

# Dental Science

<b>Dress Code</b>	Attire appropriate to the occupational area
<b>SLC Orientation</b>	<ul style="list-style-type: none"> <li>- Event explained to the competitors and individual timecards handed out. Students will return to the event room at least 5 minutes before their allotted time. <b>Students will have a secret scenario to solve when it is their turn to compete. Students not share the secret scenario when they leave the event as it is an automatic disqualification.</b></li> </ul>
<b>Round # 1</b>	Competitors must submit technical skill video to Montana HOSA by deadline. Additionally, competitors will take an online test during the testing window. Advisors will be informed of which competitors have moved on from Round 1 to qualify to participate in Round 2 at SLC.
<b>Round # 2</b>	Skill procedures from rubric guidelines will be performed by each competitor. Competitors may be asked to do one or multiple of the performance skills.
<b>Scoring</b>	Round 1 online testing scores will be combined with Round 2 skill procedures for a total score.

**Official References:**

All official references are used in the development of the written test and skill rating sheets.

[Boyd, Linda. \*Dental Instruments: A Pocket Guide\*. Saunders, latest edition.](#)

[Singhal, Kantz, Damatta, Phinney & Halstead. \*Dental Assisting: A Comprehensive Approach\*. Cengage, latest edition.](#)

**Round One Test**

Test Instructions: The written test will consist of 50 multiple choice items in a maximum of 60 minutes taken during the online testing window.

**Written Test Plan**

The Dental Team, Dental Specialties, and History.....	12%
Oral Health and Nutrition .....	6%
General Anatomy and Physiology .....	4%
Head and Neck Anatomy.....	10%
Tooth Morphology.....	12%
Infection Control / Occupational Health and Safety.....	16%
Chairside Assisting/Instruments .....	16%
Radiology.....	8%
Medical Emergencies in the Dental Office.....	10%
Restorative and Laboratory materials.....	6%



## DENTAL SCIENCE

### SKILL I: DENTAL INSTRUMENT IDENTIFICATION

Time = 15 minutes

Competitor ID #: \_\_\_\_\_ Judge's Initials: \_\_\_\_\_ Total Points (45 possible) \_\_\_\_\_

	Name of Instrument	Points (1 each for name & spelling)	Purpose or Use	Points (1 point for correct purpose/use)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
<b>TOTAL: ID &amp; Spelling (30 poss.)</b>			<b>TOTAL: Purpose (15 poss.)</b>	

# DENTAL SCIENCE

Section # \_\_\_\_\_  
 Competitor # \_\_\_\_\_

Division: \_\_\_\_\_ SS \_\_\_\_\_ PS/C  
 Judge's Signature \_\_\_\_\_

<b>Skill II: Assembly and Disassembly of Local Anesthetic Syringe (Time: 7 minutes)</b>		<b>Possible</b>	<b>Awarded</b>
1.	Washed hands or used alcohol-based hand-rub for hand hygiene.	2	0
2.	Donned protective clothing, surgical mask, protective eyewear, and gloves.	2	0
3.	Obtained disposable needle and the anesthetic specified by the scenario.	2	0
4.	Removed aspirating syringe from autoclave bag or pouch and inspected.	1	0
5.	Examined the syringe to ensure that the hub and thumb ring are secure and that the plunger moves freely.	2	0
6.	Inspected anesthetic.	2	0
	a. Rubber stopper is even with the end of the cartridge.	2	0
	b. Diaphragm and stopper are free of puncture marks.	2	0
	c. Expiration date has not passed and solution is clear and free of large bubbles.	2	0
	d. No cracks or chips on the cartridge.	2	0
7.	Grasped syringe in one hand and used thumb ring to pull back on plunger.	1	0
8.	Placed cartridge in barrel with rubber end toward harpoon with the other hand.	1	0
9.	Prevented contamination by not placing finger over the diaphragm while placing the cartridge in the syringe.	1	0
10.	Once the cartridge is in place, released the piston rod.	1	0
11.	Released thumb ring to allow the harpoon to engage the rubber diaphragm of the cartridge.	1	0
12.	With moderate pressure, pushed the piston rod into the rubber stopper until fully engaged.	1	0
13.	Did not hit the piston rod to engage the harpoon or held hand over the cartridge while engaging the harpoon.	2	0
14.	Pulled back on the thumb ring to make certain the harpoon is engaged.	1	0
15.	Removed protective cap from needle and penetrated rubber diaphragm with needle.	1	0
16.	Screwed needle to the syringe.	1	0
17.	Made sure the needle is secure but not too tight.	2	0
18.	Placed disposable needle guard on the protective covering the needle.	2	0
19.	Removed needle cover.	1	0
20.	Pushed lightly on thumb ring to expel a few drops of solution to confirm proper assembly of syringe.	1	0
21.	Recapped needle with the use of needle guard. <b>Judge states, "procedure is completed."</b>	2	0
22.	Donned utility gloves.	2	0
23.	Carefully unscrewed the needle with the protective cap in place.	2	0

