactant

(b) Antibacterial

(c) Foaming agent

(d) Cleaning agent

(xiv) Following are the examples of anticarries agent except :

(a) Sodium fluoride

(b) Strontium chloride

(c) Stannous fluoride

(d) Sodium monoflurophosphate

(xv) Which of the following preservative used in shampoo :

(a) Lanoline

(b) Methyl cellulose

(c) Imidozolidinyl urea

(d) None of the above

(xvi) Following is the benefits of heena, except .....

(a) Balance pH and oil production

(b) It act as an moisturizer

(c) It can help to prevent dandruff

(d) It can help to repair split ends

(xvii) Following is the benefit of turmeric :

(a) Protect from sun damage

(b) Reduces risk of skin cancer

(c) Help to treat psoriasis

(d) All of the above

(xviii) Variation in human skin color is mainly due to the presence of pigment :

(a) Melanin

(b) Haemoglobin and carotene

(c) Melanoid

(d) All of the above

(xix) Blemishes are :

(a) A type of fungal acne

(b) Cause by overproduction of oil by sebaceous glands

(c) Mark, spot, discoloration, or flow that appears on the skin

(d) All of the above

(xx) Ideal characteristics of antiperspirant and deodorant is :

(a) Should spread easily and have good permeation properties

(b) Should have short-term deodorization effect

(c) Should be alkaline

(d) None of the above

Section-B

(Long Answer Type Questions) **2×10=20**

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

2. Define and classify sunscreen? Write about BIs specification and analytical methods for skin cream.

3. Define and classify cosmetics? Explain cosmetics as quasi and OTC drugs.

4. What is moisturizing cream? Discuss various materials used in the manufacturing of moisturizing cream?

Section-C

(Short Answer Type Questions) **7×5=35**

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

5. Write the basic structure and function of skin?

6. Write the formulation cosideration of shampoo.

7. Define, classify and write applications of preservatives?

8. What is TEWL? Explain different methods for the TEWL measurement?

9. Explain the benefits and evaluation of soap.

10. Write short note on skin color.

11. Explain mechanism of action of antiperspirant and deodorant.

12. Discuss various elements of healthy scalp.

13. Discuss the benefits of Neem and Clove in oral care.

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B. Pharmacy (Eighth Semester) Examination, April-May 2021

(Pharmacy Branch)

EXPERIMENTAL PHARMACOLOGY

(Theory : BP810ET)

Time Allowed : Three hours

Maximum Marks : 75

***Note** : Question paper is of three parts i.e. (A), (B) and (C). Part A consists of 10 object type questions each of 2 mark. All questions are compulsory. Part B consists of 3 long answer questions of which attempt any **two**. Each of 10 marks. Part C consists of 9 short answer questions, attempt any **seven** questions. Each of 5 marks.*

Part-A

(Objective Type Questions) **10×2=20**

***Note** : Attempt all questions, each carries 2 marks.*

1. Define Euthanasia.

2. Name the general methods for blood collection from rats.

3. What is CPCSEA?

4. What is Sham control?

5. Name the in vivo methods for evaluation of diuretics.

6. What models are used for determining analgesic activity using chemical stimuli?

7. Name the types of local anesthesia in preclinical models.

8. Define Transgenic and Knockout mice.

9. Define the term research hypothesis.

10. What are nootropics?

Part-B

(Long Answer Type Questions) **2×10=20**

Note : Attempt any two questions out of 3 questions. Each question carries 10 marks.

11. Explain and describe Students '*t*' test and One-way ANOVA.

12. Write about CPCSEA guidelines for laboratory animal facility.

13. Expound over the rationale for selection of animal species and sex for experimental study.

Part-C

(Short Answer Type Questions) **7×5=35**

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

14. Animal models in experimental peptic ulcer.

15. Acceptability criteria of an experimental result.

16. Effect of cardiac stimulants and depressants on perfused frog's heart.

17. Study of action of antidepressants on mice.

18. Study of action of drugs on the rabbit's eye.

19. Calculation of drug dosage and percentage solutions.

20. Common routes of drug administration in laboratory animals.

21. Preclinical screening of antidiabetics.

22. Selection of research topic.

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341879(41)

B. Pharmacy (Eighth Semester) Examination, April-May 2021

(Branch : Pharmacy)

ADVANCED INSTRUMENTATION TECHNIQUES

(Theory) (BP811ET)

Time Allowed : Three hour

Maximum Marks : 75

Note : *The question paper consists of three section i.e. A, B and C. Section A consists of 20 MCQs of 1 mark each. All questions are compulsory. Section B consists of 3 questions out of which 2 questions should be attempted, 10 marks each. Section C consists of nine questions out of which attempt 7 questions 5 marks each.*

Section-A

1. Multiple Choice Questions : 1×20=20

(i) Why is it important to use a deuterated solvent?

(a) NMR uses least of this solvent

(b) So the spectrometer can lock onto the sample to prevent the spectrum from drifting during acquisition.

