

पाटन स्वास्थ्य विज्ञान प्रतिष्ठान, सेवाआयोग  
प्राज्ञिक सेवा, दन्त चिकित्सा समूह, Orthodontic उपसमूह, सहायकप्राध्यापक पद,  
(९ख) तहको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम  
**Paper II: Technical Subject**  
**Section (A) - 45 Marks**  
**( 1 critical analysis Q -15 mark + 3 long Q- 30 marks)**  
**Orthodontic**

1. Introduction and History of Orthodontics:

- ☐ Introduce and define Orthodontics.
- ☐ Enumerate and explain aims and objectives of Orthodontics.
- ☐ Discuss different branches of Orthodontics.
- ☐ Discuss history and evolution of Orthodontics from ancient civilization till date.

2. Growth and development:

- ☐ Explain basic concept of embryology.
- ☐ Explain basic principles of growth -
  - ☐ Introduce and define common terminologies used in growth and development.
  - ☐ Define and explain features of normal growth and development.
  - ☐ Understand methods of studying physical growth.
  - ☐ Classify, enumerate, and explain factors affecting growth and development.
- ☐ Enumerate and explain different growth theories.
- ☐ Enumerate and explain types of bone, sutures, synchondroses, and concept of bone growth.
- ☐ Discuss the growth and development of different parts of craniofacial structures and its clinical implication in orthodontics i.e.
  - ☐ Explain Pre- and post-natal growth and development of skull.
  - ☐ Explain Pre- and Post- natal growth and development of face, eye, ear and facial muscles.
  - ☐ Explain Pre- and Post- natal growth and development of Naso -maxillary complex.
  - ☐ Explain Pre- and Post- natal growth and development of mandible.
  - ☐ Explain Pre- and Post- natal growth and development of oral structures, palate, tongue, salivary glands, TMJ and MS of Mastication.
- ☐ Role of condyle in the growth of mandible.
- ☐ Understand development of dentition before and after birth
  - ☐ Explain the different stages of tooth development, development of supporting structures and mechanism of tooth eruption.
  - ☐ Explain development of dentition from birth to adulthood.
- ☐ Become familiar with the normal and abnormal psychosocial development of an individual and its clinical implication in relation to orthodontics i.e.
  - ☐ Explain how different behaviors are learned and developed.
  - ☐ Explain stages of emotional and cognitive development.
  - ☐ Understand the adolescent patient as compared to adult patient and define the role of orthodontist in handling them.
  - ☐ Understand the role of psychology in development of deleterious habits.
  - ☐ Understand the social psychology of Orthodontics.
  - ☐ Explain the Psychological outcomes of orthodontic treatment.
  - ☐ Manage physically and mentally compromised child for orthodontic treatment.
  - ☐ Understand the psychology of abused children to treat them.

3. Occlusion in Orthodontics :

- ☐ Introduce and define common terminologies used in occlusion.
- ☐ Enumerate and explain the components of Masticatory System.
- ☐ Explain mandibular movements and neuromuscular control of TMJ movements.
- ☐ Explain the components of Functional Occlusion.
- ☐ Describe and record different types of Mandibular movements.
- ☐ Examine different muscles of mastication.
- ☐ Identify and use different types of articulators, record centric occlusion, perform face bow transfer and perform occlusal analysis and occlusal grinding.

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**4. Classification, Etiology and Epidemiology of Malocclusion:**

- ☐ Define malocclusion, and identify skeletal as well as dental malocclusion i.e.
- ☐ Define, identify and explain need for classification of malocclusion.
- ☐ Define common terminologies used in malocclusion.
- ☐ Define, classify and identify skeletal malocclusion in all planes.
- ☐ Enumerate and define different classification of dental malocclusion.
- ☐ Explain Ackerman-Proffit Classification.
- ☐ Understand different etiological factors responsible for causing malocclusion i.e.
- ☐ Enumerate different types of classification of malocclusion.
- ☐ Enumerate Graber's classification of etiology of malocclusion.
- ☐ Enumerate and explain local causes of malocclusion.
- ☐ Enumerate and explain Systemic causes of malocclusion.
- ☐ Understand epidemiology of malocclusion i.e.
- ☐ Describe epidemiology of malocclusion.
- ☐ Explain indices for orthodontic treatment need.
- ☐ Evaluate demand for orthodontic treatment.

