

पाटन स्वास्थ्य विज्ञान प्रतिष्ठान, सेवा आयोग
प्राज्ञिक सेवा, औषधी विज्ञान समूह, सहायक प्राध्यापक पद नौ ख (९ ख) तहको
खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
एवं परीक्षायोजना

यस पाठ्यक्रमयोजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा(Written Examination)

पूर्णाङ्क :- २००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- ३०

प्रथम चरण(First Phase) : लिखित परीक्षा योजना(Written Examination Scheme)

Paper	Subject		Marks	Full Marks	Pass Marks	No. Questions & Weightage		Time Allowed
I	General Subject	Part I: Management, General Health Issues, Academic Research and Teaching-Learning Practices	50	100	40	10 × 5 = 50 (Subjective)	1.30 hrs	2.15 hrs
		Part II: Technical Subject (Relevant Subject)	50			50 × 1 = 50 (Objective Multiple Choice)	45 min	
II	Technical Subject (Relevant Subject)			100	40	7 × 10 = 70 (Long answer) 2 × 15 = 30 (Critical Analysis)		3.00 hrs
द्वितीय चरण(Second Phase)								
	Interview			30		Oral		

द्रष्टव्य :

- लिखित परीक्षाको माध्यमभाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ।
- प्रतिष्ठानको प्राज्ञिक सेवा अन्तर्गतका सबै समूह/सवै उपसमूहहरूको लागि प्रथमपत्रको Part I को पाठ्यक्रमको विषयवस्तु एउटै हुनेछ। तर प्रथमपत्रको Part II र द्वितीयपत्र Technical Subject को पाठ्यक्रम समूह/उपसमूह अनुरूप फरक फरक हुनेछ।
- प्रथम र द्वितीयपत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ। प्रथमपत्रको Part II र द्वितीयपत्रको विषयवस्तु एउटै समूहको हकमा समान हुनेछ। परीक्षामा सोधिने प्रश्नसंख्या र अङ्कभार यथासम्भव सम्बन्धित पत्र, विषयमा दिईए अनुसार हुनेछ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ। तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A,B,C,D मा लेख्नुपर्नेछ। सानो अक्षर (Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ।
- विषयगत प्रश्नमा प्रत्येक पत्र/विषयका प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन्। परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ।

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९. यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ।
१०. प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ।
११. पाठ्यक्रम लागु मिति : २०७४/६/२९
१२. पाठ्यक्रम परिमार्जन मिति : २०७९/१२ /२९

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Paper I: General Subject

Part I:

(Management, General Health Issues, Academic Research and Teaching-Learning Practices)

Section (A) - 25 Marks

1. Management

- 1.1. Health care management system in Nepal and other parts of the world
- 1.2. Fundamental principles of healthcare institution and hospital management.
- 1.3. Effective hospital management principles
- 1.4. Purpose of medical and non-medical data and records
- 1.5. Ethics and responsibility of management
- 1.6. Concept of management and its application in health care including hospital
 - 1.7.1 Management: Concept, principles, functions, scope and role, level and skills of manager
 - 1.7.2 Planning: Concept, principles, nature, types, instruments and steps
 - 1.7.3 Leadership: Concept, function, leadership styles, leadership and management
 - 1.7.4 Coordination: Concept, types, techniques of effective coordination
 - 1.7.5 Communication and counselling: Concept, communication processes and barrier to effective communication, techniques for improving communication
 - 1.7.6 Decision making: Importance, types, rational process of decision making, problem solving techniques, improving decision making
 - 1.7.7 Participative management: Concept, advantage and disadvantage, techniques of participation
 - 1.7.8 Time management: Concept, essential factors and strategies for effective time management
 - 1.7.9 Conflict management: Concept, approaches to conflict, levels of conflict, causes of conflict and strategies for conflict management
 - 1.7.10 Stress management: Concept, causes and sources of stress, techniques of stress management
 - 1.7.11 Change management: Concept, sources of organizational change, resistance to change, management of resistance to change
 - 1.7.12 Appreciative inquiry: Concept, basic principle and management
 - 1.7.13 Human resource management: Concept, functions and different aspects
 - 1.7.14 Health manpower recruitment and development
 - 1.7.15 Financial management: Concept, approaches, budget formulation and implementation, Auditing and topics related to fiscal administration

