APRIL - 1991

044

THIRD B.PHARM. DEGREE EXAMINATION, APRIL 1991.

Paper II — CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours. Maximum : 100 marks.

Answer any FIVE questions.

1. (a) How can you estimate the number of methoxy and N-CH_3 groups in an alkaloid ? (6)

(b) Discuss the Hofmann's degradation of tropinic acid, giving all structures. (7)

(c) Outline a method of synthesis of papaverine. (7)

2. (a) Discuss the chemistry and inter-relationships of lanatosides and purpurea glycosides. Compare their biological activities and indicate the effect of sugars and the hydroxyl functions of the aglycones, on these activities. (10)

(b) Discuss the structure elucidation of salicin. (10)

3. (a) Write the skeleton structures of cholesterol, stigmasterol, ergosterol and cholic acid, to indicate their stereochemical nature. Number the structures suitably to show the differences. (8)

(b) How can progesterone be chemically converted to an active corticosteroid analogue ? (8)

(c) Describe four chemical tests for steroids. (4)

4. (a) Enumerate essential amino-acids, with their structures. Explain why they are "essential". Outline *two* methods of synthesis of any *one* essential amino-acid. (10)

(b) How is uric acid converted to caffeine and theobromine ? Compare the biological activities and applications of methylated xanthines. (10)

5. (a) With structures and names of all products, trace the path of formation of ergocalciferol and degradation of ergosterol during irradiation. (10)

(b) Enumerate the currently useful amino-glycoside antibiotics, giving their therapeutic applications. Write the structure of any *one* of them. Give the pharmacopoeial identification tests for streptomycin. (6)

(c) Outline a method of synthesis of chloramphenicol. (4)

6. (a) Write the possible structures of a fat, which on hydrolysis yields one mole each of capric, stearic and oleic acids. Calculate its molecular weight, iodine value and saponification value. (10)

(b) Discuss the chemical differences and tests to distinguish between sucrose, lactose and maltose. How can the exact point of attachment of the two monosaccharides of sucrose be established ? (10)

7. (a) How was the structure of alpha-terpineol established from synthetic and analytical evidence ? How can its relationship with carvone be established ? (12)

(b) With structures show the possible stereochemical isomers of menthol and name them correctly. (4)

(c) How is alpha-pinene converted to camphor ? (4)

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APRIL - 1993

[RS 547]

THIRD B.Pharm. DEGREE EXAMINATION.

(Old Regulations)

Paper II — CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

1. (a) Discuss the chemistry and degradation products of Penicillins.

(b) Explain the commercial synthesis of chloramphenicol.

2. (a) Mention the quality control tests for Fixed Oils.

(b) How is the degree of unsaturation present in the glycerides of the oils estimated? Explain one method.

3. (a) Explain the industrial method of synthesis of Ascorbic acid. Give its uses.

(b) Give the chemical synthesis of Thyroid hormones.

4. Show the structural relationship between β carotene and Vitamin A. Mention the synthesis, colour reactions, biological activity and preparations of Vitamin A_2.

5. Discuss the structural features of Ergot alkaloids and mention their therapeutic uses. Give their identification tests and Assay. Discuss the colour reactions of Morphine.

6. Write on purine alkaloids with their structures and uses. Give the synthesis of Uric Acid.

7. What are Polypeptides and Proteins? List the Pharmaceutically important natural peptides and proteins. Give the methods of Peptide synthesis.

APRIL - 1993

[R S 5 5 3]

THIRD B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper II — CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours. Maximum : 90 marks.

Two and a half hours for Sections A and B. Sections A and B : 60 marks.

Answer Sections A and B in separate answer books.
Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Discuss the structure elucidation of riboflavine, including a method of its synthesis. How does it participate in the life processes ?

2. (a) Discuss the constitution of geraniol and a method of its synthesis. How is it related to nerol ? (10)

(b) How are menthol and thymol related ? Can they be interconverted and if so, how ? (5)

3. Discuss the constitution of glucose, including its ring structure and configuration.

4. How was the structure of atropine established ? Indicate important reactions and their interpretation. Show its relationship to hyoscine and cocaine.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain two important methods used for establishing the quality of an oil or fat.

6. Write the structures of any two sapogenins studied by you and indicate their importance. How are saponins tested and detected ?

7. Discuss briefly the chemistry and relative activities of progesterone analogs used as oral contraceptives.

8. Give a brief description of mild silver protein I. P. 1966. How is this distinguished from strong silver protein ? How do you test for foreign proteins in strong silver protein I.P. 1966 ?