**5. Orthodontic Diagnosis and Treatment Planning:**

- ☐ Classify essential and non-essential diagnostic aids.
- ☐ Take detailed case history of an orthodontic patient.
- ☐ Perform extra-oral, intra-oral and functional examination of the orthodontic patients.
- ☐ Make an ideal study model and use them for diagnostic purpose i.e.
- ☐ Understand and fabricate study models.
- ☐ Perform different types of model analysis in children and adult patients.
- ☐ Use IOPA, Bite wing and OPG x-rays for Orthodontic purposes.
- ☐ Take extra- and intra- oral photographs for orthodontic purposes and analyze them.
- ☐ Explain the Principles of Form.
- ☐ Understand the facial analysis methods.
- ☐ Understand the "Facial Points of Interest".
- ☐ Undertake Basic Facial Analysis.
- ☐ Undertake analysis of Forehead, Eyebrows, and Eyes.
- ☐ Perform Nasal Analysis.
- ☐ Perform Lips, Teeth, Chin, and Smile Analysis.
- ☐ Understand and perform analysis of dentofacial deformities cases.
- ☐ Understand about different aspects of aging face.
- ☐ Understand the role of orthodontic rehabilitation for aesthetic purposes in different conditions.
- ☐ Use Cephalometry for diagnosis and treatment planning of Orthodontic Cases i.e.
- ☐ Define, understand and take cephalometric radiographs.
- ☐ Identify points, planes and angles.
- ☐ Trace all important anatomical landmarks.
- ☐ Carry out contemporary analyses.
- ☐ Perform Visualizing Treatment Objectives.
- ☐ Predict Growth.
- ☐ Understand other supplemental diagnostic aids and use them when necessary
- ☐ Enumerate specialized radiographs for orthodontic purpose.
- ☐ Explain Occlusograms.
- ☐ Understand EMG and use it for research purpose.
- ☐ Understand CT.
- ☐ Basic knowledge of MRI.
- ☐ Explain the role of endocrinology, BMR, Sensitivity tests and Biopsy in Orthodontics.
- ☐ Understand and use recent advances in Cephalometry i.e.

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- ☐ Enumerate and explain recent advances in Cephalometry.
- ☐ Use computer aided cephalometric tracing programs.
- ☐ Analyze the data and develop problem list.
- ☐ Develop a comprehensive treatment plan for the patient including mechanotherapy i.e.
- ☐ Understand treatment planning concepts and goals.
- ☐ Plan Treatment for Moderate Problems.
- ☐ Plan Comprehensive Orthodontic Treatment.
- ☐ Understand common mistakes and sources of error in treatment planning.

**6. Orthodontic Materials and Their Uses:**

- ☐ Understand general principles of orthodontic materials
  - ☐ Explain the evolution of orthodontic biomaterials to date.
  - ☐ Explain basic physical and chemical properties of orthodontic materials.
  - ☐ Understand the different mechanical testing methods for orthodontic materials.
  - ☐ Enumerate and explain common techniques for study of orthodontic materials.
  - ☐ Classify orthodontic materials.
- ☐ Familiar with different types of orthodontic wires and their uses
  - ☐ Introduce what orthodontic wires are, their types and uses.
  - ☐ Explain the physical properties of wire.
  - ☐ Explain evolution and types of orthodontic arch wires and their comparative properties.
- ☐ Differentiate between programmed and non-programmed orthodontic brackets, and enumerate and explain different types of contemporary bracket systems.
- ☐ Familiar with elastics and elastomers used in orthodontics.
- ☐ Familiar with different types of impression materials used in orthodontics i.e.
  - ☐ Classify impression materials and explain their properties.
  - ☐ Understand different techniques and art of taking orthodontic impression clinically.
- ☐ Familiar with different types of materials used to construct orthodontic study models
  - ☐ Plaster of Paris.
  - ☐ Hard Plaster.
- ☐ Familiar with different types of orthodontic adhesives and cements and their uses
  - ☐ Explain different types of Adhesive resins and composites, their properties and their uses.
  - ☐ Explain and use different cements in orthodontics.
- ☐ Enumerate and use different types of Separators used in orthodontics.
- ☐ Apply different types and techniques of Banding.
- ☐ Ready to start bonding and debonding procedures clinically
- ☐ Etch enamel.
- ☐ Have sound knowledge of bonding.
- ☐ Bond brackets to non conventional surfaces.
- ☐ Debond brackets effectively and clean and remove adhesives properly.
- ☐ Make different kinds of bends, shapes arch forms in different wires
  - ☐ Introduce wire bending and its importance.
  - ☐ Commonly used pliers, instruments, and material.
  - ☐ Manipulate wire for different purposes in orthodontic mechanics.
  - ☐ Enumerate different types of Arch forms.
  - ☐ Make 1st order bends.
  - ☐ Make 2nd order bends.
  - ☐ Make 3rd order bends.
  - ☐ Explain and perform heat treatment and annealing.
  - ☐ Explain clinical indications of loops.
- ☐ Do soldering and welding for orthodontic purposes
  - ☐ Define and explain dental solders, flux, anti-flux, types of soldering and application in orthodontics.
  - ☐ Explain principles of Welding and apply them clinically.
- ☐ Identify the harmful effects of orthodontic materials, take necessary precautions to avoid them and manage

