

MDS ORTHODONTICS

Final Exam Question Bank



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PAPER I (BASIC SCIENCES) – LONG ESSAYS – 20 MARKS

1. Describe the different cellular responses to different stages of orthodontic treatment.
2. Evolution of archwire materials.
3. Compare the advantages, disadvantages of tooth movement in various orthodontic techniques.
4. Discuss the recent works on the role of oral & facial musculature on development of occlusion.
5. What are the proximate principles necessary in human nutrition? Give importance of each as related to the development of normal dentition.
6. Discuss the role of mandibular growth in relation to facial profile.
7. Discuss the role of vitamins & hormones on growth & development of jaws.
8. Discuss the anatomy of the mandible, its development & age changes.
9. Discuss role of genetics.
10. Briefly outline the embryological development of structures arising from the 1st & 2nd branchial arches. Enumerate the malformations & add a note on the pathophysiological basis affecting the 1st branchial arch.
11. Enumerate the requisites of an orthodontic bonding adhesive. Describe the composition, physical properties of contemporary resin based & glass ionomer orthodontic bonding adhesives. Add a note on the clinical steps in direct bonding of orthodontic attachments.
12. AIDS & orthodontics.
13. Changes brought about in facial profile by growth.
14. Role of orofacial musculature in development of dental arches.
15. Adjustment of maxillomandibular complex from birth to adulthood with reference to the developing dentition.
16. Discuss functional matrix theory & its clinical application to functional appliances.
17. Discuss maturation of oral function.
18. Outline the post natal growth & development of mandible. Add a note on its significance in treatment planning.

19. Discuss the counterpart principle & relocation concepts of Enlow. Add a note on clinical significance of these concepts.
20. Discuss the doctrine of functional matrix hypothesis in relation to maxilla & mandible.
21. Tongue – development, anatomy, function & its role in relation to growth & normal occlusion.
22. Equilibrium effects on dentition.
23. Discuss types of malocclusion influenced by genetics.
24. Discuss studies conducted on influence of heredity in anomalies of the jaws & occlusion.
25. Role of genetics in clinical orthodontics.
26. Define growth & development. What are the various theories of bone growth & discuss any one theory in detail.
27. Discuss in detail effects of various nutritional deficiencies on human growth & development.
28. Archwire materials used in contemporary fixed appliance therapy.
29. Classify cleft palate. Discuss the growth & development of treated & non-treated cleft-lip & palate.
30. Describe in detail the development of palate & the development of its anomalies.
31. Give a detailed account of composition & functions of saliva. Add a note on the physiology of secretion of saliva.
32. Factors bringing about growth disturbances. Describe the racial & genetic influence on the dentofacial complex.
33. Discuss changes in the dimension & form of face & head.
34. Define index. What are the various indices of malocclusion used in epidemiological studies & their purposes? What are the various problems in standardizing, reproducing & comparing the various epidemiological studies.
35. General growth of body as related to the stomatognathic system.
36. Discuss the role of attritional occlusion in the development of “normal occlusion.”
37. Discuss the relation between the structure of a bone & the mechanical forces applied to it, illustrating your answer in reference to the maxilla & mandible.
38. Describe the origin, course, relations & distribution of glossopharyngeal nerve.
39. Properties of nickel-titanium alloy archwires correlated with their clinical usage.

40. Discuss the physical properties of ceramic bracket materials. Add a note on the clinical problems encountered in their usage & their remedies.
41. Discuss the adjustments of the maxillomandibular complex from birth to adulthood with reference to the developing dentition.
42. Discuss the relation of Impaction, Displacement & Transposition in the light of development of occlusion.
43. Discuss the postpubertal maturational changes in hard & soft tissues of the human face.
44. Outline the anatomy & discuss the physiology of the velopharyngeal mechanism. Outline the pathophysiology of velopharyngeal incompetence seen in cleft palate patients & their significance in treatment planning & mechanotherapy.
45. Trigeminal nerve. Discuss the histo-chemical responses to orthodontic tooth movement.
46. Describe the orofacial musculature & its role in the development of the jaws.
47. Discuss the theories of bone resorption & formation & the changes in the periodontal ligament during orthodontic tooth movement.
48. Properties & applications of TMA wires.
49. Discuss the theories of root resorption & formation & the changes in the periodontal ligament during orthodontic tooth movement.
50. Discuss the natural spaces that exist in the normal development of deciduous dentition.
51. Discuss postural changes observed in mandibular permanent first molar from its eruption to puberty.
52. Describe briefly various materials used in the manufacture of – band materials, archwires and brackets giving their advantages, disadvantages, physical & chemical properties.
53. Describe briefly – alginate impression material, direct bonding adhesives.
54. Etiology of cleft lip & palate.
55. Outline the maturational development & growth of the human chin, lips & nose. Add a note on its significance in treatment planning.
56. Discuss the role of cartilages at various sites in the pre- & post-natal craniofacial development.
57. Describe the functional movements of mandible.

58. Describe how the maxillo-mandibular relation is maintained from birth to adulthood.
59. "Facial growth & orthodontics are closely linked." Discuss.
60. Discuss critically – " childhood deficiency diseases are responsible for causing malocclusions found commonly in India."
61. Describe the face of a normal child of 4 years of age. Discuss the changes in dimensions & form of the face & the head till completion of growth.
62. Discuss the cephalometric study of growth of maxillo-mandibular complex during permanent dentition period.
63. Discuss the effect of diet pattern of our society of dento-facial growth.
64. Discuss critically the effect of the following on child's dentition & occlusion- Protein-calorie malnutrition, Mouth-breathing habit, Cleft lip & palate.
65. Discuss the methods for determining norms of dental development.
66. Describe the essential features of an adequate diet – with special reference to the requirements of a growing child.
67. Discuss the evaluation of facial esthetics & proportion of facial anthropometric measurements.
68. Describe the causative agent of AIDS & its transmission in dental practice & prevention.

