

**WST-DCI-2019-MDS-ORTHO-P-2-SET-1-B**

Printed Pages: 15

Sr. No. **50002**

**WST-DCI-2019-MDS-ORTHO-P-2-SET-1-B**

Total Questions: 150

Max. Marks: 150

Time: Three Hours

Roll No. (in figures) .....

(in words).....

.....  
**(Signature of Candidate)**

**I have checked the entries made above and in the OMR Sheet by the candidate.**

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**(Signature of invigilator)**

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**CANDIDATES MUST READ THE FOLLOWING INFORMATION/ INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.**

1. All the candidates must return the test booklet as well as answer-sheet to the Invigilator concerned before leaving the Examination Hall. If any candidate leaves the examination hall without handing over the test booklet/ answer sheet to the Invigilator, a case of use of unfair means/ misbehavior will be registered against him/ her in addition to lodging an FIR with the Police. The answer-sheet of such a candidate will not be evaluated.
2. The candidates must not do any rough work or writing work in the answer-sheet (OMR Sheet). All rough work is to be done in the test booklet.
3. Candidates will be required to darken the circle by using **blue/ black ball point pen** only.
4. Books, papers, slide rule, log table, cellular phone, pager, calculator or any other electronic gadget etc. are not allowed in the Examination Hall.
5. BEFORE ANSWERING THE QUESTIONS, THE CANDIDATES SHOULD ENSURE THAT THEY HAVE BEEN SUPPLIED THE CORRECT AND COMPLETE TEST BOOKLET CONTAINING SR. NO.1 TO 150 QUESTIONS, COMPLAINTS REGARDING MISPRINT ETC. WILL NOT BE ENTERTAINED 15 MINUTES AFTER THE EXAMINATION IS STARTED.

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1. The major reason for not recycling & reusing brackets?  
(A) Non recyclable  
(B) Recycled brackets are efficient  
(C) It is difficult to remove the bracket without distorting the base  
(D) All of the above
  
2. The ratio of head to body at 2-3 months of Intra uterine life is:  
(A) 1:2  
(B) 1:8  
(C) 1:12  
(D) 1:24
  
3. Who was first to study the growth changes of the face?  
(A) Bjork  
(B) Humphrey  
(C) Kingsley  
(D) Hunter
  
4. Beta angle can be used to assess the craniofacial structure in which of the following dimension of space?  
(A) Transverse  
(B) Vertical  
(C) Sagittal  
(D) All of the above
  
5. Protein kinase enzyme are considered as:  
(A) 1<sup>st</sup> messenger for tooth movement  
(B) 2<sup>nd</sup> messenger for tooth movement  
(C) 3<sup>rd</sup> messenger for tooth movement  
(D) Inhibitors for orthodontic tooth movement
  
6. Orthodontic bonding with porcelain surface is achieved by which of the following steps:  
(A) Sandblasting the surface  
(B) Silane treatment of porcelain surface before bonding  
(C) 9% HF acid etching  
(D) All of the above
  
7. Root control is needed for more than:  
(A) 2-3 mm of crown movement  
(B) 1-2 mm of crown movement  
(C) 4-5 mm of crown movement  
(D) 3-4 mm of crown movement
  
8. Which of the following is not Synostosis syndrome  
(A) Treacher Collin Syndrome  
(B) Apert Syndrome  
(C) Calvin Case Pfeiffer Syndrome  
(D) Crouzon Syndrome
  