<b>Skill II: (con't) Assembly and Disassembly of Local Anesthetic Syringe (Time: 7 minutes)</b>	<b>Possible</b>		<b>Awarded</b>
24. Discarded needle in sharp container.	2	0	
25. Retracted the piston to release the harpoon from the cartridge.	1	0	
26. Removed the cartridge from the syringe by retracting the thumb ring enough to release the cartridge.	1	0	
27. Placed cartridge in the sharps container.	2	0	
28. Prepared syringe for sterilization.	2	0	
29. Cleaned and disinfected in the work area.	2	0	
30. Cleaned utility gloves.	2	0	
a. Washed with soap and water under faucet.	2	0	
b. Removed and disinfected utility gloves with surface disinfectant wipes.	2	0	
31. Removed PPE and discarded in regular trash container.	2	0	
32. Washed hands or used alcohol based hand-rub for hand hygiene.	2	0	
<b>TOTAL POINTS - SKILL II</b> <b>70% Mastery for Skill II = 40.6</b>	<b>58</b>		

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Competitor # \_\_\_\_\_

Judge's Signature \_\_\_\_\_

<b>Skill III: Seat, Prepare and Dismiss Patient for Basic Dental Exam (Time: 10 minutes)</b>		<b>Possible</b>		<b>Awarded</b>
1.	Entered reception area and called patient by first name, followed by title and last name.	1	0	
2.	Made eye contact with patient and said, "the doctor will see you now".	1	0	
3.	Asked patient to follow you to the chair reserved for them.	1	0	
4.	Placed patient's belonging in cabinet within their view.	1	0	
5.	Seating dental patient:			
a.	Stood next to the dental chair back rest to help patient be seated.	1	0	
b.	Instructed patient to sit on the edge of the chair and swing legs onto footrest.	1	0	
c.	Had patient sit all the way back in the chair with buttock and shoulder against backrest.	1	0	
d.	Placed armrest in closed position and placed headrest supporting patient's head beneath the occipital area.	1	0	
6.	Positioned the chair for dental treatment.			
a.	Informed patient before each movement of the chair.	1	0	
b.	Raised chair a few inches while reclining backrest to 45 degree angle.	1	0	
c.	Clipped napkin on the opposite side from where you are standing, placed napkin over patient's chest, and clipped napkin on side closest to you.	1	0	
d.	Offered hand mirror and tissue if needed.	1	0	
e.	Reviewed and updated patient's medical and dental history and provided brief explanation of scheduled treatment for the day.	2	0	
f.	Explained office protocol for infection control and presented protective eyewear for patient to wear.	1	0	
g.	Continued to recline chair backrest to supine position 2 inches above the dentist's thighs.	1	0	
h.	Adjusted the head rest until the patient's head is well supported.	1	0	
7.	Positioned the dental light 36 inches above and toward the patient's chest.	1	0	
8.	Turned on the light and slowly moved the light to the tip of the patient's nose.	1	0	
9.	Turned out light until the start of the procedure.	1	0	
10.	Positioned the operator's stool and the rheostat.	1	0	
11.	Positioned the assistant's stool.	1	0	
12.	Put on mask and protective clothing and eyewear.	2	0	
13.	Washed hands and donned gloves before being seated chairside.	2	0	
14.	Opened sterile instrument packaging and positioned the tray setup.	2	0	
15.	Places dental handpieces, saliva ejector, evacuator, and air/water syringe tips into their respective couplings or mouthpieces.	1	0	
16.	Informed dentist the patient is seated.	1	0	
17.	Turned on the light and adjusted for maximum illumination of the dental treatment area. <b>Judge states, "treatment is completed".</b>	1	0	
18.	Verbalized patient's mouth was thoroughly rinsed and evacuated.	1	0	

