All India Institute of Medical Sciences, Jodhpur

Indicative Syllabus for the Post of Technical Officer Ophthalmology (Refractionist)

(Syllabus is only indicative. The questions can assess any aspect of knowledge, aptitude, attitude and practical skills, which is expected from a trained person to work efficiently at the advertised post)

Section A

40% Questions covering the following topics:-

General Intelligence & Reasoning: It would include questions of non-verbal type. The test will include questions on similarities and differences, space visualization, problem solving, analysis, judgment, decision making, visual memory, discriminating observation, relationship concepts, figure classification, arithmetical number series, non-verbal series etc. The test will also include questions designed to test the candidate's abilities to deal with abstract ideas and symbols and their relationship, arithmetical computation and other analytical functions.

Quantitative Aptitude: This paper will include questions on problems relating to Number Systems, Computation of Whole Numbers, Decimals and Fractions and relationship between Numbers, Fundamental arithmetical operations, Percentages, Ratio and Proportion, Averages, Interest, Profit and Loss, Discount, use of Tables and Graphs, Mensuration, Time and Distance, Ratio and Time, Time and Work, etc.

Computer Knowledge: Candidates' understanding of the Basics of Computer Knowledge, its parts, functions, emails, MS office, etc.

Section B (SUBJECT KNOWLEDGE)

60% Questions to be based on the subject specific to the post with following topics:-

1. GENERAL ANATOMY

Entire human anatomy with emphasis on different tissues, blood vessels, glands, nerves and the entire central nervous system in particular.

2. GENERAL PHYSIOLOGY

Entire human anatomy with emphasis on different organ systems, their physiological functions with special emphasis on blood and neuro physiology.

3. GENERAL BIOCHEMISTRY

Biochemical nature of carbohydrates, proteins, minerals, vitamins, lipids etc.

4. GEOMETRICAL OPTICS-I

Geometric Optics is the study of light and its behaviour as it propagates in a variety of media. Specifically, the phenomena of reflection and refraction of light at boundaries between media and subsequent image formation will be dealt with in detail. Reflections at plane and spherical surfaces and refractions at plane, spherical, cylindrical and toric surfaces will be studied in this course. Attention will be given to the system of surfaces and/or lenses and their imaging properties. The effect of aperture stops on the quality of images, such as blur and aberrations, depth of field and depth of focus, will also be studied.

5. NUTRITION

Basic aspects of Nutrition for good health. It also includes nutrients and nutrient derivatives relevant to ocular health, nutrition deficiency and ocular disease, Nutrition and ocular aging, and contraindications, adverse reactions and ocular nutritional supplements.

6. OCULAR ANATOMY

Detailed anatomy of the orbit, eyeball and cranial nerves associated with ocular functions.

7. OCULAR PHYSIOLOGY

Ocular physiology deals with the physiological functions of each part of the eye.

8. OCULAR BIOCHEMISTRY

Ocular Biochemistry deals with the metabolism that takes place in the human body. It also deals with ocular biochemistry in detail.

9. PHYSICAL OPTICS

Physical Optics is the study of light, its properties and its interaction with matter. Specifically, the phenomena of interference, diffraction, polarization and scattering will be dealt with in detail.

10. GEOMETRICAL OPTICS II

Geometric Optics is the study of light and its behaviour as it propagates in a variety of media. Specifically, the phenomena of reflection and refraction of light at boundaries between media and subsequent image formation will be dealt with in detail. Reflections at plane and spherical surfaces and refractions at plane, spherical, cylindrical and toric surfaces will be studied in this course. Attention will be given to the system of surfaces and/or lenses and their imaging properties. The effect of aperture stops on the quality of images, such as blur and aberrations, depth of field and depth of focus, will also be studied.

11. OCULAR MICROBIOLOGY

Basic biological, biochemical and pathogenic characteristics of pathogenic organisms.

12. VISUAL OPTICS I

Concept of eye as an optical instrument and thereby covers various optical components of eye, types of refractive errors, clinical approach in diagnosis and management of various types of refractive errors.

13. OPTOMETRIC OPTICS I

Understanding the theory behind spectacle lenses and frames, their materials, types, advantages and disadvantages, calculations involved, when and how to prescribe. It will impart construction, design application and development of lenses, particularly of the methods of calculating their power and effect.

14. OPTOMETRIC INSTRUMENTS

Commonly used optometric instruments, its basic principle, description and usage in clinical practice.

