**Subject Dental Material instructor: Mr. Usman**

**Midterm Assignment 30 Marks**

**Department AHS Semester DT 4th Name : Sultan zeb Student ID: 14600**

* **Attempt all questions, all questions carry equal marks.**

Q1. Discuss glass ionomer cement briefly? **GLASS IONOMER CEMENT;** It was discvered by 2 scientists wilson and kent. Glass ionomer cement is produced by reaction of silicate base powder and poly acrylic acid. These 2 release flouride for long time. **CLASSIFICATION OF GLASS IONOMER CEMENT:**  Type 1 - luting agent Type 2 - restoration Type 3 - linear and base Type 4 - fissure and sealent Type 5 - orthodontic Type 6 - core build up **COMPOSITION;**  Marketed in powder and liquid or powder mixed with liquid **POWDER COMPOSITION**  Silica 41.9% alumnia 28.6% alumnia floride 1.6% calcium floride 15.7% sodium floride 9.3% **LIQUID COMPOSITION** Polyacrylic acid tartaric acid water **SOLUBILITY AND DISINTEGRATION** Setting occurs completely in 24 hours so material should not be shown to saliva in 24 hours or it will disintegrate. **MANIPULATION** Preparation of tooth surface Proportion and mixing Protection during setting Finishing Protection after setting **ADVANTAGES** Inherent adhesion to the tooth surface good marginal seal anti cariogenic minimal cavity preparation requires easy to manipulation permanant restoration and cementation material **DISADVANTAGES**  Less fracture resistance less water resistance water sensitive during setting phase low esthetic compared to composit **USES**  Anterior esthetic restoration material for class 3 and 5 restorations Luting Core build up Eroded area Traumatic restoration treatment Ortho bracets adhesive Restoration for decidious teeth  ------------------------------------------------------------------------------

Q2. Differentiate permanent cement, luting agent and temporary cement. **PERMANENT CEMENT**  Use for long term cementation of cast restorations such as crown,bridge, inlay ans orthodontic fix appliances. **LUTING AGENT** Act as adhesive to hold togehther the casting to the tooth structure. **TEMPORARY CEMENT** When restoration have to be removed.  -----------------------------------------------------------------------------------

Q3. Write a detail note on manipulation, advantages and disadvantages of Zinc Oxide Eugenol cement. **MANIPULATION**  Small area of pad surface instruments should be clean powder liquid ratio 1.0 part of powder to 1 part of liquid **ADVANTAGES**  Good surfae detail Dimentionally stable easy manipulation Non toxic inexpensive **DISADVANTAGES** allergic for some patients cannot used in deep undercut set quickly -------------------------------------------------------------------------------------

Q4. Briefly explain polycarboxylate cement. **POLYCORBOXYLATE CEMENT** bonding to the tooth structure along with some metal restoration. **AVAILABILITY** available as powder and liquid. **COMPOSITION POWDER** Zinc oxide 89% magnesium oxide 9% barium oxide 0.2% Other oxide 1.4% **LIQUID** polyacrylic acid 32-48% other corboxylic acids 30- 50% **PROPERTIES** Ph of liquid in zinc polycarboxylic 1.7 highly bio compatible to the pulp which is similar to zoe cements working time2.5 minutes setting time is 6 to 9 minutes solubility: 0.6 % film thicness: it is more viscous than zinc phosphate cements. **MANIPULATION:**  power / liquid ratio is 1.5 parts of powder to 1 part of liquid using a small area of the pad surface maxing time is 30 to 60 second cement should be used immediately because the working is short working time 2.5 minutes. setting time is 6 to 9 minutes . instrument should be cleaned before the cement sets on them. **USES** Crowns, bridges, inlays, orthodontic cementation **ADVANTAGES**  Low lrritancy adhesion to tooth easy manipulation strength tensile solubility film thickness  **DISADVANTAGES**  Poor esthetic , high solubility . ----------------------------------------------------------------------------------------------

Q5. Distinguish liquid powder ratio of Zinc phosphate cement, also write its uses and advantages **ZINC PHOSPHATE CEMENT**  **LIQUID** Phosphate cement water 30 to 40% zinc oxide and aluminium hydroxide as buffering agent **POWDER** Zinc oxide magnesium oxide other oxide and flouride **USES** Cavity base temporary filling material cementation orthodontic bands final cementation **ADVANTAGES** Inconspicious appearance speed and case of usage low thermal conductivity beneath a metallic restoration. --------------------------------------------------------------------------------------------