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those effects when they occur.

- ☐ Understand and explain principles of biocompatibility and measure them.
- ☐ Familiar with allergic reactions produced by orthodontic materials, and recognize, prevent and manage them when encountered.
- ☐ Recognize effects of microbial flora changes during orthodontic treatment and to prevent and manage them.

7. Biomechanics :

- ☐ Understand and apply forces in a tooth or group of teeth to produce desired movement
- ☐ Introduce principles of bioengineering and biophysics, orthodontic force system, and sign conventions.
- ☐ Define and explain force, moment, couple, centre of rotation, centre of resistance, and load deflection rate.
- ☐ Understand types of tooth movements.
- ☐ Identify of center of rotation according to type of tooth movement.
- ☐ Explain concept and use moment to force ratio for desired orthodontic tooth movement.
- ☐ Explain and use sliding mechanics in orthodontics.
- ☐ Discuss the principles and use of V-bends.
- ☐ Understand and use segmented technique in orthodontics.
- ☐ Understand principles of deep bite correction, Canine retraction and En masse incisor retraction.
- ☐ Make and use Transpalatal Arch (TPA) and Lingual Holding Arch (LHA).
- ☐ Make and use Nance palatal button (NPB).
- ☐ Understand the changes brought about by the application of forces and be able to use physiological force system in order to achieve orthodontic treatment goal
  - ☐ Explain mechanism of eruption of teeth.
  - ☐ Outline the Theory of equilibrium.
  - ☐ Be familiar with Metabolism of bone – basis of tooth movement.
  - ☐ Be familiar with Phases of tooth movement.
  - ☐ Describe different theories of tooth movement.
  - ☐ Explain Tissues reaction to different kinds of tooth movements.
  - ☐ Mention effects of force distribution and types of tooth movements.
  - ☐ State the effects of force duration and force decay.
  - ☐ Mention deleterious effects of orthodontic force.
  - ☐ State the outcome of Orthopaedic forces.
  - ☐ Explain effects of Drugs on tooth movement.
- ☐ Recognize the reaction produced by any applied force and plan anchorage system accurately
  - ☐ Define anchorage, state Newton's third law, and explain goals of anchorage planning.
  - ☐ Enumerate and describe sources of anchorage.
  - ☐ Define anchorage values of individual teeth.
  - ☐ Classify anchorage.
  - ☐ Appreciate significance of anchor loss.
  - ☐ Explain types of anchorage planning.
  - ☐ Supplement anchorage.
  - ☐ Control anchorage in three planes of space.
  - ☐ Explain Tweed's Anchorage preparation.
  - ☐ Explain Begg's Anchorage preparation.
- ☐ Select and use mini implants as anchorage devices
  - ☐ Introduce, define and discuss historical evolution of Temporary Anchorage Device (TAD).
  - ☐ Enumerate indications for the use of TAD and select the patient.
  - ☐ Define Criteria for ideal TAD.
  - ☐ Describe advantages and failure rate of TAD.
  - ☐ Describe different designs of TAD.
  - ☐ Place TAD in a patient.