9. The term orthodontia was given by:  
(A) Angle  
(B) Le-Foulon  
(C) Angell  
(D) Albert Ketcham

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10. The concept of driftodontics was popularized by:  
(A) William Wilcko (B) Ronald Roth  
(C) Wick Alexander (D) Howard Lang
11. Lateral Cephalogram of a patient shows W angle < 51 degree, it is suggestive of:  
(A) Class I malocclusion (B) Class II malocclusion  
(C) Class III malocclusion (D) Deep bite
12. Which Pharyngeal arch is absent in embryo during development:  
(A) 2 (B) 5  
(C) 7 (D) 6
13. Which loop has great mechanical advantage of no residual moment:  
(A) Rickets (B) Gjessing  
(C) Opus (D) Mushroom
14. Trifocal ellipse is:  
(A) Braiders' arch form (B) Rickets arch form  
(C) Mushroom shaped form (D) Bonwill Hawley form
15. Staging of tooth movement in aligners has maximum linear and relative velocity of:  
(A) 0.18 mm and 2 degrees (B) 2 mm and 4 degrees  
(C) 0.25 mm and 2 degrees (D) 2 mm and 6 degrees
16. Laser etching cause thermal induced changes within the enamel to a depth of:  
(A) 10-20 micrometer (B) 5-10 micrometer  
(C) 20-30 micrometer (D) 15-30 micrometer
17. Alternative to etching with phosphoric acid:  
(A) Maleic acid (B) Polyacrylic acid  
(C) Self etching primers (D) All of the above
18. Important aspect of the mini aesthetic is:  
(A) Incisor height/width ratio (B) Black triangle  
(C) Connectors (D) Buccal Corridors
19. Which of the following is/are second order bend:  
(A) Tip bends (B) Start up bends  
(C) Artistic positioning bends (D) All of the above
20. Low level laser therapy uses wavelength of:  
(A) 200-400 nm (B) 600-1000 nm  
(C) 1500-2000 nm (D) 30-100 nm

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21. Power ridges is a smart force feature used in:  
(A) Lingual orthodontics (B) Labial orthodontics  
(C) Aligner therapy (D) Myobrace therapy
22. Australian wire, which is round austenitic wire most commonly used with Begg,s differential light force technique is manufactured by:  
(A) Heat treated and Cold drawn (B) Cold treated and Heat drawn  
(C) Annealed and Cold drawn (D) Spring drawn and Cold treated
23. When bonding to amalgam is required in orthodontic practice which of the following is selected for the purpose?  
(A) TEGMA (B) UDMA  
(C) 4 - META (D) Cyanoacrylate
24. Which of the following metals show the property of Twinning?  
(A) Stainless steel (B) Nickel- Titanium  
(C) Cobalt - Chromium (D) All of the above
25. An increase in elastic properties of stainless steel can be obtained by:  
(A) Heat treatment  
(B) Work hardening  
(C) Both of the above  
(D) Once stainless steel is hardened , its elastic properties cannot be changed
26. In orthodontics, which of the following systems is used for Non metallic direct adhesion:  
(A) Salt matrix adhesion (B) Resin matrix adhesion  
(C) Both of these (D) None of these
27. Sensitisation of austenitic stainless steel occurs at temperature range of:  
(A) 300-600 degree Celsius (B) 400-700 degree Celsius  
(C) 400-900 degree Celsius (D) 500-1200 degree Celsius
28. Magnets are used in orthodontics practise for various purposes. The magnetic force follows the:  
(A) Inverse square law (B) Coloumb's law  
(C) Gravitational law (D) Law of electrostatic
29. Which of the following oral habits gets developed during intrauterine stage?  
(A) Atypical swallowing (B) Tongue thrusting  
(C) Thumb sucking (D) Lip sucking
30. Which was the first cephalometric analysis to emphasis horizontal relationships and interaction between vertical and horizontal proportion:  
(A) Wits analysis (B) Sassouni analysis  
(C) Ricketts analysis (D) Jaraback analysis

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31. According to envelope of discrepancy, maximum amount of upper incisor retraction achieved is:  
(A) 7mm (B) 16mm  
(C) 9mm (D) 26mm
32. Which of the following is the most common cause of gummy smile:  
(A) Tipped down pre maxilla (B) Gingival enlargement  
(C) Short upper lip (D) Maxillary vertical excess
33. During which of the following orthodontic tooth movement , the centre of rotation is at the bracket slot:  
(A) Controlled tipping (B) Torque  
(C) Tipping (D) Rotation
34. The resiliency of orthodontic wire as regards to its cross section will:  
(A) Increase with increase in cross section  
(B) Decrease with increase in cross section  
(C) Remains same  
(D) Independent of cross sectional area
35. When two solid surfaces are pressed together or, one slide over the other, the real contact occurs only at a limited number of small spots called:  
(A) Ridge (B) Groove  
(C) Aperities (D) Peak
36. The unit of measure of moment is:  
(A) Newton (B) g mm  
(C) Grams (D) a. and b.
37. Nomogram was developed by:  
(A) Burston (B) Kusy  
(C) Andrew (D) Root
38. How much minimum clearance is needed for wire to slide in orthodontic bracket slot:  
(A) 1 mil (B) 2 mil  
(C) 3 mil (D) 4 mil
39. Which of the following is an example of dynamic anchorage:  
(A) Sved plate (B) Transpalatal arch  
(C) Tip back bends (D) Nance palatal button
40. Occlusal forces are tolerated mostly by which group of periodontal ligament fibres:  
(A) Apical (B) Oblique  
(C) Horizontal (D) Transeptal