PAPER I (BASIC SCIENCES) – SHORT ESSAYS – 10 MARKS

1. Sterilization in orthodontic office.
2. Evolution & future of orthodontic wires.
3. Latest trends in orthodontic bonding.
4. TALA (Totally Aesthetic Labial Archwire).
5. Relationship between the structure of a bone & the mechanical forces applied to it with reference to maxilla & mandible.
6. Chemistry of self-curing composite bonding materials.
7. Twin studies.
8. Implant as method of growth study.
9. Recent advances in orthodontic material.
10. Role of temporomandibular joint in relation to orthodontic diagnosis.
11. Histology of bone & periodontium & its importance in orthodontics.
12. Cleft lip & Palate.
13. Gradient of growth.
14. Hyalinization.
15. Molecular basis of genetics.
16. Role of tongue in development of malocclusion.
17. Annealing.
18. Sutural growth.
19. Attritional occlusion.
20. Standard deviation & coefficient of variation.
21. Sockets of teeth.
22. Acid etching.
23. Copper NiTi wires.
24. Alpha & Beta errors in statistics.
25. Fixing the sample size in a clinical study.
26. Butlerfield's theory.
27. Transcription of mRNA.
28. Bauschinger effect.
29. Null hypothesis.

30. Formula for deflection of wires & cantilever springs.
31. Genetic basis of Down's syndrome.
32. Piezo-electricity.
33. Orchestration of tooth movement.
34. Tooth formation, theory & shedding of teeth & eruption.
35. Histology & development of maxillary sinus.
36. Stratified squamous epithelium.
37. Laser etching & acid etching – its effect on the structure of enamel.
38. Orthodontic movement of non-vital teeth.
39. Apical root resorption & other tissue responses in human permanent teeth under orthodontic treatment.
40. Dryopethicus tooth pattern.
41. Hypodivergent tooth pattern.
42. Malformations of tongue, teeth.
43. Micrognathia.
44. Supernumerary teeth.
45. Wolff's law & trajectories of force.
46. Neural crest cells, neuroepithelial cells.
47. Ankylosed teeth.
48. Age changes in mandible.
49. Dilaceration.
50. Orthodontic movement & management of fractured teeth.
51. Strength, Stifness & Range.
52. Soldering & welding.
53. Titanium alloys.
54. Cyanoacrylates.
55. Composites.
56. Glass ionomers – recent advances.
57. Hydrocolloids.
58. Dental stone & plaster.
59. Acrylic resins.
60. Ceramics.
61. Indirect bonding – recent trends using new materials for bonding.

62. Heat treatment of orthodontic wires.
63. Temperature & different zones of a flame.
64. At what temperature is bracket base made, moulded, debonded & what are the different methods of debonding?
65. Cephalocaudal gradient of growth.
66. Clinical anthropometry.
67. Growth onset & cessation indicators.
68. Role of endocrines in pubertal growth spurt.
69. Growth charts – Peer's, Scammon's growth curves.
70. Longitudinal growth studies.
71. Genetically controlled growth studies.
72. Monohybrid inheritance.
73. Chromosome aberration.
74. Growth site & Growth centre.
75. Relation between genetics & environment in orthodontics.
76. Self-correcting malocclusion.
77. Servosystem theory.
78. Nasocapsular theory.
79. Implant growth studies.
80. Epigenetic growth studies.
81. Logarithmic growth of mandible.
82. Speech & malocclusion.
83. Evolution of lower jaw in vertebrates.
84. Pain pathway.
85. Mitosis & meiosis.
86. Teeth of continued succession.
87. Theories of growth.
88. Stomatognathic system.
89. Difference between primary & secondary teeth.
100. Age changes in jaws & facial dimensions.
101. Apical root resorption.
102. Racial & genetic influences of dentofacial complex.

103. Effect of protein deficiency on the growth of skull.
104. Growth spurts.
105. Basal metabolic rate.
106. Congenital defects as related to orthodontics.
107. Buccinator mechanism.
108. Cranial growth centres.
109. Esthetic brackets.
110. Statistics & case selection.
111. Role of genes in orthodontic treatment.
112. Autosomal dominant.
113. Self-etching primer.
114. Vitamin C.
115. Immature swallow.
116. Temperature thermomechanics.
117. Development of occlusion.
118. Significance of pubertal growth spurt in orthodontics.
119. Growth of maxilla in cleft palate patients.
120. Glass ionomer as a bonding agent.
121. Evolutionary changes in inter-attachment.?
122. Muscular balance.
123. Styloid process.
124. Differentiate between primary & secondary cartilage.
125. Cervical part of trachea.

126. External jugular vein.
127. Describe supra clavicular part of brachial plexus.
128. Development of branchial arches.
129. Pituitary gland.
130. Microscopy of tonsils.
131. Auditory tube.
132. Facial artery.
133. Describe the maxillary & mandibular division of trigeminal nerve.
134. Describe blood supply & nerve supply of oral cavity.
135. Composition of collagen & its formation.
136. Types of collagen.
137. Amino acids affecting collagen formation.
138. Krebs citric acid cycle.
139. Protein synthesis.
140. Blood supply & nerve supply to teeth.
141. Discuss the principles in growth modification.
142. Resting position of mandible & its significance in orthodontics.
143. Nature of skeletal growth.
144. Rotation changes in mandible.
145. Muscles of mastication.
146. Facial nerve.
147. Physiology of deglutition.
148. Velopharyngeal mechanism.