<b>Skill III: Seat, Prepare and Dismiss Patient for Basic Dental Exam (con't)</b> <b>(Time: 10 minutes)</b>		<b>Possible</b>		<b>Awarded</b>
19.	Turned off dental light and positioned out of patient's way.	1	0	
20.	Removed from patient's vision any items that might disturb the patient.	1	0	
21.	Removed and disposed of PPE.	1	0	
22.	Informed patient that you are returning them to upright position.	1	0	
23.	Raised the backrest to 45 degree angle.	1	0	
24.	Removed the patient napkin and placed over the tray setup.	1	0	
25.	Asked patient to remove protective eyewear.	1	0	
26.	Removed debris from patient's face with moistened gauze square.	1	0	
27.	Asked patient how they feel and examined their eyes and breathing.	2	0	
28.	Offered hand mirror and tissue.	1	0	
29.	Raised backrest to upright position if patient is stable.	1	0	
30.	Washed hands or used alcohol based hand-rub for hand hygiene.	2	0	
31.	Completed patient records.	2	0	
32.	Provided any postoperative instructions.	2	0	
33.	Cleared path to escort patient and positioned the armrest to release patient.	1	0	
34.	Returned patient's personal items.	1	0	
35.	Escorted patient to the business office.	1	0	
36.	Used appropriate verbal and nonverbal communication with patient and other personnel.	2	0	
<b>TOTAL POINTS - SKILL III</b>		<b>55</b>		
<b>70% Mastery for Skill III = 38.5</b>				

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Division: \_\_\_\_\_ SS \_\_\_\_\_ PS/C  
 Judge's Signature \_\_\_\_\_

<b>Skill IV: Treatment Room Disinfecting &amp; Cleaning</b> (Time: 7 minutes)	<b>Possible</b>	<b>Awarded</b>
1. Washed hands or used alcohol based hand-rub for hand hygiene.	2	0
2. Donned PPE and utility gloves.	2	0
3. Removed all items used on patient.	2	0
4. Placed all contaminated tips, handpieces, and instruments onto patient tray.	2	0
5. Covered the tray with patient napkin and transported to sterilization area.	2	0
6. <b>BARRIERS:</b>	2	0
a. Removed all barriers with soiled outer side toward the inside barrier and disposed of immediately.	2	0
b. Did not shake a barrier free of debris.	2	0
c. If area under barrier becomes contaminated, disinfected using required method for particular item. * <b>Judge awards points if disinfection is not required.</b>	2	0
7. Removed any remaining covers or barriers and placed inside the inverted bag.	2	0
8. Verbalized that air/water syringe, HVE and saliva ejector mouthpieces, and handpiece motors and adaptors were disinfected using the saturate-wipe-saturate method.	2	0
9. Verbalized disinfected all operatory equipment not covered by barriers (patient mirror, viewbox, material dispensers) or area exposed beneath torn barriers using saturate-wipe-saturate method.	2	0
10. Disinfected flat surfaces (sinks, countertops, bracket table, dental cabinets, operator, and assistant stools) using saturate-wipe-saturate method.	2	0
11. Cleaned and disinfected face of dental light per manufacturer's directions.	2	0
12. Verbalized cleaned water lines for 30 seconds each: air/water and handpieces.	2	0
13. Verbalized suctioned a cup of water through evacuation lines for 30 seconds each: oral evacuator and saliva ejector.	2	0
14. Removed all PPE.	2	0
15. Washed hands or used alcohol based hand-rub for hand hygiene.	2	0
<b>TOTAL POINTS - SKILL IV</b> <b>70% Mastery for Skill IV = 23.8</b>	<b>34</b>	