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41. Cyclic nucleotide level appears and increases in periodontal ligament tissue after how many hours of force application:  
(A) 2 (B) 3  
(C) 4 (D) 7
42. Small electrical potential preceding bone bending is called:  
(A) Piezo electric signal (B) Streaming potential  
(C) Alternate electric potential (D) Electromagnetic potential
43. Large, multinucleated cells in Howship's lacunae are:  
(A) Osteoblast (B) Osteoclast  
(C) Osteocyte (D) Cementoblast
44. The first bone formed in response to orthodontic loading is:  
(A) Lamellar (B) Woven  
(C) Compact (D) Composite
45. Which of the following provides the best description of natural dental arch:  
(A) Catenary curve (B) Brader arch  
(C) Bonwill Hawley's (D) Ellipse
46. Apertognathia refers to:  
(A) Open bite (B) Deep bite  
(C) Cross bite (D) Scissor bite
47. The concept of morphologic/ developmental fields was put forward by:  
(A) Spemann and Mangold (B) Spemann  
(C) Mangold (D) Moss
48. Which of the following indexes is used to assess the cleft treatment outcome:  
(A) Goslon Yardstick (B) 5 year olds' index  
(C) 10 year olds' index (D) All of the above
49. Homeobox Genes were first identified in which organism:  
(A) Hedgehog (B) Drosophila melanogaster  
(C) Homo sapiens (D) Drosophila suzukii
50. Which austenitic Stainless Steel is used for the fabrication of Stainless Steel Brackets:  
(A) AISI 304 (B) AISI 316  
(C) AISI 302 (D) AISI 308
51. The credit for developing the 0.018 slot goes to:  
(A) Angle (B) Rickets  
(C) Steiner (D) Tweed

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52. Bimetric Appliance was given by:  
(A) Schudy (B) Alexender RG  
(C) Ricketts (D) Burstone
53. Which appliance is also known as skeletalized Activator:  
(A) Frankel II (B) Bimler Appliance  
(C) Bionator (D) Twin Block
54. Which is the last synchondrosis which undergo ossification:  
(A) Spheno—Ethmoid (B) Intersphenoid  
(C) Spheno-occipital (D) Interethmoid
55. Nd:YAG laser has a wavelength of:  
(A) 1064nm (B) 1584nm  
(C) 514nm (D) 478nm
56. Magnets in Orthodontics was introduced by:  
(A) Behrman &Egan (B) Blechman & Smiley  
(C) Cerny (D) Dellinger
57. Gnathostatic study models are the orthodontic study models in which:  
(A) Base of the mandibular cast is trimmed to correspond to the FH plane  
(B) Base of the maxillary cast is trimmed to correspond to the FH plane  
(C) Both a and b  
(D) None of the above
58. Who coined the term “Hypodivergent” and “Hyperdivergent” :  
(A) Bjork (B) Sassouni  
(C) Schudy (D) Rakosi
59. Middle layer of Optiflex wire contains:  
(A) Silicon Dioxide (B) Strain resistant Nylon  
(C) Teflon (D) Silicon resin
60. Play in 0.022 inch slot bracket with a 0.19X0.25 wire:  
(A) 10° (B) 2.3°  
(C) 6.9° (D) 4.3°
61. Moment is defined as  
(A) Force x distance from centre of resistance  
(B) Force x distance from centre of rotation  
(C) Force x modulus of elasticity  
(D) Force x stiffness