2. General Health Issues

- 2.1. Present constitution of federal republic of Nepal (including health and welfare issues)
- 2.2. Organizational structure of Ministry of Health at national/federal, regional/state, district (if applicable), municipal and village council level
- 2.3. Professional council and related regulations
- 2.4. National Health Policy
- 2.5. Health Service Act and Regulation
- 2.6. Second Long term health plan
- 2.7. Health Management Information System, forms, indicators, annual reports

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- 2.8. Human Development Indices, Sustainable Development Goals
- 2.9. Health volunteers in the national health system, its rationale, use and effectiveness
- 2.10. Local governance and community participation in health service delivery
- 2.11. Health Insurance and financing in health care
- 2.12. Alternative health care system: Ayurveda, homeopathy, Unani, Chinese etc.
- 2.13. Indigenous and traditional faith health and health practices
- 2.14. International Health Agencies: Roles and responsibilities of WHO, UNICEF, UNFPA, Inter-agency relationships, Government-agency coordination: Joint Annual Review meeting
- 2.15. Supervision, types and its usage in health sector
- 2.16. Monitoring and evaluation system in health sector
- 2.17. National Health Training Centre
- 2.18. National and International Disaster Plan, Coordination
- 2.19. Patan Academy of Health Sciences Act, Mission, Goals, Organogram
- 2.20. Scope and function of Patan Academy of Health Sciences executive bodies (senate, executive committee, academic council, faculty board, hospital management committee, subject committee), various other committees

Section (B) - 25 Marks

3. Academic Research

- 3.1 Ethics, Bio-ethics and Professionalism
- 3.2 Human dignity and Human Right
- 3.3 Benefit and Harm
- 3.4 Autonomy and Individual responsibility
- 3.5 Consent and capacity to consent
- 3.6 Privacy and confidentiality
- 3.7 Respect for humans and personal integrity
- 3.8 Non-discrimination and non-stigmatization
- 3.9 Respect for cultural diversity and pluralism
- 3.10 National Health Research Council (NHRC) and its guidelines
- 3.11 Research process: ethical research proposal development, research principles, methods and materials, conclusion/recommendation/lesson learnt, commonly used referencing styles
- 3.12 IRB/IRC forms, types, use, importance; getting IRB/IRC clearance
- 3.13 Ethics on research methodology: sample selection, sample size calculation, ensuring reliability and validity of the instruments as well as methods proposed for health research
- 3.14 Quantitative and Qualitative studies
- 3.15 Data analysis (data visualization, descriptive statistics, inferential statistics with statistical hypotheses and appropriate tools/methods for quantitative studies; theme and code generation, thematic analysis, content analysis, grounded theory for qualitative and triangulation for mixed method studies)
- 3.16 Research ethics on vulnerable and non-vulnerable population
- 3.17 Research proposal/protocol/publication:
- 3.18 Publication ethics, plagiarism including self-plagiarism

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4. Teaching-Learning, Assessment and Evaluation