149. Role of orofacial musculature in development of dental arches.
150. Implant growth studies.
151. Describe epigenetic growth factors affecting craniofacial growth.
152. Importance of thyroid hormone in growth.
153. Clinical anthropometry.
154. How is the mandible in mesocephalic, dolicocephalic & brachycephalic individuals?
155. Growth trends & types in cleft palate patients.
156. Discuss importance of grids in growth studies.
157. Role of calcium & phosphorous in growth.
158. Acromegaly.
159. Importance of peak velocity in growth.
160. High Cuspid theory.
161. Theories of eruption.
162. Bolton-Brush / Burlington / Iowa / Belfast / Ann Arbor / Trivandrum Growth studies.
163. Somatotyping.
164. Mutations.
165. Neurobiotaxis.
166. Autism.
167. Oedipus complex.
168. Turner's syndrome.
169. TMJ imaging.
170. Radiovisionography.

171. Hunter-Enlow concept of growth equivalents.
172. Control & phases of dental eruption.
173. Impairment of jaw growth by abnormal habits.
174. Post-natal first year growth of dental arches.
175. Milestones of development.
176. Growth vectors.
178. Growth charts.
179. Welder & welding.
180. Prenatal causes of malocclusion.
181. Shape memory of arch wires.
182. Logarithmic spiral as the basis of facial growth.
183. Naso-capsular theory.
184. Carpel index.
185. Developmental age.
186. Space adjustment during mixed dentition period.
187. Facial types.
188. Space maintainers & regainers.
189. Neural crest cells.
190. Growth percentiles.
191. Enlow's "V" concept.
192. Spastic child in orthodontic practice.
193. Predisposing factors for cleft palate.
194. Newer archwire materials.

195. Normal occlusion.
196. Hormones in growth.
197. Braided archwires.
198. Optiflex.
199. Neurotrophic process of orofacial growth.
200. Grid pattern of assessment of growth in children.
201. Vitamin deficiency.
202. Wetzel's grid.
203. Somatomedin & somatostatin.
204. Social & behavioural development of a child.
205. Development of congenital orofacial deformities.
206. Physiology of pubertal changes.
207. Co-ax wires.
208. No-mix adhesives.
209. Micrognathia.
210. Elgiloy.
211. Flexibility.
212. Ductility & malleability.
213. Crystallock.
214. Polycarbonate cement.
215. Self-cure acrylic.
216. Fluxes & anti-fluxes.
217. Solders.

- 218. Trajectories of force.
- 219. Annealing & tempering.
- 220. Morphologic changes in TMJ.
- 221. Gum pads.
- 222. Chi-square test.
- 223. Cleidocranial dysostosis.
- 224. Bone maturation age.
- 225. Autosomal recession.
- 226. Test of significance.
- 227. Light cure orthodontic adhesives.
- 228. Microscopic appearance of enamel.
- 229. Genetically controlled malocclusion.

PAPER II (Diagnosis and treatment planning)– LONG ESSAYS – 20 MARKS

1. Discuss critically the reliability of cephalometric landmark location, source of error in linear & angular measurements & limitations of cephalometric analysis in orthodontics.
2. Discuss the treatment of children with excessive face height.
3. Various classifications of malocclusions & their implication on orthodontic treatment planning.
4. Management of impacted canine.
5. Discuss the management of “Gummy smile”.
6. Discuss early management of developing malocclusion.
7. Different PA analysis & its significance in dentistry.
8. Discuss the rationale & biologic basis of growth modulation in skeletal mandibular prognathism. Add a note on the orthopedic management of such problems.
9. Discuss the behavioural problems in adolescence during the orthodontic treatment & their management.
10. Differentiate between skeletal & functional malocclusion & their clinical significance.
11. Discuss orthodontic management of Class II div 1 malocclusion in mixed dentition.
12. Compare the advantages & disadvantages of tooth movement by various orthodontic treatment techniques. Hand wrist radiographs.
13. Etiopathogenesis of long face syndrome.
14. Discuss Rickett’s 4-step analysis to distinguish natural growth from orthodontic treatment.
15. Discuss the influence of orthodontic treatment in growing children with deviated jaw growth.
16. Discuss the psychological problems as related to orthodontic treatment.
17. Discuss retention & relapse.
18. Discuss current status & importance of soft-tissue facial analysis.
19. Discuss various methods to correct contracted maxillary arch.
20. Describe extra-oral anchorage, its indications & uses.
21. Describe the orthodontic treatment planning for adults.

22. Discuss the various differences between removable & fixed functional appliances on dento-facial orthodontics.
23. Magnetic force as a growth modulation appliance – discuss.
24. Diagnosis of a surgical case.
25. TMJ disorders - diagnosis & orthodontic management.
26. Growth of maxilla & mandible in cleft lip & palate patients & their psychology.
27. Classification & presurgical treatment of cleft lip.
28. Describe Ricketts growth prediction method. Compare it with other methods.
29. Discuss the psychological factors responsible for oral habits & what habit-breaking appliances should not be used in school going children & why?
30. Discuss the cephalometric method of assessing the effect of orthodontic tooth movement.
31. Use of roentgenography in assessing development of orthodontics.
32. What are growth markers? How do they help in treatment planning?
33. Discuss the factors affecting cephalometric radiography.
34. Discuss the etiology of facial asymmetries. Outline the essential investigations & how would you apply such diagnostic information in treatment planning for its correction.
35. Discuss the psychosocial factors contributing to the body image & dentofacial attractiveness in an individual. Briefly outline the differences in body image perception on an individual with dentofacial deformity compared to a normal individual.
36. Discuss the psychological basis of non-compliance to orthodontic appliance. Outline the approach to the clinical & psychological management of non-compliant orthodontic patients.
37. What are the emerging trends & recent advances in imaging of the Cranio-Dentofacial area for orthodontic purposes? Add a note on 3-dimensional cephalometry.
38. Discuss the management of a problem child in early treatment.
39. Discuss the current status & importance of soft-tissue facial analysis.
40. Discuss the treatment planning of Angle's Class III cases in children in mixed dentition age, in adolescents & in adults.
41. Discuss in detail Proffit-Ackermann system of classification of malocclusion.