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8. Preventive Orthodontics:

- ☐ Define preventive orthodontics.
- ☐ Enumerate and explain common techniques for preventive orthodontic measures.
- ☐ Explain principles and undertake the process of parent counseling.
- ☐ Explain principles, need and measure for Space maintenance.
- ☐ Explain clinical indications for deciduous teeth management on eruption and exfoliation.
- ☐ Explain and undertake treatment of treatment of locked teeth.
- ☐ Explain the clinical implications of frenal attachment in orthodontics.
- ☐ Define habit.
- ☐ Classify abnormal oral musculature and enumerate related habits.
- ☐ Explain the process of oral physiological maturation.
- ☐ Explain the process of development of habit. Explain the forms of digit sucking and its effect on the orofacial structures and its management.
- ☐ Enumerate the theories of digit sucking.
- ☐ Classify the digit sucking.
- ☐ Highlight the clinical aspect and effect of digit sucking.
- ☐ Make diagnosis and develop treatment planning.
- ☐ Define and understand the normal swallowing process and its physiology.
- ☐ Classify the tongue thrusting habit and understand the etiological factors.
- ☐ Diagnose the deviation from normality and its effect on the orofacial structures and its management.
- ☐ Define and explain the forms of mouth breathing and understand the normal physiological process of breathing.
- ☐ Mention the forms and etiological aspect of mouth breathing.
- ☐ Describe the effects of mouth breathing on the orofacial structures and its management.
- ☐ Explain the neurophysiology and causes of night grinding.
- ☐ Relate the effect of night grinding on the orofacial structures and its management.
- ☐ Explain the forms of lip habits and its effect on the orofacial structures and its management.
- ☐ Enumerate and explain other forms of abnormal habits and its effect on the orofacial structures and its management

9. Interceptive Orthodontics:

- ☐ Define of interceptive orthodontics.
- ☐ Enumerate and explain different types of Interceptive orthodontic measures.
- ☐ Use different methods to calculate the space required and techniques of Space regaining, Correction of cross bites, Habit elimination
- ☐ Recognize effects of abnormal muscle activity and its prevention and interception through muscle exercises
- ☐ Removal of hard and soft tissue impediments
- ☐ Explain principles of resolution of crowding
- ☐ Describe indications and contra-indications of serial extraction
- ☐ Intercept developing malocclusion with myofunctional appliances

10. Principles of Class I Treatment:

- ☐ Introduce Class I malocclusion at different ages and the reason for treatment.
- ☐ Execute the complex non skeletal planning for the treatment of class I malocclusion during preadolescent age.
- ☐ Manage sagittal occlusal problems on Class I malocclusion during preadolescent age.
- ☐ Manage vertical occlusal problems on Class I malocclusion during preadolescent age.
- ☐ Manage transverse occlusal problems on Class I malocclusion during preadolescent age.
- ☐ Manage habits associated with Class I Malocclusion.
- ☐ Explain the general characteristics of adolescent malocclusion, advantages of adolescent treatment, and difficulties in adolescent treatment.

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- ☐ Explain the clinical problems associated with adolescent Class I malocclusion.
- ☐ Develop the strategy of treatment for Class I malocclusion with different consideration.
- ☐ Apply the principles of expansion of arch dentally or skeletally with RME or SME.
- ☐ Create additional arch length.
- ☐ Plan the strategy to resolve crowding.
- ☐ Undertake the leveling of lower arch.
- ☐ Control/maintain vertical dimension to intrude upper/lower posterior teeth in vertical pattern.

11. Principles of Class II Treatment:

- ☐ Define and classify Class II malocclusion.
- ☐ Enumerate and explain the etiology, and characteristic features of Class II malocclusion.
- ☐ Explain different modalities of treatment of Class II cases
- ☐ Plan treatment for Class II cases.
- ☐ Explain the reasons for the treatment of Class II case in different age groups.
- ☐ Enumerate the limitations and predict the prognosis for Class II treatment.
- ☐ Describe the importance of the early orthodontic treatment of Class II malocclusion.
- ☐ Apply various treatment procedures for Class II.
- ☐ Implement two phase therapy.
- ☐ Explain the Class II extraction guidelines
- ☐ List indications and contraindications to implement camouflage treatment.
- ☐ Diagnose, plan and prepare patients for surgical orthodontics. *surgery*).