- 4.1 Lancet Commission Report on Education of Health Professionals
- 4.2 Adult learning: Theories, principles, use, importance and outcomes, Andragogyvs. Pedagogy
- 4.3 Conventional teaching-learning: Didactic lectures, Teacher centred approaches, use and importance
- 4.4 Surface learning, deep learning and metacognition
- 4.5 Integrated teaching: Genesis, use, importance and outcomes
- 4.6 Problem-based learning: Genesis, use, importance and outcomes
- 4.7 SPICES model its use, importance and outcomes
- 4.8 Socialization, self-directed learning, mentoring, role model
- 4.9 Community orientation/community posting, re-orientation of medical education camp, community based learning and community engaged teaching-learning methods/models, use, importance and outcomes
- 4.10 Outcome Based Education (Competency-based Medical/Health Professions Education): Genesis, use, importance and outcomes
- 4.11 Experiential learning, Reflective practice, Feedback and feed-forward, Situated learning, Co-operative learning, Communities of practice
- 4.12 Assessment of students
 - 4.12.1 Blueprinting(Table and specification) : use, importance and outcomes
 - 4.12.2 Bloom's taxonomy of cognitive, psychomotor and affective domains, use and importance
 - 4.12.3 Diagnostic, Formative, Summative and Professional exams
- 4.13 Assessment of knowledge: Selection methods like Multiple Choice Questions, Extended Matching Items and supply methods like Short Answer Question, Problem Based Question, Long Answer Question with or without model answers and marking schemes, unstructured, semi-structured and structured viva-voce examination, advantages and limitations, use and importance, outcomes and its use in quality control
- 4.14 Assessment of performance (in-vitro): Direct observation of skills in the simulated setting, lab, ward etc. with or without checklist, Objective Structured Practical Examination, Objective Structured Clinical Examination, Standardized patients, use and importance, analysis, quality assurance, outcomes and its use in quality control
- 4.15 Assessment of performance (in-vivo): Mini-Clinical Evaluation Exercise (Mini-CEX), Direct Observation of Procedural Skills (DOPS), Case-Based Discussion (CbD), OSATS/ PBA, Multi-Source feedback (360 degree evaluation) use and importance for competency based health professions education, analysis, quality assurance, outcomes and its use in quality control
- 4.16 Assessment of observable behaviours in small groups e.g. Problem Based Learning sessions, Community Based Learning and Education sessions, Clinical clerkship rotations
- 4.17 Evaluation: Difference between assessment and evaluation, theory of change and its use in health professions education, process and outcome evaluation, qualitative, quantitative and mixed methods used in evaluation of health professions education

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Paper I

Part II: Technical Subject

Section (C) - 25 Marks

1. General Pharmacology

- 1.1 History, Terminology, Sources and Routes of Drug.
- 1.2 Pharmacokinetics
 - 1.2.1 The Dynamics of drug absorption, distribution, metabolism and kinetics of elimination.
 - 1.2.2 Optimization of dosage regimen: loading dose, maintenance dose and steady state plasma concentration.
- 1.3 Pharmacodynamics:
 - 1.3.1 Action of drug and Receptor pharmacology.
 - 1.3.2 The quantitative affects of drug action.
- 1.4 Adverse Drug Reactions, Monitoring and Pharmacovigilance:
 - 1.4.1 Definition, types, clinical significance.
 - 1.4.2 Heavy metals - antagonists
- 1.5 Drug Interactions (Food, Disease and Drugs)
- 1.6 Pharmacogenetics:
 - 1.6.1 Importance of Pharmacogenetics to variability in Drug Response
 - 1.6.2 Genomic Basis of Pharmacogenetics.
- 1.7 Evaluation of New Drugs:
 - 1.7.1 Introduction of a New Drug
 - 1.7.2 Drug Discovery
 - 1.7.3 Preclinical Evaluation (Animal Studies)
 - 1.7.4 Clinical Trials, Official Regulations and Drug Advertisement.
- 1.8 Concepts of Essential Medicines and Rational Use of Medicines
 - 1.8.1 National and State Level EDL
- 1.9 Law Governing Drugs (Drug Schedules)

2. Neuropharmacology

2.1 Drugs Acting at Synaptic and Neuroeffector Junctional Sites

- 2.1.1 Neurotransmission : the autonomic and somatic nervous system
- 2.1.2 Muscarinic Receptor Agonists and Antagonists:
 - 2.1.2.1 Classifications, pharmacological basis for their actions, uses, contraindications and adverse effects.
- 2.1.3 Neuromuscular Blocker and Ganglion Blocker:
 - 2.1.3.1 Classifications, mechanism of actions, uses, contraindications and adverse effects.