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62. Pierre Robbins Syndrome is characterized by  
(A) Cleft palate with retrognathic mandible  
(B) Cleft palate with prognathic mandible  
(C) Cleft palate with orthognthic mandible  
(D) Cleft palate with prognathic maxilla
63. Rapid maxillary expansion is assessed clinically by  
(A) appearance of anterior crossbite  
(B) appearance of median diastema  
(C) appearance of generalized spaces in maxilla  
(D) no change in the position of incisors
64. Which bend is used for anchorage control  
(A) First order bend (B) Second order bend  
(C) Third order bend (D) None of the above
65. Artistic positioning bend is  
(A) First order bend (B) Second order bend  
(C) Third order bend (D) None of the above
66. To prevent relapse of derotated tooth, which surgery is recommended  
(A) Frenectomy  
(B) circumferential supracrestal fiberotomy  
(C) Both of them  
(D) None of them
67. Molar distalization is contraindicated in individuals with  
(A) Vertical growth pattern (B) Horizontal growth pattern  
(C) Average growth pattern (D) Growing individuals
68. Serial extraction is done in individuals with  
(A) Severe crowding (B) Anterior crossbite  
(C) Proclined anterior teeth (D) Anterior open bite
69. Sliding mechanics for space closure is done with  
(A) TMA wire (B) NiTi wire  
(C) Stainless steel wire (D) Cu NiTi wire
70. Force decay is rapid with  
(A) Stainless steel coil spring (B) NiTi coil spring  
(C) Elastic chain (D) Both SS coil spring and NiTi spring
71. To avoid overhanging of mesiolingual cusp of maxillar first molar during expansion, it requires  
(A) Lingual root torque (B) Increased Buccal root torque  
(C) No torque (D) Bayonet bend
72. Which of the following is not corrected by functional appliance?  
(A) Sagittal dysplasia (B) Transverse dysplasia  
(C) Dental midline shift (D) Skeletal midline shift

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73. The following modifications were done in MBT appliance  
(A) Reduced tip in incisors (B) Increased torque in incisors  
(C) Both a & b (D) Tip & torque remain unchanged
74. Individualized arch form in MBT was made after alignment with  
(A) 016x022 inch NiTi archwire (B) 017x025 inch NiTi archwire  
(C) 018x025 inch NiTi archwire (D) 019x025 inch NiTi archwire
75. Pterygoid response with functional appliance appears  
(A) Within a few days (B) Within a few weeks  
(C) Within a few months (D) Not at all
76. Ceramic brackets can be used  
(A) For esthetic appearance (B) For reduced friction  
(C) In individuals with Nickel allergy (D) For both reasons a & c
77. Inadequate sample size may be the cause of  
(A) Type I error (B) Type II error  
(C) Both Type I and Type II errors (D) Neither type I nor type II error
78. Alveolar bone loss leads to  
(A) Apical shift of centre of resistance  
(B) Occlusal shift of centre of resistance  
(C) Shift of centre of resistance in either direction i.e apical or occlusal  
(D) No change in centre of resistance
79. Moment to force ratio for root torquing should be  
(A) 5:1 (B) 7:1  
(C) 10:1 (D) 12:1
80. Deep bite correction in adults is preferred by :  
(A) Both anterior intrusion and posterior extrusion  
(B) Anterior intrusion only  
(C) Posterior extrusion only  
(D) None of these
81. Molar extrusion is contraindicated with  
(A) Vertical growth pattern (B) Horizontal growth pattern  
(C) Average growth pattern (D) None of the above
82. Interarch Elastics are contraindicated in  
(A) Horizontal growth pattern (B) Vertical growth pattern  
(C) Average growth pattern (D) None of these
83. Median diastema appearing at the age of 8 years generally requires  
(A) Fixed appliance therapy (B) Removable appliance therapy  
(C) Lip exercises (D) No treatment