42. Discuss critically Angle's concept of ideal occlusion & treatment with a full complement of teeth.
43. Explain the term orthodontic camouflage of skeletal malocclusion.
44. Discuss functional & skeletal malocclusion & their importance.
45. Etiology of excessive anterior facial height.
46. Write about the merits & demerits of Steiner's analysis & Tweed's triangle. Indicate the differences in errors involved in their clinical application. Also add a note on the importance of IMPA angle in Indian context & the importance of FMA angle in treatment planning.
47. What are the Tanaka Johnston prediction values? Briefly describe the various dental cast analyses.
48. Discuss the different methods of computerized cephalometric orthodontic diagnostic procedures.
49. Discuss & compare the merits & demerits of any three methods of superimposition of cephalograms to assess the changes in mandibular & maxillary dimensions.
50. Describe any 2 authored methods to assess the skeletal maturation from the hand & wrist X-ray pictures.
51. Functional analysis in orthodontic diagnosis.
52. Role of mouth-breathing in etiology of malocclusion.
53. Describe the facial growth trends & their importance in orthodontic treatment planning & prognosis.
54. Discuss the varied opinions concerning the role of digit sucking in the etiology of malocclusion & give your own views.
55. Etiology & management of open bite cases.
56. Molar distalization techniques.
57. Discuss the concept of pre-fabrication of appliances for increased inefficiency.
58. Various applications of headgear in the correction of Class-II malocclusion along with their mode of action.
59. Orthodontic triage.
60. Discuss causes, effects & management of enamel defects following orthodontic therapy.
61. Role of various headgears in orthodontic treatment.
62. Discuss management of skeletal problems in various age groups.

63. Role of biomechanics of tooth movement in clinical orthodontics.
64. Discuss various expansion appliances & methods of using in different indications.
65. Discuss the various myofunctional appliances & their relative merits.
66. Psychology of habits.
67. Describe in detail the various procedures you adopt to assess the anteroposterior relations of the jaws.
68. Discuss the skeletal, dental & soft-tissue analysis for orthodontic patients having long face & requiring surgical orthodontic management.
69. Describe in detail the phenomenon of rotation of jaws during the growth & how it contributes to malocclusion.
70. Enumerate the various parameters to assess normal & abnormal growth.
71. Describe the dental condition in various syndromes.
72. Childhood diseases leading to malocclusion.
73. Discuss the errors in cephalometric radiography, their clinical significance & methods to remedy the same.
74. Discuss Coben's proportionate analysis.
75. Describe a treatment protocol for a bilateral cleft lip & palate case & outline clearly the orthodontic options.
76. Discuss various options to treat anterior open bite.
77. Criteria for selection of cases for functional jaw orthopedic treatment.
78. Discuss drawbacks of activator therapy. How will you overcome these drawbacks?
79. Discuss the differential diagnosis of normal, acceptable deviations & abnormal swallowing patterns & the management of abnormal swallowing.
80. Enumerate the various parameters to across normal & abnormal human growth.
81. Discuss the mechanism of dentofacial adjustment to the various appliances.
82. Discuss the psychological influence of malocclusion.
83. The two most commonly used serial extraction sequences & discuss merits & demerits of each, supported by studies.
84. The role of secondary vs primary alveolar bone grafting in cleft palate cases.
85. List the commonly seen orthodontic scars & suggest various means to minimize them.
86. Etiological factors in relation to pseudo & skeletal class III.

87. Describe the normal & abnormal muscle function pattern & its role in orthodontic anomalies & therapy.
88. Discuss the principle methods of investigation of forces exerted on the dentition by perioral & lingual musculature.
89. Discuss the significance of soft-tissue morphology in diagnosis, prognosis & treatment planning.
90. Describe the bony landmarks used in evaluating a cephalometric X-ray. Discuss critically what these landmarks represent.
91. Discuss the mechanism of heredity & the heritable types of malocclusion.
92. Discuss your plan for a research project to study the role of inheritance in orthodontics.
93. Discuss the cephalometric appraisal of craniofacial growth by Bjork.
94. Describe hereditary limitations in orthodontics.
95. Discuss role of tongue in relapse of treated orthodontic cases.
96. Discuss the effect of Milwaukee brace upon dentofacial growth & its management.
97. What different cephalometric readings will you include in clinical practice? Discuss them.
98. Discuss the methods of determining concordance & discordance in twins & their importance in orthodontic diagnosis.
99. Describe various stages in the psychological development of a child & the different psychological factors which influence orthodontic treatment.
100. Psychological factors responsible for habits such as – thumb-sucking, abnormal swallowing & lip-biting.
101. Discuss the “form & function” co-relation in open bite & tongue-thrust cases.
102. Discuss psychological effectiveness in various methods of treatment.
100. Discuss the use of roentgenology in assessing osseous development in relation to orthodontics.
101. Discuss critically the clinical value of cephalometric norms.
102. Discuss the reliability of the different cephalometric landmarks put forth by various writers. Which analysis in your opinion gives the maximum advantage for our purpose? Briefly describe this analysis.