15. OCULAR DISEASES I

Various ocular diseases affecting various parts of the eyes. It covers clinical signs and symptoms, cause, pathophysiological mechanism, diagnostic approach, differential diagnosis and management aspects of the ocular diseases.

16. CLINICAL EXAMINATION OF THE VISUAL SYSTEM

Various clinical optometry procedures involving external examination, anterior segment and posterior segment examination, neuro-ophthalmic examination, paediatric optometry examination, and Glaucoma evaluation.

17. INDIAN MEDICINE AND TELEMEDICINE

Existing healthcare system in India.

18. OPTOMETRIC OPTICS II & Dispensing Optics

Understanding the theory behind spectacle lenses and frames, their materials, types, advantages and disadvantages, calculations involved, when and how to prescribe. It will impart construction, design application and development of lenses, particularly of the methods of calculating their power and effect. In addition deals with role of optometrists in optical set-up.

19. VISUAL OPTICS II

Concept of eye as an optical instrument and thereby covers different optical components of eye, types of refractive errors, clinical approach in diagnosis and management of various types of refractive errors.

20. OCULAR DISEASE II

Various ocular diseases affecting various parts of the eyes. It covers clinical signs and symptoms, cause, pathophysiological mechanism, diagnostic approach, differential diagnosis and management aspects of the ocular diseases.

21. PATHOLOGY

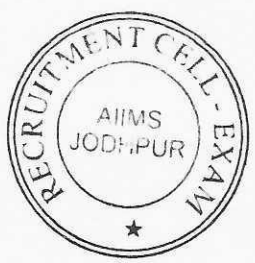
Inflammation and repair aspects.
Pathology of various eye parts and adnexa.

22. BASIC AND OCULAR PHARMACOLOGY

Actions, uses, adverse effects and mode of administration of drugs, especially related to eyes.

23. MEDICAL PSYCHOLOGY

Various aspects of medical psychology essential for the optometrist.



24. INTRODUCTION TO QUALITY AND PATIENT SAFETY

Various aspects of quality and safety issues in health care services.

25. CONTACT LENSES I

Suitable knowledge both in theoretical and practical aspects of Contact Lenses.

26. LOW VISION CARE

Definition of low vision, epidemiology aspect of visual impairment, types of low vision devices and its optical principles, clinical approach of the low vision patients, assistive devices for totally visually challenged, art of prescribing low vision devices and training the low vision patients and other rehabilitation measures.

27. GERIATRIC OPTOMETRY & PAEDIATRIC OPTOMETRY

General and ocular physiological changes of ageing, common geriatric systemic and ocular diseases, clinical approach of geriatric patients, pharmacological aspects of ageing ,and spectacle dispensing aspects in ageing patients.

28. PEDIATRIC OPTOMETRY

Theoretical and practical aspects of diagnosis, and management of eye conditions related to paediatric population. Also it will inculcate the skill of transferring / communicating the medical information to the attender / patient by the students. The scope of this subject is to train the optometrists to develop a systematic way of dealing with children below 12, so as to implement primary eye care and have better, specialized management of anomalies.

29. BINOCULAR VISION I

Binocular Vision and its clinical application. It deals with basis of normal binocular vision and space perception, Gross anatomy and physiology of extraocular muscles, various binocular vision anomalies, its diagnostic approaches and management.

30. SYSTEMIC DISEASES

Definition, classification, clinical diagnosis, complications and management of various systemic diseases. In indicated cases ocular manifestations also will be discussed.

31. RESEARCH METHODOLOGY AND BIOSTATISTICS

Basic principles of research and methods applied to draw inferences from the research findings.

32. CONTACT LENSES II

Suitable knowledge both in theoretical and practical aspects of Contact Lenses.

33. BINOCULAR VISION II

Strabismus, its classification, necessary orthoptic investigations, diagnosis and non-surgical management. Along with theoretical knowledge it teaches the clinical aspects and application.

34. PUBLIC HEALTH AND COMMUNITY OPTOMETRY

Foundation and basic sciences of public health optometry with an emphasis on the epidemiology of vision problems especially focused on Indian scenario.

35. OCCUPATIONAL OPTOMETRY

General aspects of occupational health, Visual demand in various job, task analysing method, visual standards for various jobs, occupational hazards and remedial aspects through classroom sessions and field visit to the factories.