(c) Expensive solvents work best with NMR

(d) They dissolve polymer the fastest

(ii) Coupling causes the peaks in ^{1}H NMR spectra to be split into :

(a) two peaks

(b) multiple peaks equal to the number of hydrogens on surrounding atoms

(c) multiple peaks equal to the number of surrounding carbon atoms

(d) multiple peaks equal to the number of hydrogen on surrounding atoms, plus one

(iii) All hydrogen atoms :

(a) have the same resonance frequency

(b) resonate at different frequencies depending on their environment

(c) are attached to carbon

(d) resonate at about the same frequencies as carbon

(iv) What is shielding in NRM?

(a) Using a curved piece of metal to block an opponents attack

(b) Putting metal around an Rf source

(c) When the magnetic moment of an atom blocks the full induced magnetic field from surrounding nuclei

(d) Blocking parts of a molecule from Rf radiation

(v) How many possible orientations do spin 1/2 nuclei have when they are located in an applied magnetic field?

(a) 2

(b) 4

(c) 3

(d) 6

(vi) In FT-NMR, how are nuclei excited?

(a) By radio-frequency radiation whose frequency is swept across a predetermined range

(b) By an intense pulse of radiation which contains a wide range of frequencies

(c) By an intense pressure

(d) None of the above

(vii) Why is it advantageous to record many FID signals from the same sample and then add them together?

(a) To ensure that all target nuclei in the sample have been excited

(b) To remove inaccuracies caused by fluctuations in the applied magnetic field

(c) To increase sensitivity

(d) None of the above

(viii) Which can be used as a mobile phase in LC-MS applications?

(a) Any compound with solubility in liquid

(b) Any compound with limited solubility in liquid

(c) Any compound with non-solubility in liquid

(d) Any of the above

(ix) In gas chromatography, the basis for separation of the components of the volatile material is the

difference in :

(a) partition coefficients

(b) conductivity

(c) Molecular weight

(d) molarity

(x) What is the name given to the relaxation process due to an interaction between an excited nucleus and the magnetic fields caused by nuclei in molecules moving arround in the sample?

(a) Spin-lattice relaxation

(b) Spin-spin relaxation

(c) Spin-spin-spin relaxation

(d) None of these

(xi) What is the relationship between wavelength and wave number?

(a) Wavenumber = 1 / wavelength in centimeters

(b) Wavenumber - wavelength in nanometers = 1

(c) Wavelength in nanometers x wavenumber = 1

(d) None of the above

(xii) Which of the following cannot be used as carrier gas in gas chromatography :

(a) Hydrogen

(b) Nitrogen

(c) Helium

(d) Oxygen

(xiii) To explain the column efficiency, two theories i.e., plate and rate theory has been proposed. They are related to :

(a) HPLC

(b) Gel chromatography

(c) Gas liquid chromatography

(d) Paper chromatography

(xiv) Vicinal coupling is :

(a) Coupling between ^{1}H nuclei in an alkene

(b) Coupling between ^{1}H nuclei in an alkene

(c) Coupling between ^{1}H nuclei attached to adjacent C atoms

(d) Coupling between ^{1}H nuclei attached to the same C atom

(xv) The eluent strength is a measure of :

(a) solvent adsorption energy

(b) solvent absorption energy

(c) solvent diffusivity

(d) solvent mixing index

(xvi) An isocratic elution in LC is one in which the composition of the solvent :

(a) remain constant

(b) changes continuously

(c) changes in a series of steps

(d) none of these

(xvii) Dwell volume is defined as :

(a) the volume of solvent contained in a liquid chromatographic column

(b) the time required for the gradient to reach the column

(c) the volume of the column between the point at which solvents are mixed and the beginning of the column

(d) none of these

(xviii) The plot of ΔT Vs temperature ids called as :

(a) Thermo gram

(b) Energy plot

(c) Pressure plot

(d) Temperature plot

(xix) The crystalline behaviours of polymer is studied by using ..... method :

(a) X rays and electron diffraction method

(b) TGA

(c) DTA

(d) DSC

(xx) Differential scanning calorimetry is a technique to measure ..... .

(a) electrical conductivity

(b) specific heat

(c) thermal expansion

(d) magnetic field

Section-B

(Long Answer Type Question) **10×2=20**

1. What do you mean by chemical shift? Discuss factors affecting chemical shift and application of NMR spectroscopy.

2. Give principle, instrumentation and uses of X-ray diffraction.

3. Define and classify different chromatographic technique. Write in detail principle & instrumentation of LC-MS/MS.

Section-C

(Short Answer Type Question) **7×5=35**

1. Describe the principle, working & instrumentation of mass spectroscopy.

2. Discuss the principle of thermogravimetric analysis (TGA).

3. Write a note on Differential Scanning Calorimetry. (DSC).

4. Give the procedure for calibration of UV-Visible Spectroscopy.

5. Illustrate the basic aspects of crystals; discuss the structure elucidation by X-Ray diffraction methods.

6. Write a note on limitation and applications of Radio Immuno Assay.

7. Discuss Liquid-liquid extractions with examples.

8. Discuss the principle of HPTIC-MS.

9. Write a short note on X-Ray Crystallography.