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Section # \_\_\_\_\_

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Competitor # \_\_\_\_\_

Judge's Signature \_\_\_\_\_

<b>Skill V: Patient Education- Brushing (Bass Brushing Method) and Flossing (Time: 7 minutes)</b>	<b>Possible</b>	<b>Awarded</b>
1. Assembled materials and dentoform/typodont.	1 0	
2. Greeted patient and introduced self.	1 0	
3. Washed hands or used alcohol based hand-rub for hand hygiene.	2 0	
4. Donned protective clothing, mask, and gloves.	2 0	
5. Using dentoform/typodont demonstrated the Bass Brushing Method:		
a. Grasped toothbrush and placed tips of bristles angled apically into the sulcus at 45°.	1 0	
b. Used gentle, short vibratory strokes without removing the bristles from the sulcus.	1 0	
c. Lifted brush and continued into next area or group of teeth until all areas have been cleaned.	1 0	
d. For the lingual side of anterior teeth, held the brush vertically with the bristle tips in the sulcus.	1 0	
6. Using dentoform/typodont demonstrated flossing:		
a. Removed approximately 18 inches of floss from the container.	1 0	
b. Wound floss around middle fingers of each hand.	1 0	
c. Pinched floss between thumbs and index fingers, leaving a 1 to 2 inch length in between.	1 0	
d. Kept the floss tight between fingers, used index fingers or a combination of index finger and thumb and placed the floss between two teeth.	1 0	
e. Guided the floss gently between the teeth by using a see-saw motion until the floss is below the contact.	1 0	
f. Avoided injury to the gingiva by not snapping the floss between the teeth.	2 0	
g. Curved the floss in a "C" shape tight against the tooth.	1 0	
h. Slid the floss gently under the gumline.	1 0	
i. Removed biofilm and debris by scraping up and down several times.	1 0	
j. Avoided injury to the gingiva, by not using too much force and not going too far under the gum line.	2 0	
k. Lifted the floss over the interproximal papillae just below the contact area without removing the floss from between the teeth.	1 0	
l. Moved the floss to the adjacent tooth and repeated the procedure.	1 0	
m. Removed the floss gently from between the teeth. If floss tears when sliding past the contact area gently placed floss below contact area and pulled between the teeth.	2 0	
n. Wound the floss on the fingers to allow for a fresh section to be used.	1 0	
o. Used a clean piece of floss, moved between the next two teeth and repeated procedure.	1 0	

<b>Skill V: Patient Education- Brushing (Bass Brushing Method) and Flossing con't (Time: 7 minutes)</b>	<b>Possible</b>	<b>Awarded</b>
p. Flossed each tooth thoroughly until entire mouth is clean.	1      0	
7. Used appropriate verbal and nonverbal communication with patient and other personnel.	2      0	
8. Removed & disposed of PPE.	2      0	
9. Washed hands or used alcohol based hand-rub for hand hygiene.	2      0	
<b>TOTAL POINTS - SKILL V 70% Mastery for Skill V = 24.5</b>	<b>35</b>	