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84. In hydrocephaly, due to increased intracranial pressure, which of the following is true  
(A) Cranial roof expands more than cranial base  
(B) Cranial base expands more than cranial roof  
(C) Cranial base and cranial roof expand by the same amount  
(D) Both cranial base and cranial roof can expand unpredictably
85. Which of the following Synchronoses is a major contributor to growth?  
(A) Spheno-ethmoidal (B) Spheno-occipital  
(C) Intra occipital (D) None of the above
86. Cephalometric analysis are used to evaluate growth changes by superimposing on:  
(A) Sella-nasion plane (B) Mandibular plane  
(C) Palatal plane (D) Occlusal plane
87. Which of the following Orthodontic arch wire has maximum surface friction:  
(A) Stainless steel wire (B) AJW wire  
(C) TMA wire (D) Niti wire
88. A patient is involved in chronic mouth breathing, the clinical examination of patient reveals:  
(A) Convex profile, long face (B) Concave profile, long face  
(C) Convex profile, short face (D) Concave profile, short face
89. Percentage of posterior facial height to anterior facial height is known as:  
(A) Jackson Ratio (B) Ackerman Ratio  
(C) Morley Ratio (D) Jaraback ratio
90. Inclination angle indicates:  
(A) Inclination of mandibular plane to cranial base  
(B) Inclination of Palatal plane to cranial base  
(C) Inclination of occlusion plane to cranial base  
(D) Inclination of mandibular incisors
91. First order bends are :  
(A) Torqueing bends (B) Anchor bends  
(C) Tip back bends (D) In and out bends
92. Relapse after derotation of a rotated tooth can be prevented by  
(A) circumferential Supracrestal Fibrotomy  
(B) pericision  
(C) long term retention  
(D) All the above
93. Two hemi of mandible fuse at the symphysis around:  
(A) one years of age (B) three years of age  
(C) four years of age (D) Do not fuse at al
94. Average Korkhous palatal Index value is:  
(A) 10-15% (B) 15-20%  
(C) 40-50 % (D) 60-80%

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95. Which of these is a nickelfree Orthodontic wire?  
(A) Stainless steel wire (B) Elgiloy wire  
(C) Cobalt chromium alloy wire (D) Beta titanium wire
96. Saddle angle is formed by joining these cephalometric points:  
(A) Nasion-sella-Gonion (B) sella -articulare-Gonion  
(C) Articulare -Gonion-Menton (D) Gonion -Menton –Nasion
97. Center of resistance of a tooth is based on the following EXCEPT:  
(A) Size & shape of tooth (B) PDL attachment  
(C) Tooth position (D) level of alveolar bone
98. Turbo wire in Orthodontics is:  
(A) Dual flex wire (B) Esthetic wire  
(C) Braided nickel Titanium wire (D) Copper nitewire
99. "C" Anchorage in Orthodontics describes:  
(A) Critical Anchorage (B) Moderate Anchorage  
(C) Noncritical Anchorage (D) Temporary Anchorage
100. Acid etching removes the Enamel surface when etched by Orthophosphoric acid (35% for 20- 30 sec) by:  
(A) 10 $\mu$ m (B) 50  $\mu$ m  
(C) 100  $\mu$ m (D) 150  $\mu$ m
101. Uprighting spring is used to-  
(A) derotate a tooth  
(B) move the root in mesiodistal direction  
(C) move the root in palatal direction  
(D) closure of space
102. All of these are sign of vertical growth rotation of mandible except:  
(A) Large gonial angle (B) Large mandibular plane angle  
(C) High jaraback ratio (D) Deep antigonialnotch
103. Andrew's first key to normal occlusion deals with  
(A) Crown angulation (B) Crown inclination  
(C) Molar relationship (D) Plane of occlusion
104. Column angle is highest in which malocclusion?  
(A) Class 2 divisions 1 malocclusion (B) Class 2 division 2 malocclusion  
(C) Bilateral posterior cross bite (D) Class 3 malocclusion
105. An impacted or unerupted maxillary canine may be located most accurately by means of  
(A) Periapical and lateral jaw roentgenograms  
(B) Periapical and occlusal roentgenograms  
(C) Lateral jaw roentgenogram alone  
(D) Cephalogram