पाटन स्वास्थ्य विज्ञान प्रतिष्ठान, सेवा आयोग
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2.1.4 Adrenergic Receptor Agonists and Antagonists:

2.1.4.1 Classifications, pharmacological basis for their actions, uses, contraindications and adverse effects.

2.1.5 Serotonin Receptor Agonists and Antagonists:

2.1.5.1 Classifications, pharmacological basis for their actions, uses and adverse effects.

2.2 Central nervous system and special senses

2.2.1 Aliphatic alcohols

2.2.1.1 Pharmacological properties and its effect of physiological system.

2.2.1.2 Etiology of alcohol use disorders and the role of gene.

2.2.1.3 Ethanol and methanol intoxication and its management, tolerance, dependence.

2.2.2 General anaesthetics and Therapeutic Gases:

2.2.2.1 Classifications, mechanism of action, uses, contraindications and adverse effects.

2.2.3 Local anaesthetics

2.2.3.1 Types of local anaesthesia, classification, mechanism, uses and adverse effects.

2.2.4 Therapy of epilepsies

2.2.4.1 Classification of antiepileptic drugs, mechanism of action, indication, adverse effects, drug interactions and contraindications.

2.2.5 Treatment of Central Nervous System Degenerative Disorders

2.2.5.1 Therapy of Parkinsonism

2.2.5.1.1 Classification of antiparkinsonian drugs, mechanism of action and adverse effects.

2.2.5.2 Therapy of Alzheimer's disease

2.2.5.3 Therapy of Huntington's Disease

2.2.6 Opioid analgesics and antagonists

2.2.6.1 Classification of opioid analgesics and antagonists, pharmacological actions, uses, contraindications, adverse effects and drug dependence- management.

2.2.7 Sedatives and hypnotics

2.2.7.1 Classification of sedatives and hypnotics, pharmacological actions, uses and adverse effects.

2.2.8 CNS stimulants- classification, uses and adverse effects.

2.2.9 Drug abuse

2.2.9.1 Types and management

2.2.10 Psychopharmacology

2.2.10.1 Antipsychotic, antidepressants and mood stabilizers

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2.2.10.1.1 Classification, mechanism of action, uses, adverse effects and drug interactions of it.

3. Drugs used to treat disease of Inflammation and Related Autocoids

3.1 Histamine and bradykinin

3.1.1 Its analogues, mechanism of action, uses and adverse effects.

3.2 Prostaglandins, leukotrienes and platelet activating factors

3.2.1 Its preparations, mechanism of action, uses and adverse effects.

3.3 Nonsteroidal anti-inflammatory drug (NSAIDs)

3.3.1 Classification of NSAIDs, salient features of various groups, mechanism of action, uses, adverse effects and drug interactions of it.

3.4 Disease modifying antirheumatic drugs (DMARDs)

3.4.1 Classification of antirheumatic drugs, mechanism of action, uses, adverse effects and drug interactions.

3.5 Drugs for gout

3.5.1 Classification of anti-gout drug, mechanism of action, uses and adverse effects.

4. Blood, reticulo-endothelial and immune system:

4.1 Haematinic and Hematopoietic Agents: Growth factors, minerals, vitamins and antioxidants:

4.1.1 Classification, their actions, indications and adverse effects.

4.2 Haemostatics

4.2.1 Classification, their actions and uses.

4.3 Therapy of Thromboembolic disorders

4.3.1 Anticoagulants

4.3.1.1 Introduction

4.3.1.2 General principles- Classification of anticoagulants, mechanism of action, therapeutic uses, adverse effects, contraindication and drug interactions.

4.3.2 Thrombolytics

4.3.2.1 Preparations, pharmacological basis for their actions, uses and adverse effects.

4.3.3 Antiplatelet agents

4.3.3.1 Classification of antiplatelet drugs, mechanism of action, therapeutic uses, adverse effects and contraindications.

4.4 Antileukaemic Drugs:

4.4.1 Classifications of anticancer drugs, mechanism of actions, uses, interactions, contraindications and adverse effects.