9. Outline a method of synthesis of uric acid. Why is it called an acid ?

10. Write the structures of the three forms of Vitamin B_6 and indicate how it participates in metabolic reactions in the body.

11. Write the stereochemical projection formulae for all the four isomers of ephedrine, name them correctly and indicate their activities.

12. With a general structure, show how the therapeutically useful tetracycline antibiotics are inter-related.

13. Write the structures of alpha and beta carotenes and show how they are related to Vitamin A.

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[P R 164]

THIRD B.Pharm. DEGREE EXAMINATION.

(Old Regulations)

Paper II — CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours **Maximum : 100 marks**

Answer any FIVE questions.

All questions carry equal marks.

1. What are Vitamins–D? Discuss their biological actions and synthetic methods involved in their preparations. Give the structure of different variants of the Vitamin.

2. Explain, step–wise, methods of determining the structure of an alkaloid. Give the chemical structure and uses of Atropine. How is Homatropine synthesised?

3. Give the Pharmaceutically important natural polysaccharides and mention their uses. What are the identification tests done for a reducible sugar?

4. What are Broad Spectrum Antibiotics? Give examples. Write the chemistry of tetracycline analogs. Mention some peptide antibiotics with their uses.

5. List the important derivatives and analogs of Progesterone, giving their structures and important uses. How is progesterone synthesised from Diosgenin?

6. Discuss the chemistry of cardiac glycosides with their Identification tests and Assay.

7. Name the source of camphor. Describe its chemistry, synthesis, properties and uses.

NOVEMBER - 1993

[PR 170]

THIRD B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper II — CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours **Maximum : 90 marks**

Two and a half hours for Sections A and B **Sections A and B : 60 marks**

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 x 15 = 30 marks)

Answer any TWO questions.

1. Discuss the structure elucidation of papaverine, including a suitable synthetic route to it. Describe a suitable identification test for it. What are its applications?

2. Discuss the chemistry of thiamine. Give a method of its total synthesis. Explain its assay, mode of participation in the body processes and properties.

3. Enumerate important reactions of estrone, which led to its structure elucidation. How can its chemical relationship to other estrogenic hormones be established? Outline one method of its preparation, for commercial exploitation.

4. (a) What are ionones? How are they obtained? Show their inter-relationship and indicate their importance.

(b) Discuss important properties of camphor and a commercially used synthesis for obtaining it.

SECTION B — (6 x 5 = 30 marks)

Answer any SIX questions.

5. Enumerate the important anti-cancer antibiotics, giving their structure and specific applications.

6. Give the structures and relative activities of totally synthetic estrogenic compounds. Indicate also their specific applications.

7. Outline two methods of obtaining progesterone from two different raw materials.

8. Discuss briefly the reactions of amygdalin, that clarified its structure.

9. Enumerate the important synthetic analogs of vitamin K and their properties and relative activities.

10. Indicate chemical inter-relationship between caffeine, theobromine and theophylline. Outline a method of synthesis of caffeine.

11. Trace the degradation of ergosterol when irradiated, to various products. Give structures and names of the important products, indicating gross stereochemistry.

12. With structures indicate the differences between alpha, beta and gamma carotenes and lycopene. Indicate their relative provitamin activity.

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13. An oil yielded on saponification oleic acid and palmi acid in the proportion of 2 to 1. Write the complete structure of the oil (major component) and calculate its molecular weight.

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[ND 581]

THIRD B.Pharm. DEGREE EXAMINATION

(Old Regulations)

Paper II — CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours. Maximum : 100 marks.

Answer any FIVE questions.

All questions carry equal marks.

1. (a) Discuss the constitution and synthesis of pyridoxine. What is its role in the body ?

(b) Name the fat soluble vitamins, give their structures, uses and their role in the body. (14+6)

2. (a) Enumerate important anti-cancer and anti-fungal antibiotics, giving the structures of at least *two* for *each* class. What are their specific applications ?

(b) Classify glycosides, based upon the aglycone character, giving examples for each class. Discuss the chemistry of amygdalin. (7+13)

3. (a) Outline *two* methods of partial synthesis of progesterone. Enumerate different synthetic analogs of progesterone, giving their structures and relative applications.

(b) How can progesterone by converted to (i) an androgen and (ii) a corticosteroid analog ? (12+8)

[ND 581]

4. (a) Discuss the structure elucidation of a disaccharide studied by you.