**Section (B) - 55 Marks**

**(1 critical analysis Q -15 marks + 4 long Q -40 marks)**

**Orthodontic**

12. Principles of Class III Treatment:

- ☐ Introduce Class III malocclusion and give reasons for the treatment of Class III malocclusion at different ages.
- ☐ Classify Class III malocclusion based on cephalometric classification.
- ☐ Discuss the process of treatment planning of Class III.
- ☐ Differentiate between pseudo Class III and True Class III malocclusion.
- ☐ Enumerate the indications and contraindications for early Class III treatment, and treatment for pseudo Class III malocclusion.
- ☐ Understand general strategies for Class III correction.
- ☐ Enumerate the limitations and predict the prognosis for Class III treatment
- ☐ Understand the need for early correction of anterior cross bite and early interception in Class III Cases.
- ☐ Describe the extraction protocol for Class III Cases.
- ☐ Carry out Camouflage treatment.
- ☐ Diagnose, plan and prepare Class III patients for surgical orthodontics. *to*

13. Adult Orthodontics :

- ☐ Explain the evolution of adult orthodontics.
- ☐ Explain basic differences between adjunctive and comprehensive adult orthodontic treatment.
- ☐ Enumerate and explain the goals and principles of adjunctive treatment.
- ☐ Diagnose and plan treatment for adult patients.
- ☐ Perform common adjunctive procedures.
- ☐ Explain special considerations in different aspects of adult orthodontics.
- ☐ Understand the reasons for seeking comprehensive orthodontic treatment by adults.

14. Removable Appliance :

- ☐ Introduce orthodontic appliances.

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- ☐ Classify orthodontic appliances.
- ☐ Explain advantages of removable appliances.
- ☐ Understand clearly the limitations of removable orthodontic appliances.
- ☐ Explain mechanical principles involved in designing orthodontic appliances.
- ☐ Explain various parts of removable appliances.
- ☐ Identify different pliers used in removable orthodontic treatment.
- ☐ Classify different types of clasps.
- ☐ Understand, design and use different types of clasps.
- ☐ Enumerate ideal requirements of a spring.
- ☐ Explain basic properties of spring.
- ☐ Understand, design and use different types of springs.
- ☐ Design and make base plate.
- ☐ Fabricate, insert and use different removable appliances.
- ☐ Describe the principles of slow expansion.

15. Principles of functional and Orthopaedic Orthodontics: Fixed Functional Appliances

- ☐ Introduce the functional appliances.
- ☐ Define and explain the evolution of functional orthodontic appliances.
- ☐ Explain the scientific concepts and validation of functional appliances.
- ☐ Explain the principles and mode of action of functional appliances.
- ☐ Apply different techniques and art of taking orthodontic impression clinically cephalometric diagnosis and functional analysis for functional appliance therapy.
- ☐ Classify and enumerate functional appliances.
- ☐ Describe Vestibular screen in detail.
- ☐ Describe Lip shields in detail.
- ☐ Describe Tongue crib in detail.
- ☐ Explain the development, action and types of activators (original and variations).
- ☐ Explain the development, action and types of Bionators (original and variations).
- ☐ Explain the development, action and types of Functional regulator or corrector.
- ☐ Combined Functional Appliances/Headgear.
- ☐ Understand the development, action and types of Twin block.
- ☐ Discuss and use fixed functional appliances.
- ☐ Explain Magnetic functional system.
- ☐ Use combined extra oral and functional appliances.
- ☐ Use maxillary retraction and intrusion splints.
- ☐ Explain Mara.
- ☐ Advocate role of functional appliances in contemporary orthodontics.

16. Fixed Orthodontic Treatment:

- ☐ Explain Begg Philosophy.
- ☐ Discuss Edgewise appliances.
- ☐ Explain Bioprogressive Therapy.
- ☐ Explain Alexander Discipline.
- ☐ Discuss Andrews Straightwire philosophy.
- ☐ Differentiate between Roth and Andrews's prescription.
- ☐ Display proficiency in Roth philosophy and treatment mechanics.
- ☐ Display proficiency in treatment philosophy and treatment mechanics of MBT System.
- ☐ Discuss the treatment philosophy and mechanics of Tip edge Technique.
- ☐ Discuss the treatment philosophy and technique of Lingual Orthodontics.

17. Surgical Orthodontics:

- ☐ Explain need and controversies related to extraction.
- ☐ Enumerate the indications for extraction.