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4.5 Immunomodulators and immunotherapy:

4.5.1 Classifications, mechanism of actions, uses and adverse effects.

5. **Drugs Affecting Renal and Cardiovascular System and Related Autocoids**

5.1 Diuretics

5.1.1 Classification of diuretics, mechanism of action, indications, adverse effects and contraindications.

5.2 Antidiuretics

5.2.1 Vasopressin analogues and vasoactive peptides-mechanism of action, indications, adverse effects and contraindications.

5.3 Nitric oxide donors and inhibitors

5.4 Therapy of hypertension

5.4.1 Antihypertensive drugs classification, mechanism of action, indications, adverse effects, contraindications and drug interactions.

5.5 Therapy of Myocardial ischaemia and Angina

5.5.1 Drugs used in myocardial ischaemia

5.5.2 Antianginal drugs classification, mechanism of action, therapeutic uses, adverse effects, contraindications and drug interactions

5.6 Therapy of Congestive Heart Failure

5.6.1 Classification of drugs used in Heart Failure, mechanism of action, therapeutic uses, adverse effects and drug interactions of it.

5.7 Therapy of Arrhythmia

5.7.1 Antiarrhythmic drugs classification, mechanism of action, therapeutic uses, adverse effects, contraindications and drug interactions.

5.8 Therapy of hypercholesterolemia and Dyslipidemia

5.8.1 Classification, mechanism of action, therapeutic uses and adverse effects of it.

6. **Respiratory system**

6.1 Therapy of Bronchial asthma

6.1.1 Classification of drugs used in Bronchial Asthma, mechanism of action, pharmacological basis for the use, adverse effects, drug interactions, contraindications and special features.

6.2 Therapy of allergic rhinitis- antihistaminics

6.2.1 Classification of antihistamines, therapeutic uses and adverse effect.

6.3 Therapy of cough

6.3.1 Antitussives and mucolytics: classifications, mechanism of action, adverse reactions and cautions.

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Section (D) - 25 Marks

7. Chemotherapy

7.1 Classification, mechanism of action, therapeutic uses, adverse effects, contraindications and drug interactions of:

- 7.1.1 Cotrimoxazole, sulphonamides
- 7.1.2 Fluoroquinolones
- 7.1.3 Lactam antibiotics: penicillins, cephalosporin etc...
- 7.1.4 Lactamase inhibitors
- 7.1.5 Aminoglycosides
- 7.1.6 Tetracyclines, chloramphenicol
- 7.1.7 Macrolides: Erythromycin: prototype
- 7.1.8 Miscellaneous groups of antibiotics e.g. lincosamide and Glycopeptidr and other antibacterial antibiotics.

7.2 Chemotherapy of Sexually transmitted diseases

7.3 Chemotherapy of Urinary Tract Infection- urinary antiseptics

7.4 Chemotherapy of leprosy

- 7.4.1 Classification of antileprotic drugs, uses and adverse effects of it.

7.5 Antiviral drugs

- 7.5.1 General principles- classification, mechanism of action, indications, adverse effects, contraindications, therapeutic uses and drug interactions.

- 7.5.2 Regimens and prophylaxis of HIV

7.6 Chemotherapy of fungal infection

- 7.6.1 Classification of anti-fungal drugs, uses and adverse effects of it.

7.7 Chemotherapy of Parasitic Infections:

7.7.1 Malaria

- 7.7.1.1 Classification of anti-malarial drugs according to parasitic stage, mechanism of action, uses and adverse effects.

- 7.7.1.2 Regimens and prophylaxis

- 7.7.2 Kalaazar- classification of drugs, uses and adverse effects of it.

- 7.7.3 Filariasis: classification of drugs, uses and adverse effects of it.

7.8 Chemotherapy of worm infestation

- 7.8.1 Anthelmintics list the drugs, mechanism of action, adverse effects, drug interactions and contraindications.