(b) Show how a pentose can be converted to a hexose and a hexose to a pentose by established chemical methods. (14+6)

5. (a) Discuss the chemistry of thymol. How can it be converted to menthol ?

(b) Describe important qualitative and quantitative tests useful in determining the purity of official oils. (12+8)

6. (a) How can cholesterol be converted to vitamin D_3 (cholecalciferol) ? What is calcitriol and what is its role in the body ?

(b) Mention the names, structures and uses of all official alkaloids (I.P. 85). Outline synthesis of any *one* of them. (10+10)

7. (a) Discuss the chemical inter-relationship among the various cardiac glycosides. Indicate their relative activities and the nature of sugars found in them.

(b) What are the criteria for purity of proteins ? Describe some important tests for proteins. (12+8)

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APRIL - 1995

(SB 586)

Third B. Pharm. Degree Examination

(Old Regulations)

Paper II - CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours Maximum : 100 Marks

Answer any FIVE questions

All questions carry equal marks

1. a) What are Tropane alkaloids ? Give examples with structure and its use

   b) How will you establish the structure of caffeine ?

   c) Write the principle involved in the assay of ephedrine Hydrochloride (6+10+4)

2. a) What are antibiotics ? Classify them, chemically

   b) Explain the effect of acids and bases on Benzyl Penicillin

   c) Write notes on semisynthetic penicillins (5+8+7)

3. a) List the fat soluble vitamins along with their structure and use

   b) Write the steps involved in the conversion of ergosterol to calciferol by irradiation

   c) Write the principle involved in the assay of Vitamin C (6+8+6)

4. a) Name the hormones secreted by Adrenal cortex and write their structure and uses

   b) Give an account of non-steroidal synthetic oestrogenic hormones, their chemistry and synthesis

   c) Explain the assay of Adrenalin (6+10+4)

5. a) What are disaccharides ? Give three examples with their structure

   b) Explain the structural elucidation of Glucose including the configuration and ring structure (6+4)

6. a) What are oils, fats and waxes ? Give examples

   b) Write the structures of essential fatty acids

   c) Define the following and explain their determination and significance

      i) Iodine value

      ii) Saponification value

      iii) Acetyl value (3+3+14)

7. Write notes on the following

   a) Isoelectric point and its importance

   b) Synthesis of Camphor

   c) Isoprene rules

   d) Saponins

   e) Hoffmann's exhaustive methylation (3+6+2+3+6)

APRIL - 1995

SB 592]

THIRD B. Pharm DEGREE EXAMINATION

(New Regulations)

Paper II—CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours — Maximum : 90 marks
Two and a half hours for Section A and B — Sec A and B : 60 marks

Answer Sections A and B in separate answer books

Answer Section C in separate answer sheet provided

SECTION—A (2×15=30)

Answer any TWO questions

1. a) Write the structure and use of fat soluble vitamins.
   b) Explain the synthesis of Thiamin and pyridoxin.
   c) Explain the chemical method of assay of Adrenalin and Benzyl penicillin. (2+8+5)

2. a) What are alkaloids ? Classify them chemically giving suitable examples.
   b) Explain Hoffmann's exhaustive methylation and its use in the structural elucidation of alkaloids.
   c) Write notes on the chemistry in Rawolfia alkaloids (excluding structure elucidation) (3+7+5)

3. a) Write the structure of purine, uric acid, Caffeine, Theophyllin and Theobromine.
   b) What is aminophyllin ? Mention its use.
   c) Elucidate the structure of caffeine. (4+3+8)

4. a) Give an account of semisynthetic corticosteroids including the structure activity relationship.
   b) Explain the determination of
      i) Iodine value
      ii) Saponification value
      iii) Acetyl value (6+9)

SECTION—B (6×5=30)

Answer any SIX questions

5. Write the reactions involved in the conversion of ergosterol to calciferol.
6. Explain
   a) Isoelectric point and its significance
   b) Sorenson - formol titration and its use.
7. What are essential fatty acids ? Write their name and structure.
8. Name the B-Complex Vitamins and explain the assay of Vitamin-C.
9. Explain the mechanism of mutarotation.
10. Explain the use of melonic ester in the synthesis of amino acids.
11. How will you synthesis camphor.
12. Write the definition, classification and tests for protein.
13. Write notes on Digitalis glycosides.

