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**APPROVED SYLLABUS FOR DIRECT RECRUITMENT TO THE POST OF
PHARMACIST UNDER HEALTH & FAMILY WELFARE DEPARTMENT**

1. Paper - I General English	100 Marks(3 hours)
2. Paper - II General Knowledge (MCQ)	100 Marks(2 hours)
3. Paper - III : Technical Subject (MCQ)	200 Marks (2 hours)
4. Paper - IV : Technical Subject (MCQ)	200 Marks (2 hours)
Total of Written Examination	600 Marks
5. Personal Interview	80 Marks
Total	680 Marks

DETAILS OF SYLLABUS:

1) Paper-I General English	100 Marks (3 hours)
a) Precis Writing	10 Marks
b) Letter Writing	15 Marks
c) Comprehension of given passages	15 Marks
d) Grammar: Parts of Speech	20 Marks
e) Correct usage and Vocabularies	20 Marks
f) Formation of Sentence	20 Marks
2) Paper-II General Knowledge (MCQ) :	100 Marks (2 hours)
(a) Current events of state, national and international importance	: 12 marks
(b) History of India and Indian National Movement	: 12 marks
(c) Indian and World Geography - Physical, Social, Economic Geography of India and the World	: 12 marks
(d) Indian Policy and Governance - Constitution, Political System, Public Policy, Duties & Rights Issues	: 12 marks
(e) Economic and Social Development Sustainable Development, Poverty, Inclusion, Demographics, Social Sector initiatives, and other related issues	: 12 marks
(f) General issues on Environmental Ecology, Bio-diversity and Climate	: 12 marks
(g) General Science	: 12 marks
<i>The topics listed above shall cover the State of Mizoram wherever applicable.</i>	
(h) General awareness on Mizo culture, its heritage and society	:16 marks

Signature

3) **TECHNICAL PAPER - I (MCQ)** : 200 Marks (2 hours)

Unit-I (30 marks)

- a) **Pharmacopoeia:** Introduction to IP, BP, USP, NF and Extra Pharmacopoeia. Salient features of Indian Pharmacopoeia.
- b) **Packaging materials:** Types, selection criteria, advantages and disadvantages of glass, plastic, metal, rubber as packaging materials.
- c) **Pharmaceutical aids:** Organoleptic (Colouring, flavouring, and sweetening) agents
- d) **Preservatives:** Definition, types with examples and uses
- e) **Cosmetics:** Formulation and preparation of the following cosmetic preparations: lipsticks, shampoos, cold cream and vanishing cream, tooth pastes, hair dyes and sunscreens.

UNIT-II (50 marks)

- a) **Tablets** - Coated and uncoated, various modified tablets (sustained release, extended-release, fast dissolving, multi-layered, etc.)
- b) **Capsules** - Hard gelatin capsules, Soft gelatin capsules, manufacturing defects and quality control tests. Packing, storage and stability testing of soft gelatin capsules and their applications.
- c) **Liquid oral preparations** - solution, syrup, elixir, emulsion, suspension, dry powder for reconstitution.
- d) **Topical preparations** - ointments, creams, pastes, gels, liniments and lotions, suppositories, and pessaries, Nasal preparations, Ear preparations.
- e) **Sterile formulations** - Injectables, eye drops and eye Ointments
- f) **Herbal cosmetics:** Sources, chemical constituents, commercial preparations, therapeutic and cosmetic uses of: Aloe vera gel, Almond oil, Lavender oil, Olive oil, Rosemary oil, Sandal Wood oil.

UNIT-III (30 marks)

- a) **Sources and types of errors:** Accuracy, precision, significant figures.
- b) **Impurities in Pharmaceuticals:** Source and effect of impurities in Pharmacopoeial substances, importance of limit test, Principle and procedures of Limit tests for chlorides, sulphates, iron, heavy metals and arsenic.
- c) **Poisoning:** Types of poisoning: Clinical manifestations and Antidote.
- d) **Pharmacovigilance:** Definition, aim and scope, Overview of Pharmacovigilance.
- e) **Medication errors:** Definition, types, consequences, and strategies to minimize medication errors.

UNIT-IV (30 marks)

- a) **Pharmacy Practice Regulations 2015**
- b) **National Pharmaceutical Pricing Authority:**
Drugs Price Control Order (DPCO) - 2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of

scheduled formulations, Pharmaceutical Policy 2002, National List of Essential Medicines (NLEM).

c) Biomedical Waste Management Rules 2016 – Basic aspects, and aspects related to pharma manufacture to disposal of pharma / medical waste at homes, pharmacies, and hospitals.

UNIT-V (30 marks)

a) Preventive healthcare – Role of Pharmacists in the following

- Demography and Family Planning.
- Mother and child health, importance of breastfeeding, ill effects of infant milk substitutes and bottle feeding.
- Overview of Vaccines, types of immunity and immunization.

b) Effect of Environment on Health – Water pollution, importance of safe drinking water, waterborne diseases, air pollution, noise pollution, sewage and solid waste disposal, occupational illnesses, Environmental pollution due to pharmaceuticals.

c) Psychosocial Pharmacy: Drugs of misuse and abuse – psychotropics, narcotics, alcohol, tobacco products. Social Impact of these habits on social health and productivity and suicidal behaviours.