7.9 Chemotherapy of amoebiasis and giardiasis

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खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

- 7.9.1 Antiprotozoal drugs classification, mechanism of action, uses, adverse effects and drug interactions.
- 7.10 Chemotherapy of Tuberculosis-
- 7.10.1 Classification of antitubercular drugs, mechanism of actions, adverse effects, contraindication and drug interaction.
- 7.10.2 Regimens and prophylaxis
- 8. Drugs used in disorder of Gastrointestinal system**
- 8.1 Drug therapy for gastric acidity, peptic ulcer and gastro esophageal disorder
- 8.1.1 Introduction, pathogenesis, list of drugs- classification, mechanism of action, uses, adverse effects and drug interactions
- 8.1.2 Drug regimen for H.pylori eradication
- 8.2 Therapy of nausea and vomiting-Emetics and anti-emetic agents
- 8.2.1 Classification of emetics, mechanism of action, uses and adverse effects.
- 8.2.2 Classification of antiemetics, mechanism of action, uses and adverse effects of it.
- 8.3 Therapy of diarrhea
- 8.3.1 Oral rehydration solution- constituents, indications
- 8.3.2 Antidiarrhoeals agents and antispasmodic agents- Classification, mechanism of action, uses and adverse effects of it
- 8.4 Therapy of constipation
- 8.4.1 Commonly used drugs in constipation, clinical importance and adverse actions.
- 8.5 Pharmacotherapy of Inflammatory Bowel Disease
- 9. Endocrine and metabolism system**
- 9.1 Anterior pituitary hormones and analogues
- 9.1.1 Growth Hormone and its analogues, Growth hormone inhibitors-uses and adverse effects.
- 9.1.2 Prolactin analogues and inhibitors- preparations, uses, adverse effects.
- 9.1.3 Gonadotropins preparations, uses, adverse effects.
- 9.1.4 GnRH agonist and antagonist- preparations, uses, adverse effects.
- 9.2 Thyroid and antithyroid drugs
- 9.2.1 Consequences of excess and deficiency of thyroid hormones
- 9.2.2 Drugs for treating hypo and hyperthyroidism- classification, mechanism of action, uses and adverse effects.
- 9.3 Insulin, Oral Hypoglycaemic drugs and Glucagon
- 9.3.1 Classifications of drugs used in treatment of diabetes mellitus, pharmacological basis for their actions, uses, interactions, contraindications and adverse effects.

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- 9.3.2 Glucagon- uses and the rationale
- 9.4 Adrenocorticosteroids and synthetic analogues and antagonist
 - 9.4.1 Classification of adrenocorticosteroids, mechanism of action, indications, adverse effects, contraindications of it.
- 9.5 Drugs affecting calcium balance and bone turnover
 - 9.5.1 Integrated physiological role, therapeutic implications of parathormone, calcitonin and vitamin –D
 - 9.5.2 Bisphosphonates- classification, mechanism of action, uses and adverse effects
- 10. **Reproductive system**
 - 10.1 Gonadal hormones and antagonists:
 - 10.1.1 Androgens and Antiandrogens- Classifications, mechanism of actions, uses, interactions, contraindications and adverse effects.
 - 10.1.2 Estrogens, Antiestrogens and Selective Estrogen Receptor Modulators (SERMs)- Classifications, mechanism of actions, uses, interactions, contraindications and adverse effects.
 - 10.2 Hormonal contraceptives
 - 10.2.1 Types, mechanism of action, pharmacological actions, uses, choice of preparation, adverse effects, contraindications.
 - 10.3 Drugs acting on uterus
 - 10.3.1 Classifications of oxytocics and tocolytics, mechanism of actions, uses, contraindications and adverse effects of it.
 - 10.4 Medication during pregnancy and lactation
 - 10.4.1 Drugs causing tratogenecity and its categories.
- 11. **Special Systems Pharmacology**
 - 11.1 Ocular Pharmacology
 - 11.2 Dermatological Pharmacology
 - 11.3 Environmental Toxicology: Carcinogens and heavy metals
 - 11.4 Enzymes in therapy
 - 11.5 Vaccines and Sera
- 12. **Recent advances in Pharmacology**

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