NOVEMBER - 1995

MB 717

THIRD B.PHARM DEGREE EXAMINATION

(Old Regulation)

PAPER II - CHEMISTRY OF NATURAL PRODUCTS

Time: Three hours Maximum: 100 Marks

Answer any FIVE Questions

All questions carry equal marks

1. a) Describe the structure and synthesis of Vit. B_1; Give its physiological role.

   b) How is Vit.A synthesised from natural sources? (12 + 8)

2. a) Discuss general methods of isolation of alkaloids? How are they detected.

   b) Name important reactions used in structural elucidation and function group determinations in alkaloids.

   c) Give synthesis of Ephedrine. (8+6+6)

3. a) Describe the structural details and chemistry of lactam antibiotics and their uses.

   b) Discuss cardiac glycosides, sources, the chemistry of the aglycone part, lactone rings and suger moeities.

4. a) Give the synthesis of progesterone from a natural Saponin.

   b) Discuss the stereo chemistry and structural elucidation of cholesterol.

   c) Give the synthesis of two non steroidal estrogenic compound. (6+6+8)

5. a) Give the structural elucidation of uric acid.

   b) How is caffeine synthesised?

   c) Give the inter relationships of Xanthine derivatives. (8+6+6)

6. a) Classify terpenes on chemical basis with examples.

   b) Give the chemistry and synthesis of camphor. How does natural camphor differ from synthetic one?

   c) Describe a method for determination of unsaturation in fixed oils with the chemistry involved. (12+6+2)

7. a) Classify proteins, their important tests and characterisation.

   b) Discuss irradiation reactions in the formation of Ergocalciferol and cholecalciferol.

   c) Explain inter conversion reactions of [illegible] to Pentoses and aldoses to ketoses.

NOVEMBER - 1995

[M8 723]

Third B. Pharm Degree Examination

(New Regulations)

Paper II - CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours — Maximum : 90 marks

Two and a half hours for Sec. A and B — Sec. A and B 60 marks

Answer section A and B in separate answer books.

Answer section C in the answer sheet provided.

SECTION - A (2X15 = 30)

Answer any TWO questions.

1. a) Elucidate structure of the official alkaloid belonging to quinoline group
   b) Name other allied alkaloids with structure giving main differences and uses. (9+6)
2. a) Discuss chemistry of Natural and synthetic tetracyclines their uses and therapeutic efficiency and drug interactions and limitations if any.
   b) Name antibiotics used as anticancer agents. (10+5)
3. a) Discuss anthraquinons glycosides with basic rings and structures. Give general chemical tests.
   b) Differentiate O, C, and N glycosides with examples (9+5)
4. a) Discuss the chemistry of pyridoxine or folic acid with synthetic pathways.
   b) Name with uses the fat soluble vitamins. (10+5)

SECTION - B (6X5 = 30)

Answer any SIX

5. Name bile acids with structure and uses.
6. Give synthesis of diethyl stilbesterol Name other structural analogues. Theoretise activity of non steroidal trans diethyl stilbesterol as estrogenic steroids.
7. How will you convert fructose to glucose.
8. Give hydrolytic products of streptomycin
9. Give the detailed reaction of synthesis of amino acid by azalactone syntheeis.
10. Give structures of synthetic analogues of testosterone and their uses.
11. Name with structures the oral contraceptives.
12. How is Vit C synthesised ?
13. Give structure and uses of
    a) Fluromethylon
    b) Dexamethasone
    c) Triamcenolone
    d) Corticosterone

APRIL - 1996

AK 719 **Third B.Pharm Degree Examination**
(Old Regulations)
Paper II - CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours Max. 100 Marks.

Answer Section A and B in separate answer books.
Give diagrams wherever necessary
Answer any Five questions.
All questions carry equal marks.

1. a) Enumerate the alkaloids present in opium. Write their structure and use. (6)
   b) Write the structural elucidation of Atropine. (10)
   c)How will you assay Quinine? (4)

2.a) Name the antibiotics used in the treatment of typhoid. Explain the synthesis of any one of them. (10)
   b)Write the structure of important natural and semisynthetic Tetracycline group of alkaloids and explain briefly the chemistry and thier use. (10)

3. a)List down the important B-complex vitamins along with their structure and use. (6)
   b)Elucidate the structure of Thiamine. (10)
   c)Explain the principle involved in the assay of Thiamine. (4)

4. a) Write the basic structre of steroid and number the carbons. Give a brief account on the nomenclature of steroidal derivatives. (5)
   b) What is progestogens? Give examples with structure and use. Write the synthesis of any one of them. (10)
   c) Explain the salient features of Insulin structure. (5)

5. a) Explain the following. Give examples wherever necessary
      i). Mutarotation
      ii). Anomers
      iii). Epimers
      iv). Structure of starch (3+3+3+6)
   b) Explain the mechanism of mutarotation (5)

6. a) Classify amino acids giving examples and name the essential amino acids. (5)
   b) Give an account on the methods of preparation of amino acids and their properties. (15)

7. a) What are glycosides? Classify them giving suitable examples. (5)
   b) Give an account on the chemistry of digitalis glycosides. (15)

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APRIL - 1996

[AK 725] Subject Code : 4192

Third B. Pharm Degree Examination

(New Regulations)

Paper II - CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours Max. : 90 marks

Two and a half an hours

for Section A and B Sec. A and B : 60 marks.