103. Give Simon's classification of skeletal facial types & their simplification. Illustrate with diagnosis.
104. Discuss the inter-relationship between the soft-tissue & skeletal profiles considering the age factor.
105. Various causes for mouth-breathing. Discuss cephalometric analysis of velopharyngeal space in mouth-breathing.
106. Discuss the inter-relationship between ortho-perio.
107. Discuss the role of active physiological functions of orofacial complex in the etiology of malocclusion.
108. Discuss in detail Tweed's diagnostic triangle & its importance in deciding various growth trends.
109. How will you plan orthodontic treatment for a 9-10 year old girl having Angle's Class II div 1 malocclusion.

PAPER II (Diagnosis and treatment planning)– SHORT ESSAYS – 20 MARKS

1. TMJ adaptation in adult subjects.
2. Prediction imaging.
3. “C” axis.
4. Abnormal deglutition.
5. Long face syndrome.
6. Kesling’s set-up.
7. Leeway space.
8. Lingual appliance.
9. Multiple extractions.
10. Segmental arches.
11. Cellular responses to forces.
12. Treatment of Angle’s Class II, div 1 with myofunctional appliances.
13. Motivation for adult orthodontic treatment.
14. Keys to retention.
15. Distal driving.
16. Role of endocrine system in development of teeth & jaws.
17. Second-molar extractions.
18. Holograms.
19. Tweed’s template correction.
20. Airway problems & its related diagnostic procedures.
21. TMJ & malocclusion.
22. Digigraph.
23. Third molars & late crowding.
24. The timing of growth modification.
25. Extraoral force to the mandible.
26. Transverse maxillary constriction.
27. Growth modification in cleft lip & palate patients.
28. Orthodontic camouflage.
29. Muscle exercise.
30. Two-phase early correction.
31. CBJ

32. Malocclusion with poor prognosis.
33. Essix retainer.
34. Bass appliance.
35. Decompensation & compromised results in relation to orthognathic surgery.
36. Discuss functional influences of dentofacial development.
37. Discuss pattern, variability & timing of growth.
38. Management of an autistic child in the orthodontic office.
39. Development of TMJ.
40. Effects of malnutrition on dentofacial growth.
41. Role of heredity in malocclusion.
42. Psychological behaviour of child during orthodontic treatment.
43. Video imaging.
44. Trimming of orthodontic models.
45. Reliability of model analysis.
46. Vertical maxillary excess.
47. Index of Orthodontic Treatment Need (IOTN).
48. Computerized growth forecasting.
49. TMJ imaging.
50. Phosphor screen based digital photography.
51. Radiographic localization of impacted canines.
52. Grummon's PA analysis.
53. Lower incisor extractions.
54. Radiation hazards.
55. Second premolar extractions in orthodontic treatment.
56. Dental orthopantomographs.
57. Heredity & midline diastema. List out various treatment plans.
58. Speech therapy.
59. Template analysis.
60. Polygenic inheritance.
61. Natural head position in cephalometry.
62. Quad helix appliance.
63. Stabilized canine retractor.
64. Goshgarian arches.

65. Bypass arches.
66. Bonding porcelain brackets.
67. Motivation for adult treatment.
68. Fixed retainers.
69. Surgical orthodontics involving maxilla.
70. Incorporation of ideal norms in an appliance.
71. Early orthodontics.
72. Orthodontic problems in rebellious child.
100. Six keys to normal occlusion.
101. Lip position analysis.
102. Causes of root resorption.
103. Heredity versus relapse in orthodontics.
104. Pulpal changes during orthodontic treatment.
105. Total space analysis.
106. Severe maxillary constriction – etiology.
107. Contour photography.
108. V. T. O.
109. Photocephalometrics.
110. Sassouni's analysis.
111. Location of impacted canines by radiographic technique.
112. Soft-tissue cephalometric analysis.
113. Tomographs.
114. Xeroradiography.
115. Intra-oral X-rays in orthodontics.
116. Rapid assessment of cephalometrics for clinical purposes.

117. Limitations of orthodontic treatment.
118. IOTN.
119. Little's irregularity index.
120. PAR.
121. ANB angle.
122. Holdaway ratio.
123. Methods of gaining space in orthodontics.
124. Kesling's diagnostic set-up.
125. Headgear- Herbst.
126. Myodynamic appliances.
127. Chin analysis.
128. Asymmetry of jaws.
129. Duration of jaws.
130. Management of border line cases.
131. Etiological classification of impaction.
132. Model analysis.
133. FR II versus activator.
134. Placement of lower incisor to the mandibular plane.
135. Model analysis.
136. Advances in the biology of tooth movement.
137. Limitations of orthodontic treatment in an unco-operative pediatric patient.
138. Lower incisor extractions.
139. Secondary alveolar bone grafts.

140. 141. Behavioral conditioning.
142. Interceptive orthodontics.
143. Warren Maynes postulate on incisor imbrication.
144. Short face syndrome.
145. Rickett's cephalometric analysis.
146. Caries control in orthodontics.
147. Stripping of teeth.
148. Coplanar X-rays.
149. Developmental age.
150. Space adjustment during the mixed dentition stage.
151. Importance of nasiolabial angle.
152. Oblique-jaw radiography.
153. Spoilt child.
154. Orthodontics & facial aesthetics.
155. Pattern, variability & timing of growth.
156. Role of retention in orthodontics.
157. Impacted maxillary canines.
158. Fronto-facial analysis.
159. Canine calcification as an indicator of skeletal growth.
160. Evaluation of dental arch length discrepancy.
161. Airway problems & their related diagnostic procedures.
162. Occlusal indices.
163. Gnathostatic models.