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Section # \_\_\_\_\_

Division: \_\_\_\_\_ SS \_\_\_\_\_ PS/C

Competitor # \_\_\_\_\_

Judge's Signature \_\_\_\_\_

<b>Skill VI: Preparation, Manipulation, Delivery, &amp; Handling of Alginate Impressions (7 minutes)</b>		<b>Possible</b>		<b>Awarded</b>
1.	Washed hands or used alcohol based hand-rub for hand hygiene.	2	0	
2.	Donned protective clothing, surgical mask, protective eyewear, and gloves.	2	0	
3.	Assembled materials.	1	0	
4.	Measured water for impression (room temperature).	1	0	
5.	Placed water in the flexible mixing bowl.	1	0	
6.	Fluffed the powder prior to opening the powder canister.	1	0	
7.	Filled the measure of powder by overfilling and then leveling off with the spatula.	1	0	
8.	Dispensed two corresponding scoops into a second flexible rubber bowl. (Three scoops for the maxillary impression.)	1	0	
9.	Placed powder in water.	1	0	
10.	Mixed the water and powder first with a stirring motion.	1	0	
11.	Mixed by holding the bowl in one hand, rotating the bowl occasionally, and using the flat side of spatula to incorporate the material through pressure against the side of the bowl. (Mixing time for Type I fast set is 30 to 45 seconds, and for Type II regular set is 1 minute.)	1	0	
12.	Mixed until homogeneous and creamy.	1	0	
13.	Loaded mixture into impression trays – mandibular tray loaded from both lingual sides and maxillary filled from the posterior part of the tray.	1	0	
14.	Used the flat side of the blade to condense the material firmly into the tray pushing material from front to back.	1	0	
15.	Smoothed impression material with a wet finger.	1	0	
16.	Removed a small amount of material from palate portion. <b>*Judge will simulate or take impression on typodont, and pass impression back to competitor.</b>	1	0	
17.	Rinsed impression gently under tap water to remove any debris.	1	0	
18.	Sprayed impression with disinfectant.	2	0	
19.	Wrapped impression in airtight container or a moist paper towel.	1	0	
20.	Placed impression into plastic bag and labeled with patient's name.	1	0	
21.	Cleaned and disinfected armamentarium.	2	0	
22.	Removed and disposed of PPE.	2	0	
23.	Washed hands or used alcohol based hand-rub for hand hygiene.	2	0	
<b>TOTAL POINTS - SKILL VI</b>		<b>29</b>		
<b>70% Mastery for Skill VI = 20.3</b>				

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Section # \_\_\_\_\_ Division: \_\_\_\_\_ SS \_\_\_\_\_ PS/C  
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*\*Competitor will begin skill wearing PPE that is indicated for dental procedure.*

Skill VII Processing of Contaminated Instruments (Time: 8 minutes)	Possible	Awarded
1. Immediately following dental procedure, added utility gloves to PPE.	2	0
2. Covered tray of used instruments before transporting.	2	0
3. Divided items on tray into categories: waste, submersible, and non-submersible items.	2	0
4. Discarded visible contaminated disposable items in a biohazard container.	2	0
5. Discarded lightly contaminated disposable items in the regular trash.	2	0
6. Disposed of contaminated sharps in the sharps container.	2	0
a. Placed needles into the sharps container.	2	0
b. Removed the anesthetic cartridge from the syringe and place into the sharps container.	2	0
7. Placed submersible instruments in the ultrasonic cleaner ( <i>can be simulated</i> )	2	0
a. Instruments placed directly in the ultrasonic basket with items such as burs, dental dam clamps, and other small items secured in a mesh holder.	2	0
b. Competitor verbalized that cleaning is completed in three to ten minutes. <b>Judge will state, "cleaning is completed".</b>	2	0
c. Removed inner tank from the general cleaner; allowing excess solution to drain into tank.	2	0
d. Rinsed the items thoroughly.	2	0
e. Placed instruments onto towel and blotted dry with second towel removing all excess water.	2	0
f. Inspected all instruments to ensure that they are debris free before bagging for sterilization.	2	0
8. Sanitized non-submersible items.	2	0
a. Rinsed and dried safety glasses, instrument tray prepared for disinfection.	2	0
b. Verbalized prepared the dental high-speed handpiece per manufacturer's direction.	2	0
c. Verbalized ran handpiece at unit after treatment or on air station in procession area.	2	0
d. Rinsed and dried or wiped with isopropyl alcohol.	2	0
9. Placed all sanitized instruments into area designated for disinfection and sterilization.	2	0
10. Cleaned and disinfected in the work area.	2	0
11. Cleaned utility gloves.	2	0
a. Washed with soap and water under faucet.	2	0
b. Removed and disinfected utility gloves with surface disinfectant wipes.	2	0
12. Removed PPE and discarded in regular trash container.	2	0
13. Washed hands or used alcohol based hand-rub for hand hygiene.	2	0
<b>TOTAL POINTS - SKILL VII</b> <b>70% Mastery for Skill VII = 32.2</b>	<b>46</b>	