Answer Section A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION - A (2×15=30)

Answer any TWO questions

1. a) What are carbohydrates ? Classify them chemically.
   b) Elucidate the structure of glucose including the ring structure.
   c) What is the difference between amylose and amylopectin. (3+10+2)
2. a) Enumerate the important tropane alkaloids along with their structure and use.
   b) Elucidate the structure of Atropine. (5+10)
3. a) What are oestrogens and progestogens ? Give example with structure.
   b) How will you synthesis progesterone ?
   c) Write notes on the synthetic non-steroidal oestrogenic compounds. (3+6+6)
4. a) Explain the hydrolysis of penicillins at various PH
   b) Give an account on the chemistry and uses of semisynthetic penicillins.
   c) Explain the assay of streptomycin. (6+6+3)

SECTION—B (6×5=30)

Answer any SIX questions.

5. How will you synthesis chloramphenicol ? Give the reactions.
6. What is saponin ? Write the structure and identification test for saponin.
7. What are essential amino acids ? Write their name and structure.
8. Define alkaloids. Write notes on general properties of alkaloids.
9. Define the following and mention their significance
   a) Acetyl value
   b) Acid value
   c) Peroxide value
10. Write the synthetic method for protein.
11. Write short notes on carotene.
12. What do you mean by amino glycosidic antibiotics ? Give examples and their structure.
13. How will you synthesis citral.

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OCTOBER - 1997

[MS 714] **Sub. Code : 4192**

THIRD B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper II — CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours — Maximum : 90 marks

Two and a half hours — Sec. A & B : 60 marks

for Sections A and B — Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Formulate the synthesis of progesterone from diosgenin. Explain different progesterone analogues are useful in contraception.

(b) Name any three biologically potent aglycones of cardiac glycosides with structure and chemical name. (9 + 6)

2. (a) Classify the alkaloids chemically and elucidate the structure of ephedrine.

(b) What are the stereochemical features of morphine for its analgesic properties? (10 + 5)

3. (a) What is Karner's method of synthesis of riboflavin starting from 3, 4 – dimethylaniline?

(b) What are the tocopherols? Mention the structural features of any two of them. (9 + 6)

4. (a) On what basis could the ring structure of glucose be established?

(b) Give any two methods of end group analysis in protein structure establishment. (9 + 6)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Name any three bile acids with structure and chemical names. Mention their uses. (3 + 2)

6. What is Gabriel's phthalimide synthesis? What are its advantages? (4 + 1)

7. Name any three antibiotics used in the chemotherapy of cancer and indicate their other uses. (3 + 2)

8. Give any five important structural characteristics of tetracycline group of antibiotics.

9. How do you synthesise testesterone from cholesterol?

10. Enlist the important stereochemical features of atropine.

11. How do you test for purity of zinc gelatin and ascorbic acid? (3 + 2)

12. What is DNP method of N-terminal aminoacid determination?

13. Write a brief account of anthraquinone glycosides useful as drugs.

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OCTOBER - 1997

[MS 730] **Sub. Code : 4221**

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I — CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours	Maximum : 90 marks
Two and a half hours	Sections A & B : 60 marks
for Sections A and B	Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Elucidate the structure of 'ATROPINE'.

(b) What products do you expect when the following compounds are subjected to Hoffman Exhaustive Methylation

(i) Tropine (ii) Ephedrine.

2. (a) Define and classify Vitamins with one example for each class.

(b) Elucidate the structure of Riboflavin.

(c) Suggest a method for the synthesis of Riboflavin.

3. (a) Give evidence for the ring structure of Glucose.

(b) Explain how it was proved that Glucose exists in Pyranose and furanose forms.

4. (a) Define steroids and give any two colour reactions of cholesterol.

(b) Elucidate the structure of oestrone.

(c) Suggest a method for the synthesis of Diethylstilbestrol.