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- ☐ Explain and execute different types of extraction procedures in orthodontics.
- ☐ Enumerate and explain the indications and contraindications for the extraction of different groups of teeth.
- ☐ Introduce the concept of growth modifications and orthognathic surgeries.
- ☐ Explain the potentials of growth modifications and orthognathic surgeries.
- ☐ Learn the limitations of growth modifications and orthognathic surgeries with respect to constitution of a patient.
- ☐ Explain the hazards and limitations of treatment combining orthodontics and orthognathic surgery.
- ☐ Introduce and enumerate indications and contraindications of Distraction Osteogenesis (DO).
- ☐ Apply Virshow law in DO.
- ☐ Discuss the different types of distracters available for Orthodontic treatment.
- ☐ Explain dentofacial deformities and facial aesthetics.
- ☐ Classify dentoskeletal deformities with respect to normal occlusion and malocclusion in three planes.
- ☐ Describe the facial esthetics.
- ☐ Enumerate the indications of orthognathic surgeries.
- ☐ Enumerate the contra-indications of orthognathic surgeries.
- ☐ List the indications of orthognathic surgeries in borderline cases.
- ☐ Undertake the procedure of clinical examination in dentofacial deformity cases.
- ☐ Undertake different diagnostic procedures in dentofacial deformity cases.
- ☐ Outline the history of first stages of development of orthognathic surgical techniques.
- ☐ Outline the history of second stages of development of orthognathic surgical techniques.
- ☐ Outline the history of third stages of development of orthognathic surgical techniques (Continuing progress).
- ☐ Explain different types of mandibular osteotomies.
- ☐ Explain different types of maxillary osteotomies.
- ☐ Enumerate indications and contraindications of orthognathic surgeries and surgical procedures in class II dentoskeletal deformities.
- ☐ Prepare Class II patients for Orthognathic surgery.
- ☐ Undertake Orthodontic preparation for the surgery.
- ☐ Enumerate types of corrective surgical procedures.
- ☐ Enumerate indications and contraindications of orthognathic surgeries and surgical procedures in class III dentoskeletal deformities.
- ☐ Prepare Class III patients for Orthognathic surgery.
- ☐ Explain different types of corrective surgical procedures.
- ☐ Classify the asymmetries. Enumerate indications and contraindications of orthognathic surgeries and surgical procedures in asymmetries.
- ☐ Undertake Orthodontic preparation of asymmetries for the surgery.
- ☐ Enumerate and understand types of corrective surgical procedures in asymmetries.
- ☐ Classify and enumerate vertical skeletal deformities (excess and deficiency) in maxilla and mandible.
- ☐ Familiar with indications and contraindications of orthognathic surgeries and surgical procedures in vertical skeletal deformities.
- ☐ Prepare from orthodontic point of view for the surgery.
- ☐ Enumerate and understand types of corrective surgical procedures used in vertical skeletal deformities.
- ☐ Classify and enumerate transverse skeletal deformities (excess and deficiency) in maxilla and mandible.
- ☐ Understand and enumerate indications and contraindications of orthognathic surgeries and surgical procedures in vertical skeletal deformities.
- ☐ Undertake Orthodontic preparation for the surgery.
- ☐ Enumerate and understand types of corrective surgical procedures used in transverse skeletal deformities.



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18. Genetics and Orthodontics :

- ☐ Introduce genetics, heredity and other common terminologies used in genetics.
- ☐ Explain development of Genetics.
- ☐ Describe different parts of Cell.
- ☐ Describe the structure and function of RNA and protein synthesis.
- ☐ Describe normal structure and types of chromosomes.
- ☐ Enumerate and explain chromosomal aberrations.
- ☐ Explain different types of Cell division.
- ☐ Describe structure of DNA.
- ☐ Define gene and discuss different types of genes.
- ☐ Explain role of Homeobox genes.
- ☐ Define and discuss Mutation.
- ☐ Discuss laws and modes of Inheritance.
- ☐ Explain role of Molecular genetics in oral and craniofacial dysmorphology.
- ☐ Recognize role of Heritability in malocclusion.
- ☐ Define role of Twin studies in understanding role of genetics in malocclusion.
- ☐ Discuss clinical implications of Genetics.
- ☐ Define Recent Advances in genetics.