164. Cephalometric extraction criteria.
165. Limitations of ANB angle.
166. Di Paolo's quadrilateral analysis.
167. Ricketts 4-step analysis.
168. Soft tissue analysis for Orthognathic Surgery.
169. Witt's analysis.
170. Incompetent lips.
171. Role of orthodontist in treatment of cleft palate.
172. Optimal orthodontic force.
173. Management of deep bite.

PAPER III (Clinical Ortho & Mechanotherapy) – LONG ESSAYS – 20 Marks

1. Discuss orthopedic forces in Class II and Class III malocclusions.
2. Enumerate removable functional appliances used for growth modification of Class II problems. Describe in detail treatment effects of bionator in treatment of Class II malocclusion.
3. Twin block appliance. Give a comparative assessment of Activator, Frankel & fixed therapy in Class II div 1 malocclusion.
4. Enumerate fixed functional appliances used for growth modification of Class II problems. Describe in detail treatment effects of Jasper Jumper in treatment of Class II malocclusion.
5. Discuss different model analyses & describe in detail clinical relevance of these for diagnosis & treatment planning.
6. Requisites of removable appliances & the parts with their ideal functions.
7. What are the effects of orthodontic force on maxilla & midface? Discuss.
8. Enumerate & describe the role of the variables that contribute to friction at the bracket-archwire interface. Add a note on the significance of notching & binding & their clinical management.
9. Write a critique on the refinements in the Begg appliance components & philosophy. How do these refinements aid in obtaining improved treatment outcome.
10. Discuss the recent wires used in straight wire appliances.
11. Critically evaluate the various torque prescriptions in different straight wire appliances.
12. Leveling intrusion.
13. Discuss different methods of canine retraction & problems with anchorage.
14. Bypass arches. Types & uses of loops in orthodontics.
15. Torquing of incisors in various techniques torquing of roots.
16. Application of Nance appliance & its modification in orthodontic treatment.
17. Treatment of deep bite & treatment of borderline cases. What is the ideal appliance?
18. What is common sense mechanics?
19. Discuss the various types of anchorage philosophy in fixed appliance therapy. What is reciprocal anchorage & its importance?

20. Current status of Begg appliance & edgewise appliance.
21. Critical analysis of leveling of curve of Spee.
22. Discuss biomechanical advantage of Begg & Jarabak technique.
23. Lingual orthodontics & modular orthodontics.
24. Head gears.
25. Comparative assessment of Begg's & edgewise procedures in premolar extraction & correction procedures.
26. Pre-adjusted appliance.
27. Level anchorage system.
28. Universal appliance.
29. Tandem mechanics.
30. Segmented arch technique.
31. Begg's technique – why is it a philosophy? Write about differential force system, anchorage loss & anchorage preservation.
32. Write about Begg's stage III – problems encountered & ways to correct them.
33. Limitations & future of orthodontic treatment.
34. Limitations of orthodontic treatment in high angle cases. Modifications?
35. Limitations of Tweed's edgewise technique. Modifications?
36. Borderline cases & their management.
37. Treatment of anterior crossbite.
38. What is frictionless retraction mechanism?
39. Arch forms. Preformed arches. Explain what is a catenary curve.
40. Write about elastics, e-chains, their forces generated, force degradation, & fluoride-releasing types.
41. Methods of molar distalization.
42. Methods of molar uprighting.
43. Describe mesiodistal & buccolingual control of molars using various techniques.
44. Explain "Orthodontic-Prosthodontic" relationship.
45. Discuss the advantages, disadvantages & implications of incorporating 1st, 2nd & 3rd order control in the bracket in preadjusted edgewise appliances as opposed to traditional edgewise appliance. Discuss the biological parameters that detract from attaining full expression of built-in values of the preadjusted bracket.

46. Discuss the various approaches & modalities of opening the bite in skeletal deep bite subjects. Add a note on the impact of such bite opening procedures on the vertical dimension.
47. What are passive tooth borne appliances? Discuss Herbst appliance.
48. Describe the application of biomechanics to orthodontic force system.
49. Enumerate the fixed functional appliances used for growth modulation of skeletal Class II problems. Describe in detail the clinical steps & treatment effects of Jasper Jumper in correction of Class II problems.
50. Theories of retention. Factors stabilizing treatment results?
51. Critical analysis of leveling curve of Spee.
52. Describe the finishing & detailing procedures using pre-adjusted edgewise & Begg appliance.
53. Discuss the indications for non-extraction treatment. What procedures have facilitated the shift from extraction to predominantly non-extraction treatment trend in the recent years?
54. Discuss the merits & demerits of Straight wire appliance.
55. Discuss various methods adopted in preventing relapses.
56. Enumerate the effects of functional appliances in & around condylar cartilage. Give a brief summary of one latest study on this topic.
57. Compare mechanism of bite-opening in Begg & edgewise appliance.
58. Problems of treatment timing in facial growth.
59. Discuss critically Angle's concept of "ideal occlusion" & "a full complement of teeth."
60. Discuss in detail the lingual orthodontic technique, its advantages & disadvantages.
61. Discuss biomechanical advantages of techniques like Begg & Jarabak.
62. Discuss orthopedics in day to day orthodontics.
63. Discuss clinical relevance of mandibular third molars in relation to lower incisor crowding.
64. Indirect bonding procedure in orthodontics, its advantages & disadvantages.
65. Treatment of ectopic canines.
66. Begg vs Tweed philosophy & technique.
67. Criteria for selection of techniques in orthodontics.
68. Discuss different types of elastics used in different techniques.