[MS 730]

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Define and classify Glycosides. Elucidate the structure of Amygdalin.

6. Give the synthesis of Chloramphenicol. Give the structures of all the isomers of Chloramphenicol and indicate the therapeutically active one.

7. Define Isoprene rule and special isoprene rule with examples. Give the synthesis of 'Menthol'.

8. What is isoelectric point? Give all the skeletal structures of essential aminoacids.

9. Suggest a scheme for the conversion of Cholesterol to Progesterone.

10. Elucidate the structure of Uric acid.

11. Define acid value. How is it determined? Comment on its significance.

12. Define antibiotic and elucidate the structure of benzyl penicillin.

13. Give the inter-relationship between theophylline, theobromine and caffeine. Give the synthesis of caffeine.

APRIL - 1998

[SV 714] Sub. Code : 4192

THIRD B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper II — CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours Maximum : 90 marks

Two and a half hours Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B Section C : 30 marks

Answer Section A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Describe the synthesis of uric acid.

(b) Briefly explain inter relationship of caffeine, theobromine and theophylline. Mention their medicinal importance.

(c) Outline the synthesis of Caffeine.

2. (a) Briefly explain the synthesis of cortisone from naturally occurring Sapogenins.

(b) Explain the structure and activity relationship of important progesterones used as oral contraceptives.

(c) Draw the skeleton structures of Cholesterol, Estradiol and Prednisolone.

3. (a) What are antibiotics? Classify them giving examples.

(b) Briefly explain the semisynthetic Penicillins and their specific therapeutic indications.

(c) Draw structures of Chloramphenicol, Tetracycline and Streptomycin.

4. (a) Define the term 'alkaloids' and classify them giving examples and various medicinal uses.

(b) Draw structure of Ephedrine and Atropine.

(c) Outline the synthesis of Vitamin A.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. What are proteins? Classify them giving suitable examples. Give skeletal structure of all essential amino acids.

6. Explain the structure of Glucose determination of configuration and ring structure of glucose.

7. Define the term Iodine value. How is it determined? Explain its significance.

8. Explain the chemistry of cardiac glycosides giving examples.

9. Outline the synthesis of camphor.

10. Explain Hoffman exhaustive methylation giving suitable example.

11. Explain the synthesis of Linalol. Establish inter relationship among Limonene, Alpha terpeniol and Cineole.

12. Briefly explain the chemistry and medicinal use of Opium alkaloids.

13. Elucidate the structure of Amygdalin. Explain briefly the chemistry of anthraquinone glycosides and saponins.

APRIL - 1998

[SV 730] **Sub. Code : 4221**

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I — CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours — Maximum : 90 marks

Two and a half hours — Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B — Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Give the chemical classification of Antibiotics with suitable examples.

(b) Write a brief account of the structure and stereo chemistry of chloramphenicol.

(c) Discuss the salient structural features of tetracycline derivatives.

2. (a) What are Oestrogens and Progestogens? Give examples with structures.

(b) What do you mean by Ephedra alkaloids?

(c) Elucidate the structure of Ephedrine.

3. (a) Explain how vitamins are classified with suitable examples with structures.

(b) Discuss the salient features in the structural elucidation of Vitamin A.

(c) Outline a synthetic route for Vitamin B_2.

4. (a) What are essential Aminoacids? Give examples. (2)

(b) Write four general methods of synthesis of aminoacids. (8)

(c) Explain the following (i) Iso electric point (ii) Nin Hydrin reaction. (5)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Chemically differentiate between Fixed oil, Volatile oil, Paraffin oil and Wax. Give one example each.

6. Define Saponification value and the factors affecting it.

7. Write the structure and chemical reactions of Aneurine HCl.

8. Explain the chemical relationship between caffeine, Theobromine and Theophylline. Discuss their pharmacological significance.

9. What are Cardenolides and Bufadienolides? Give examples with structures.

10. Explain the chemical nature and one method of assay of Ascorbic Acid.

11. Explain the significance of Hofmann's exhaustive methylation in the structural elucidation of Alkaloids.

12. What are Terpenes and Terpenoids? Classify Terpenes with suitable examples.

13. Suggest a suitable method to synthesize Testosterone from cholesterol.

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OCTOBER - 1998

[SM 730] **Sub. Code : 4221**

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I — CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours — Maximum : 90 marks

Two and a half hours — Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B — Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. What are Alkaloids? Classify, discuss isolation chemistry and use of Morphine.

2. What are fat soluble vitamins? Give the structures. Give the synthesis and an important method of Assay for Vitamin A.