19. Craniofacial Anomalies (CFA) :

- ☐ Introduce CFA. Classify and explain different causes of CFA.
- ☐ Define different terminologies used in craniofacial anomalies.
- ☐ Classify CFA.
- ☐ Use prenatal and postnatal diagnostic guidelines.
- ☐ Outline the composition of Craniofacial Team.
- ☐ Introduce craniosynostosis.
- ☐ Classify and explain clinical features of different craniosynostosis.
- ☐ Explain modalities of treatment of craniofacial anomalies.
- ☐ Introduce facial clefts.
- ☐ Classify facial clefts.
- ☐ Define, diagnose and develop treatment planning for different types of facial clefts.

20. Cleft lip and Palate (CLP) and the role of Orthodontist:

- ☐ Introduce CLP.
- ☐ Explain how CLP develops.
- ☐ Explain factors involved in development of CLP.
- ☐ Explain Genetic risk and perform genetic counseling.
- ☐ Classify CLP.
- ☐ Explain the problems of CLP patients.
- ☐ Explain the Features of CLP.
- ☐ Diagnose CLP cases involving different specialties.
- ☐ Fulfill the role of orthodontist as a member of CLP team.
- ☐ Carry out Orthodontic Treatment of CLP patient as well as prepare for surgical management of CLP patients.
- ☐ Discuss speech defects in CLP patients and manage them with the help of related service providers i.e.
  - ☐ Discuss milestones of Speech and Language development.
  - ☐ Discuss acquisition of Speech sounds.
  - ☐ Describe normal Velopharyngeal (VP) function.
  - ☐ Describe Velopharyngeal muscles.
  - ☐ Explain pattern of VP closures in normal speakers.
  - ☐ Discuss various VP dysfunctions.
  - ☐ Discuss perceptual evaluation of VP dysfunction.

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- ☐ Enumerate different ways of evaluating VP dysfunction.
- ☐ Enumerate different methods of treatment of VP dysfunction.
- ☐ Explain hearing impairment in CLP patients.
- ☐ Discuss speech or communication problem in CLP patients.
- ☐ Describe articulation and articulatory errors in CLP patients.
- ☐ Explain resonance and hypernasality.
- ☐ Discuss voice and errors associated with voice in CLP patients.
- ☐ Explain fluency of speech.
- ☐ Describe speech intelligibility.
- ☐ Decide when to start speech therapy in CLP patients.

**21. Deleterious Effects of Orthodontic Treatment :**

- ☐ Define deleterious effects.
- ☐ Classify deleterious effects.
- ☐ Prevent and manage the damages occurring in crown.
- ☐ Prevent and manage the damages occurring in root.
- ☐ Prevent and manage pulp damage
- ☐ Prevent and manage periodontal damages.
- ☐ Prevent and manage damage to TMJ.
- ☐ Prevent and manage Headgear induced damage.
- ☐ Prevent and manage allergy incidence.
- ☐ Prevent and manage burns.
- ☐ Prevent bacterial endocarditis.
- ☐ Understand and manage cross infection.

**22. Retention and Relapse:**

- ☐ Introduce retention and relapse.
- ☐ Explain different schools of thought on retention.
- ☐ Enumerate and explain Riedel's Theorem.
- ☐ Enumerate and explain William's Keys to lower retention.
- ☐ Describe occlusal changes related to growth.
- ☐ Plan retention, and control and manage relapse.
- ☐ Explain Proffit's recommendation for retention.
- ☐ Classify retainers.
- ☐ Classify and deliver temporary retainers.
- ☐ Classify and deliver permanent retainers.
- ☐ Classify and deliver active retainers.

**23. Periodontal considerations in Orthodontics:**

- ☐ Understand different periodontal lesions and conditions affecting the orthodontic therapy.
- ☐ Describe adjunctive role of periodontal therapy for Orthodontic treatment.

Following pattern will be used for formation of paper I & II as far as possible.

Paper I				
Part	Section	Weightage	No. Questions & Weightage	
			Objective Multiple Choice	Subjective
I	A	20		2 Questions X 10 Mark = 20
	B	30		3 Questions X 10 Mark = 30
II	C	25	25 Questions X 1 Mark = 25	
	D	25	25 Questions X 1 Mark = 25	

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Paper II			
Section	Weightage	No. Questions & Weightage	
		Long answer	Critical Analysis
A	45	3 Questions X 10 Mark = 30	1 Questions X 15 Mark = 15
B	55	4 Questions X 10 Mark = 40	1 Questions X 15 Mark = 15

--- The end ---