69. Discuss in brief the various treatment procedures carried out during mixed-dentition period.
70. Discuss the statement – “the case, efficacy & duration of the III stage of Begg treatment will depend on how well the I & II stages are managed.
71. Discuss Begg’s philosophy of differential force systems in orthodontic treatment.
72. Discuss the concept of correct bracket positioning.
73. Describe the behaviour of mandibular teeth during orthodontic treatment.
74. Canine retraction with removable appliances.
75. First permanent molar extractions in orthodontics.
76. Discuss the bony profile changes resulting from the cervical traction & intermaxillary elastics.
77. Write in detail the electron microscopic study of acid etched enamel.
78. Discuss the analysis of the components of forces used to effect distal movement of teeth.
79. Discuss the major stages of comprehensive treatment in edgewise appliance.
80. Discuss the progressive merits of various types of fixed appliances.
81. Discuss the behaviour of TMJ response to myo-functional treatment modalities in disto-occlusion. Add a note on muscular adaptation also.
82. Discuss the rationale & biologic basis of using headgears to correct maxillary protrusion. Add a note on the common injuries with head gear usage & their prevention.

PAPER III (Clinical Ortho & Mechanotherapy) – SHORT ESSAYS – 10 MARKS

1. Tooth positioner.
2. Removable bite plates.
3. Different removable retention appliances.
4. Schwartz's plate.
5. Arrowhead clasp.
6. TMA wires & 18-8 stainless steel.
7. Heat treatment of orthodontic wires.
8. Finishing wires used for PEA & Begg's techniques.
9. Recycling of NiTi wires.
10. Tooth colored archwires.
11. Simon's classification.
12. Treatment of vertical deficiency.
13. Twin Block appliance.
14. Functional appliances for maxillary protraction.
15. Rapid Palatal Expansion.
16. Facial asymmetry.
17. Clinical management of functional appliances.
18. Rotation wedges.
19. Load deflection rate.
20. Digital photography.
21. Two-piece corrector.
22. Moment – to – force ratio.
23. Anterior root torque.
24. Molar distalization.
25. White spots & their clinical management.
26. Utility arches.
27. Clinical adjuncts in bite opening.
28. Fluoride releasing adhesives.
29. Adhesion enhancers.
30. Different types of torque in Begg stage III.

31. Different methods of elastic application.
32. Correction of midline discrepancies.
33. Different methods of correcting impacted canines.
34. Any one molar distalizer of your choice.
35. Correction of bimaxillary protrusion.
36. T-loop & M-loop.
37. Lingual arches.
38. Driftodontics.
39. Rapid Vs Slow palatal expansion.
40. NiTi palatal expanders.
41. Magnets for aligning impacted teeth.
42. Bonded lingual retainers.
43. Tip-edge appliance.
44. Recycling of fixed appliance components.
45. Self-ligating brackets.
46. Space control in orthodontics.
47. Bioprogressive technique.
48. Functions of loops in orthodontic archwires.
49. Invisible orthodontics.
50. Treatment of non-vital tooth.
51. Reverse torque.
52. Finishing & detailing in Begg technique.
53. Distal jet appliance.
54. Implants as anchorage.
55. 2 X 4 appliance.
56. Stability of derotated teeth, post-treatment measurement of anterior open bite.
57. Bonded retainers.
58. Methods of correcting bilateral crossbite.
59. Bite-jumping appliances.
60. Bio-progressive therapy.
61. Use of computers in orthodontics.
62. En-masse retraction in any 3 different fixed appliance techniques.
63. Management of "gummy smile."

64. Concepts of functional occlusion.
65. Incompetent lips.
66. Late imbrication of lower incisors.
67. Ectopic teeth.
68. Retraction appliances used in cleft lip & palate patients.
69. Methods of reinforcing anchorage.
70. Torquing auxiliaries in the III stage of Begg.
71. Direct vs indirect bonding.
72. Management of a unilateral highly placed labial canine in a developed & well-aligned arch.
73. Preadjusted brackets.
74. Distal driving.
75. Bionator.
76. Bimetric system.
77. Implants in orthodontics.
78. Eureka spring.
79. Dual arch appliance.
80. Magnets in orthodontic.
81. Mini springs.
82. MARS appliance.
83. Role of speech in orthodontics.
84. Balista spring.
85. Vari-simplex discipline.
86. Johnson's twin wire appliance.
87. Crozat's appliance.
88. Labio-lingual appliance.
89. Mushroom appliance.
90. Delaires face mask.
91. Super-elastic phenomenon in nickel titanium archwires.
92. Fluoride induced enamel remineralization.
93. Role of friction in sliding mechanics.
100. Nickel induced allergy & its management.

101. Gnathologic positioners.
102. Frictionless retraction mechanics.
103. Arch form.
104. Aligning – principles involved.
105. Oral physiotherapy.
106. Occlusal equilibrium.
107. Aesthetic finishing.
108. Debonded enamel surface.
109. Torquing auxiliaries & modifications.
110. Bonding & debonding.
111. Concepts of Tweed & orthodontic treatment.
112. Distal jet appliance.
113. Third degree anchorage.
114. Combination techniques.
115. Aligning & leveling.
116. Haas palatal expander.
117. Margolis ACCO appliance.
118. Distraction osteogenesis.
119. Monobloc.
120. Serial extractions.
121. Retention & Relapse
122. Adult orthodontics.
123. Magnets.
124. K-loop.