3. What are oils, fats and waxes? What are the parameters for the quality control? Discuss the significance of free acid and iodine value.

4. Classify glycosides giving suitable examples. Discuss the chemistry of cardiac glycosides.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. What are Bread Spectrum Antibiotics? Discuss the Chemistry Tetracycline.

6. Give an account of synthetic estrogens.

7. What are Terpenes? What are their basic units? Classify them with examples.

8. Write short notes on :

Semi synthetic penicillin.

9. Classify carbohydrates. Explain the chemistry of any one of the Disaccharides.

10. Discuss the chemistry of Ascorbic acid.

11. Give the structural formula and uses of Vitamin K and Menthol.

12. What are essential Amino acids? Write the synthesis of any one of the Amino acid.

13. Explain the chemical inter–relationship between Caffeine, Theobromine and theophylline.

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APRIL - 1999

[SG 730] **Sub. Code : 4221**

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I — CHEMISTRY OF NATURAL PRODUCTS

(Common to Fourth Year RR and Third Year arrear candidates admitted upto 1992–93)

Time : Three hours — Maximum : 90 marks

Two and a half hours — Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B — Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Describe the important tests and reactions of steroids to detect and establish the structures of hormones using progesterone as an example.

(b) How is progesterone synthesized?

(c) Give an account of the structure activity relationship of oral progesterone derivatives. (5 + 5 + 5)

2. (a) Explain general properties of alkaloids and the methods of isolation of alkaloids from plant materials.

(b) Give the chemistry and synthesis of Ephedrine.

(c) Write the structures of possible Ephedrine isomers. Comment on their activity. (5 + 7 + 3)

3. (a) What are antibiotics? Classify them with examples.

(b) Discuss the chemistry, uses and therapeutic efficiency of penicillins.

(c) How is chloramphenicol synthesized? (3 – 7 + 5)

4. (a) What are the evidences for the existence of D–glucose as ring structure? Outline the methods to establish the size of the ring structure of glucose.

(b) Give the pharmaceutical importance of starch, cellulose and its derivatives.

(c) Write a note on different types of sugars found in cardiac glycosides. (9 + 3 + 3)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. What are proteins? Describe a suitable method to determine the sequence of amino acids in polypeptides.

6. Define the term glycoside. Give an account on

(a) Therapeutic uses (b) Important structural features of Digitalis glycosides.

7. Outline how the positions of three methyl groups established in caffeine. Mention the uses of caffeine and theophylline.

8. Explain isoprene rules with examples. Give the structure and uses of (a) geraniol (b) camphor and (c) menthol.

9. What are essential amino acids? Explain the synthesis of amino acids by azlactone method and give its importance.

10. What are vitamins? Write the structure and specific uses of any FOUR vitamins.

11. How is thiamine synthesized? What is cocarboxylase?

12. Name one alkaloid each of the following groups with their uses and give one identification test for each of them.

(a) Cinchona (b) Opium (c) Nux Vomica (d) Rauwolfia.

13. Give the structure and uses of the following :

(a) Ergosterol (b) Lithocholic acid (c) Cortisone (d) Dexamethasone.

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OCTOBER - 1999

[KA 730] **Sub. Code : 4221**

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I – CHEMISTRY OF NATURAL PRODUCTS

(Common to IV year RR and III year arrear candidates admitted upto 1992–93)

Time : Three hours — Maximum : 90 marks

Two and a half hours — Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B — Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) What are essential Amino acids, give examples. (2)

(b) Write four general methods of synthesis of amino acids. (8)

(c) Explain the following : (2 + 3)

(i) Iso Electric point

(ii) Ninhydrin reaction.

2. (a) Classify alkaloids with examples. (4)

(b) Establish the constitution of Atropine. (11)

3. (a) Give the analytical and synthetic evidences for the structure of Riboflavine. (12)

(b) Write a note on Irradiation of Ergosterol. (3)

4. (a) Define steroids. Write two colour reactions of cholesterol. (3)

(b) Discuss the following : (6 + 6)

(i) Ring structure of glucose

(ii) Constitution of Oestrone.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Define and classify glycosides. Write the chemistry of Salicin.

6. What are broad spectrum antibiotics? Give examples. Outline the synthesis of choramphenicol.

7. Discuss the inter relationship of dipentene, α–Terpeneol, Terpene hydrate and Cineole.

8. Establish the constitution of uric acid.

9. What is camphor? How is it synthesised?

10. Outline the following synthesis :

(a) Non-steroidal estrogenic compounds.