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106. All of these drugs may inhibit the Orthodontic tooth movement except:  
(A) Bisphosphonates (B) doxycycline  
(C) Indomethacin (D) Prostaglandin
107. In Harvold analysis ,mandibular length is measured from:  
(A) gonion to menton point (B) gonion to gnathion point  
(C) condylon to pogonion point (D) gonion to pogoion point
108. Models for clear aligner therapy are made by the process called:  
(A) Stereography (B) sterolithography  
(C) Steroangiography (D) stereocranigraphy
109. Quenching the soldered assembly immediately after introduction of heat is to:  
(A) Limit the flow of flux (B) Limit the flow of anti flux  
(C) Limit the flow of solder (D) Limit the spread of heat
110. Arch space for the eruption of 3rd molars is created by:  
(A) Apposition of alveolar process  
(B) Resorption of posterior border of Ramus  
(C) Resorption of anterior border of Ramus  
(D) Apposition of lower body of mandible
111. Mordex normalis, rectus and apertus is a classification of malocclusion given by:  
(A) Edward H Angle (B) Lischer  
(C) Carabelli (D) Strang
112. Incisor classification for malocclusion was given by  
(A) Ballard and Wayman (B) Simon  
(C) Ackerman an Profit (D) Katz
113. Index of complexity, outcome and need (ICON) was given by  
(A) Grainger (B) Daniels and Richmond  
(C) Shaw et al (D) None of the above
114. Gene involved in growth and development of cartilage and bone are  
(A) Sox 9 (B) Indian hedgehog  
(C) IGF (D) All the above
115. The mechanism by which growth of naso maxillary complex occurs is  
(A) Sutures (B) Nasal septum  
(C) Periosteal and endosteal surfaces (D) All the above
116. Which is the theory that has been put forward to explain thumb sucking habit:  
(A) Sear's oral drive (B) Palermo  
(C) Eysenck's learning (D) All the above
117. Phases of tooth movement (initial, lag and post-lag) was given by  
(A) Angle (B) Strang  
(C) Burstone (D) Nanda

118. Syndrome associated with mandibular deficiency is  
(A) Gorlin (B) Klinefelter  
(C) Goldenhar (D) Crouzon
119. The number of line angles in a posterior tooth are:  
(A) 4 (B) 6  
(C) 8 (D) 10
120. The primordia responsible for facial development are readily observed by:  
(A) Fifth week of intrauterine life  
(B) Tenth week of intrauterine life  
(C) Fifteenth week of intrauterine life  
(D) Twentieth week of intrauterine life
121. The cranial base grows primarily by cartilage growth in  
(A) Spheno-ethmoidal synchondrosis (B) Inter-sphenoidal synchondrosis  
(C) Spheno-occipital synchondrosis (D) All the above
122. By 10 years which body tissue is 96 % complete ?  
(A) Lymphoid (B) Neural  
(C) General (D) Genital
123. The growth of maxilla ceases first in which plane of space ?  
(A) Transverse (B) Vertical  
(C) Antero-posterior (D) There is no set pattern
124. Which of the following is an Intrinsic muscle of tongue ?  
(A) Superior longitudinal (B) Inferior longitudinal  
(C) Vertical (D) All the above
125. What serves as a 'safety valve' for pubertal growth spurt:  
(A) Maxillary intercanine dimension (B) Mandibular intercanine dimension  
(C) Maxillary intermolar dimension (D) Mandibular intermolar dimension
126. Milwaukee brace is used for:  
(A) Maxillary teeth (B) Mandibular teeth  
(C) Scoliosis (D) All of the above
127. Intra alveolar appliance is a synonym for:  
(A) Palatal arch appliance (B) Lingual arch appliance  
(C) Distal shoe appliance (D) Nance appliance
128. Bionator appliance was developed in:  
(A) Germany (B) France  
(C) Switzerland (D) England
129. Which type of headgear has better patient compliance?  
(A) Cervical (B) Occipital  
(C) Highpull (D) All the above