125. Indication and contraindications of FR III, its construction & patient instructions.
126. Active vertical corrector.
127. Oral screen.
128. Mode of action of Jasper Jumper.
129. Cybernetic model as related to functional appliance theory.
130. Inclined plane.
131. Balter's theory & approach to functional appliances.
132. Norwegian appliance.
133. Effects of Class II elastics.
134. Phantom activator effect.
135. Hybrid orthodontic appliances.
136. Philosophy of North American type activators.
137. Progressive torque.
138. Activator headgear combination therapy.
139. Rick-a-nator.
140. Bonded RPE.
141. Schwartz appliance.
142. Biomechanics of Begg's stage III.
143. Removable bite plates.
144. Muscle anchorage appliance.
145. Oral physiotherapy.
146. Bite registration procedure in different functional appliances.
147. Neo-myofunctional appliance.
148. FR II.
149. Torquing auxiliaries in the III stage of Begg treatment.
150. Indications in Frankel's appliance.
151. Coil springs.

PAPER IV – 100 MARKS ESSAYS.

1. Role of magnets in orthodontics.
2. Describe materials & technique advancement in esthetic invisible orthodontics. Mention Chitra band material and composites.
3. Ceramic brackets (with trade names), Speed brackets, Sapphire brackets, Plastic brackets, Zirconia brackets.
4. Application of computers in clinical orthodontics.
5. Current modifications in orthodontic attachments.
6. Recent advances in methodology of diagnosis & treatment planning in orthodontics.
7. Balanced diet & importance of nutrition & its effect on teeth & jaws.
8. Current status of orthodontics in India. Changing concepts of orthodontic force.
9. Hormones & drugs affecting tooth movement in orthodontics. Mention about the advances in biology of tooth movement.
10. Bradts plastic guide.
11. Physio print / Contour photography.
12. Planning orthodontic services for a country like India. How would you educate the patient.
13. Recent advances in growth studies.
14. Clinical photography in orthodontics.
15. Hypnosis in clinical orthodontics.
16. Onplants, implants & its importance in orthodontics.
17. Lasers in orthodontics.
18. Wires in orthodontics.
19. Rules of formation of Indian Orthodontic Society & the responsibilities of an orthodontist.
20. Infection risks & sterilization & different methods of sterilizing orthodontic wires.
21. Current controversies in orthodontics. Explain the statement – “the swing of pendulum between extraction & non-extraction approaches.”
22. Face, in orthodontic perspective. Esthetic components in orthodontics.
23. Discuss principles of electromyography & its application in orthodontic diagnosis.
24. Recent advances in orthodontic imaging.

25. Evolution of & current practice in the use of light forces in orthodontic tooth movement.
26. Stone age dentition.
27. Dentition in primates. Compare it with human dentition.
28. Recent concept of malocclusion & its influence on orthodontic treatment objective.
29. Extraction in orthodontics. Which teeth & why? What are the types of extraction.
30. Dermatoglyphics in dentistry. Importance of prophecy in orthodontics.
31. Serial extraction.
32. Begg technique today.
33. Management of Class II malocclusion.
34. Ricketts contribution to orthodontics. Explain the term golden/divine proportions.
35. McNamara's contribution to orthodontics.
36. Value of prophecy in orthodontics.
37. Surgical orthodontics.
38. Functional matrix hypothesis & its clinical applications.
39. Orthodontics – a patient's point of view.
40. Recent technological advances which have resulted in improved standards of orthodontic treatment.
41. Management of excess facial height in different age groups.
42. Latest trends in methodology of diagnosis & treatment on orthodontics.
43. Current status of orthodontics as a health service in India & elsewhere.
44. Cephalometrics in orthodontics.
45. Lingual appliance.
46. Soft tissue cephalometric analysis.
47. Torque in orthodontics.
48. Retention & Relapse.
49. Classification of skeletal facial types.
50. Computers in orthodontics.
51. Early management in developing malocclusion.
52. Infection control in orthodontics.
53. Anchorage in orthodontics.
54. Orthodontic case analysis.
55. The methods of research in human growth.

56. Fixed functional appliances.
57. Extraction vs non-extraction.
58. Late vs early management.
59. Genetics & orthodontics.
60. Limitations of orthodontic treatment.
61. Early management of developing malocclusion.
62. The evolution & the state of the art in ceramic brackets in orthodontics.
63. Orthodontics & TMJ dysfunction.
64. Need based orthodontic training in post-graduates.
65. Orthodontic treatment in the mixed dentition period.
66. Evolution of orthodontic mechanotherapy.
67. Anterior deep bite – A challenge.
68. Maxillary protrusion.
69. Tissue response to orthodontic treatment.
70. Malfunction of tongue.
71. Non-extraction: A panacea for all orthodontic problems.
72. “Status of orthodontics in India” – your comments.
73. Biomechanical principles of orthodontics.
74. Aesthetics in orthodontics.
75. Technique dogma in orthodontics.
76. Role of orthodontist in cleft lip & palate treatment.
77. Evolution of orthodontic appliances.
78. Planning orthodontic service to a country like India.
79. Combination approach to improve Begg therapy.
80. Different factors to consider before you start an orthodontic practice in your community.
81. Adult orthodontics.
82. Cephalometrics.
83. Direct bonding in orthodontics.
84. Likely changes in orthodontic therapy in the next decade.
85. Prevention of developing malocclusion – Discuss.
86. Straight wire appliance.
87. Class III malocclusion – its diagnosis, prevention & correction.]

88. Epidemiology of malocclusion.
89. Skeletal deformities & surgical correction.
90. Bioprogressive philosophy in orthodontics.
91. Orthodontic practice management.
92. Edgewise appliances, their history & evolution.
93. Evolution & state of the art in archwire materials.
94. Diagnostic aids in orthodontics.