(b) Progesterone from Diorgenin.

11. What are fixed oils, fats and waxes? How do they differ chemically and physically? What is Iodine value? What is its significance?

12. Discuss the chemistry involved in the estimation of Thymol.

13. Write a brief note on :

(a) Cardiac Glycosides

(b) Adreno cortical Hormones.

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APRIL - 2000

[KB 730] **Sub. Code : 4221**

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper I — CHEMISTRY OF NATURAL PRODUCTS

(Common to Fourth Year RR and Third Year arrear candidates admitted upto 1992–93)

Time : Three hours — Maximum : 90 marks

Two and a half hours for Sec. A & Sec. B — Sec. A & Sec. B : 60 marks

Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Discuss the general methods used in elucidating the structures of the terpenoids. Explain the constitution of menthol. (5+ 4)

(b) Discuss the constitution of caffeine. Give the structures of theobromine and theophylline. (5 +1)

2. (a) How is the functional nature of the Nitrogen in alkaloids is determined? (6)

(b) What are cinchona alkaloids? Discuss the structural elucidation of quinine. (9)

3. (a) Classify carbohydrates. Discuss the constitution of sucrose. $(1\frac{1}{2} + 4\frac{1}{2})$

(b) Elucidate the structure of Vitamin C. Give its synthesis. $(4\frac{1}{2} + 4\frac{1}{2})$

4. (a) What are steroids? Give examples and their uses. Discuss the nomenclature of steroids. $(2\frac{1}{2} + 3\frac{1}{2})$

(b) What are steroid hormones? Elucidate the structure of estrone. (2 + 7)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Classify the amino acids and give one example each. Explain the synthesis of tryptophan. $(1\frac{1}{2} + 3\frac{1}{2})$

6. Discuss the synthesis of chloramphenicol.

7. What are cardenolides and bufadienolides and how they differ in configuration? Give the structure of Digitoxin, strophanthidin and scillaren A. (2 +3)

8. Discuss the primary structure of peptides. What is Edman N–terminal amino acid determination? (3 + 2)

9. Explain the synthesis of Vitamin B_1 and give its use. $(4\frac{1}{2} + \frac{1}{2})$

10. What are carotenoids? Discuss the synthesis of Vitamin A. (1 + 4)

11. Explain the determination of acid value and peroxide value of an oil. $(2\frac{1}{2} + 2\frac{1}{2})$

12. Give an account of the irradiation of ergosterol with ultra violet light. What are the uses of Vitamin D?

13. What are adrenal cortex hormones? Give the synthesis of cortisone. (1+ 4)

OCTOBER - 2000

[KC 730] **Sub. Code : 4221**

FOURTH B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

CHEMISTRY OF NATURAL PRODUCTS

Time : Three hours — Maximum : 90 marks

Two and a half hours — Sec. A & Sec. B : 60 marks

for Sec. A & Sec. B. — Section C : 30 marks

Answer Section A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Discuss the chemical inter relationships among cardiac aglycones and glycosides of digitalis purpurea and lanta, what are the major differences in the aglycone structure of digitalis, strophanthus and squill?

2. (a) What are essential Amino acids, give examples. (2)

(b) Write four general methods of synthesis of amino acids? (8)

(c) Explain the following :

(i) Iso–Electric point.

(ii) Nin–hydrin reaction. (2 + 3)

3. (a) What products may be expected on subjecting

(i) Tropine

(ii) Nicotine to Hoffmann's exhaustive methylation, explain with structure. (10)

(b) Write a brief note on occurrence, chemistry tests for detection of saponins. (5)

4. (a) Define and classify vitamins with one example for each class.

(b) Elucidate the structure of vitamin C.

(c) Suggest the method for synthesis of riboflavin.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Define saponification value. How is it determined? Comment on its significance.

6. Explain the various tests for alkaloids.

7. Show the inter relationship among Caffeine, Theophylline and Theobromine.

8. Define and classify antibiotics with examples. Write a note on semisynthetic penicillins.

9. What happens when

(a) Ascorbic acid treated with Iodine.

(b) Cholesterol acetate is treated with CrO_3 in acetic acid.

10. Outline the synthesis of Camphor.

11. What are carbohydrates? Classify. Give examples for each class. Give the chemical tests for detection of reducing sugars.

12. Elucidate the structure of uric acid.

13. Write the structure and uses of :

(a) Riboflavin.

(b) Betamethasone.

(c) Reserpine.

(d) Cocaine.

(e) Diosgenin.