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130. Centre of resistance of maxillary teeth is located -----?  
(A) Between the roots of premolar teeth  
(B) Between the roots of first molar teeth  
(C) Between the roots of second molar teeth  
(D) Midway of canine root
131. First self Ligating system introduced was:  
(A) Adenta Time (B) Russel Lock  
(C) Ormco EdgeLock (D) Oree speed
132. The play (degree) for 21.5 x 28 wire size used in 0.022 inch slot bracket is:  
(A) 2.5 (B) 0.5  
(C) 1 (D) 1.8
133. Which of the following is an intramatrix rotation of mandible  
(A) Rotation of mandibular base in relation to cranium  
(B) Rotation of mandibular plane in relation to cranium  
(C) Rotation of mandibular plane in relation to core of mandible  
(D) Rotation of mandibular base in relation to maxilla
134. For which orthodontic wire Hooke's law is not applicable:  
(A) Stainless steel (B) TMA  
(C) NiTi (D) A- NiTi
135. Which of the following orthodontic wire has least modulus of elasticity:  
(A) Ni Ti (B) B-Titanium  
(C) Stainless Steel (D) Co-Cr-Ni
136. The concept of Anchorage value of tooth was introduced by:  
(A) Jose Carriere (B) Ricketts  
(C) Burstone & Melson (D) R. Holdaway
137. Rickett's canine retraction spring is normally constructed with:  
(A) 0.016 x 0.016 inch blue elgiloy (B) 0.016 x 0.022 inch blue elgiloy  
(C) 0.016 x 0.022 inch TMA (D) 0.016 x 0.016 stainless steel
138. GTRV ratio for individual with normal growth pattern from age 8 to 16 years is:  
(A) 0.47 (B) 0.52  
(C) 0.77 (D) 0.82
139. Recommended latency period in distraction osteogenesis:  
(A) 1-2 days (B) 3-5 days  
(C) 5-7 days (D) 7-10 days

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140. Which doesn't accelerate tooth movement:  
(A) Parathyroid hormone (B) Micro-osteoperforations  
(C) Osteoprotegerin (D) Corticotomy
141. Which of the following researchers for the first time has shown that mandibular lengthening is by means of bone deposition & resorption on ramus of mandible?  
(A) Moyers (B) Enlow  
(C) Humphry (D) Hunter
142. Which of the following statements about mandibular growth is not correct?  
(A) Mandibular growth follows neural growth curve  
(B) Two halves of the mandible fuse by 16-18 months of age  
(C) Main growth of mandible after birth occurs at the condyle, ramus & alveolar bone  
(D) At birth, size of the mandible is sufficient to accommodate all primary teeth
143. Growth of maxillary sinus occurs via:  
(A) Intramembranous bone formation (B) Endochondral bone formation  
(C) Sutural formation (D) Apposition
144. Buccopharyngeal membrane is present till:  
(A) 2<sup>nd</sup> week post conception (B) 3<sup>rd</sup> week post conception  
(C) 4<sup>th</sup> week post conception (D) 5<sup>th</sup> day post conception
145. Labial bow in activator is constructed with:  
(A) 0.6mm (B) 0.8 mm or slightly heavier  
(C) 0.4 mm (D) 0.5 mm
146. According to Balter, which of the following is an important factor in treatment of developing dentition & skeletal relationship?  
(A) Tongue (B) Lip  
(C) Dentition (D) Cheek
147. Headgear should not be prescribed in which of the following situations  
(A) Facial asymmetry is severe  
(B) Posterior movement of mandibular teeth is needed  
(C) Maxillary teeth need only slight restraints from forward movement  
(D) The mandibular plane angle is high

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148. Which of the following is true when a helical loop is used?
- (A) The force is accordingly reduced but the range of force activity is increased
  - (B) The force is accordingly increased but the range of force activity is decreased
  - (C) Both the force and range of activity are increased
  - (D) Both the force and range of activity are decreased
149. A force maintained at some appreciable fraction of the original force from one patient visit to the next is:
- (A) Intermittent
  - (B) Interrupted
  - (C) Continuous
  - (D) None of the above
150. Speech problems associated with removable orthodontic appliance is ?
- (A) Difficulty with linguoalveolar consonants & lingual vowel for several weeks
  - (B) Difficulty with lingual vowel for few days
  - (C) Difficulty with linguoalveolar consonants for a few days
  - (D) No difficulty at all