UNIT- VI (30 marks)

- a) Herbs as health food: Brief introduction and therapeutic applications of: Nutraceuticals, Antioxidants, Pro-biotics, Pre-biotics, Dietary fibres, Omega-3-fatty acids, Spirulina, Carotenoids, Soya and Garlic
- b) Introduction to food safety, adulteration of foods, effects of artificial ripening, use of pesticides, genetically modified foods
- c) Dietary supplements, nutraceuticals, food supplements – indications, benefits, Drug-Food Interactions.

4) TECHNICAL PAPER – II (MCQ)

: 200 Marks

UNIT-I (30 marks)

1. General Pharmacology

- a) Various routes of drug administration - advantages and disadvantages.
- b) Drug absorption - definition, types, factors affecting drug absorption.
- c) Bioavailability and the factors affecting bioavailability.
- d) Drug distribution - definition, factors affecting drug distribution.
- e) Biotransformation of drugs - Definition, types of biotransformation reactions, factors influencing drug metabolisms.
- f) Excretion of drugs - Definition, routes of drug excretion.
- g) General mechanisms of drug action and factors modifying drug action.



2. Prescription and prescription handling

- a) Definition, parts of prescriptions, legality of prescriptions, prescription handling, labelling of dispensed medications (Main label, ancillary label, pictograms), brief instructions on medication usage
- b) Dispensing process, Good Dispensing Practices, dispensing errors and strategies to minimize them.

3. Medication Adherence

Definition, factors influencing non-adherence, strategies to overcome non-adherence.

UNIT-II (20 marks)**Patient counselling**

- a) Definition and benefits of patient counselling
- b) Stages of patient counselling - Introduction, counselling content, counselling process, and closing the counselling session
- c) Barriers to effective counseling - Types and strategies to overcome the barriers
- d) Patient counselling points for chronic diseases/disorders - Hypertension, Diabetes, Asthma, Tuberculosis, Chronic obstructive pulmonary disease, and AIDS
- e) Patient Package Inserts - Definition, importance and benefits, Scenarios of PPI use in India and other countries
- f) Patient Information leaflets - Definition and uses

UNIT-III (60 marks)

Definition, classification, pharmacological actions, dose, indications, and contraindications of-

i) Drugs Acting on the Peripheral Nervous System

- a) Cholinergic drugs.
- b) Anti-Cholinergic drugs.
- c) Adrenergic drugs.
- d) Anti-adrenergic drugs.
- e) Neuromuscular blocking agents.
- f) Drugs used in Myasthenia gravis.
- g) Local anaesthetic agents.
- h) Non-Steroidal Anti-Inflammatory drugs (NSAIDs).

ii) Drugs Acting on the Central Nervous System

- a) General anaesthetics.
- b) Hypnotics and sedatives.
- c) Anti-Convulsant drugs.
- d) Anti-anxiety drugs.
- e) Anti-depressant drugs.

- f) Anti-psychotics.
- g) Nootropic agents.
- h) Centrally acting muscle relaxants.
- i) Opioid analgesics.

iii) Drugs Acting on the Cardiovascular System

- a) Anti-hypertensive drugs.
- b) Anti-anginal drugs.
- c) Anti-arrhythmic drugs.
- d) Drugs used in atherosclerosis and
- e) Congestive heart failure.
- f) Drug therapy for shock.

UNIT IV (40 marks)

i) Drugs Acting on the Kidney

- a) Definition, classification, pharmacological actions, dose, indications, and contraindications of Diuretics and Anti-Diuretics
- b) Hormones and Hormone Antagonists: Physiological and pathological role and clinical uses of Anti-thyroid drugs Vitamin D, Insulin, Oral hypoglycemic agent, Estrogen, Progesterone, Oxytocin, Corticosteroids

ii) Chemotherapeutic Agents: Introduction, basic principles of chemotherapy, infestations and neoplastic diseases, Classification, dose, indication and contraindications of drugs belonging to following classes:

- a) Penicillins
- b) Cephalosporins
- c) Aminoglycosides
- d) Fluoroquinolones
- e) Macrolides
- f) Tetracyclines
- g) Sulphonamides
- h) Anti-tubercular drugs
- i) Anti-fungal drugs
- j) Anti-viral drugs
- k) Anti-amoebic agents
- l) Anthelmintics
- m) Anti-malarial agents
- n) Anti-neoplastic agents

UNIT-V (20 marks)

Community Pharmacy Management

- a) Legal requirements to set up a community pharmacy
- b) Site selection requirements
- c) Pharmacy designs and interiors
- d) Vendor selection and ordering

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- e) Procurement, inventory control methods, and inventory management
- Financial planning and management
- f) Accountancy in community pharmacy – Day book, Cash book
- g) Introduction to pharmacy operation softwares – usefulness and availability
- h) Customer Relation Management (CRM)
- i) Audits in Pharmacies
- j) SOP of Pharmacy Management
- k) Introduction to Digital Health, mHealth and Online pharmacies

UNIT- VI (30 marks)

- a) Introduction to BCS system of classification,
- b) Basic concepts of Clinical Trials, ANDA, NDA,
- c) New Drug development, New Drugs and Clinical Trials Rules, 2019.
- d) Brand v/s Generic, Trade name concept,
- e) Introduction to Patent Law and Intellectual Property Rights,
- f) Emergency Use Authorization