# DENTAL SCIENCE

Section # \_\_\_\_\_ Division: \_\_\_\_\_ SS \_\_\_\_\_ PS/C  
 Competitor # \_\_\_\_\_ Judge's Signature \_\_\_\_\_

<b>Skill VIII: Donning and Doffing PPE (Time: 5 minutes)</b>	<b>Possible</b>		<b>Awarded</b>
1. Select PPE by type of clinical interaction with patient (per scenario)	2	0	
2. Donning gown without contaminating the outside of the gown.			
a. Held gown with left hand by the inside collar of the gown with the opening of the gown toward the back.	2	0	
b. Slid right hand through the gown sleeve.	2	0	
c. Switched hands and held the gown by the inside collar of the gown with the right hand.	2	0	
d. Slid the left hand through the gown sleeve.	2	0	
e. Secured gown with neck and waist ties.	2	0	
3. Donning mask.			
a. Held mask by the straps with the flexible nose piece facing upward.	2	0	
b. Pulled mask to cover above the bridge of the nose and below the chin.	2	0	
c. Metal above the bridge of the nose and is pressed against nose for tight fit.	2	0	
d. Secured the mask on the head with ties or elastics.	2	0	
4. Donning protective eyewear.			
a. Position eyewear over the eyes, resting on the bridge of the nose.	2	0	
b. Secured the eyewear to the head by adjusting the ear pieces.	2	0	
5. Verbalized "hands have been washed & jewelry removed".	2	0	
6. Donning gloves.			
a. Gloved the dominant hand first.	2	0	
b. Picked up one glove, holding the cuff of the glove with the non-dominant hand making certain the outside of the glove is not contaminated with the bare hands.	2	0	
c. Manipulated the glove holding the cuff and inside of the glove.	2	0	
d. Lined the thumb side of the glove up with the thumb of the dominant hand while slipping the open end of the glove over the dominant hand.	2	0	
e. Slipped the open end of the glove over the dominant hand and thumb while positioning the fingers of the glove in line with the fingers.	2	0	
f. Stretched the palm side of the glove with the non-dominant hand and pulled the glove on to the finger level.	2	0	
g. Picked up the second glove with the gloved dominant hand. Lined the thumb side of the glove up with the thumb side of the non-dominant hand.	2	0	
h. Slipped the open end of the glove over the non-dominant hand and thumb.	2	0	
i. Stretched the palm side of the glove with the dominant hand, pulling the glove on to the finger level.	2	0	
j. Positioned the fingers of the glove in line with the fingers of the non-dominant hand.	2	0	
k. Once both hands are gloved, gloves pulled into position and adjusted for comfort.	2	0	

<b>Skill VIII: Donning and Doffing PPE (con't) (Time: 5 minutes)</b>	<b>Possible</b>		<b>Awarded</b>
7. Pulled cuff of glove over the cuff of the gown. <b>Judge states, "skill is completed".</b>	2	0	
8. Removing gloves.			
a. Grasped non-dominant hand glove with dominant hand on the outside edge of the cuff.	2	0	
b. Pulled glove away from hand turning the glove inside out while removing.	2	0	
c. Held the removed glove in the dominant hand.	2	0	
d. Slid ungloved index finger under wrist of dominant hand glove without touching the outside of the glove.	2	0	
e. Peeled dominant hand glove from the inside creating a bag to hold both gloves by the inside.	2	0	
9. Removing protective eyewear.			
a. Grasped the earpiece with ungloved hands.	2	0	
b. Lifted eyewear from the face.	2	0	
c. Placed eyewear in designated sanitizing area.	2	0	
10. Removed gown.			
a. Unfastened ties.	2	0	
b. Held gown by inside, neck area of the gown.	2	0	
c. Peeled gown away from neck and shoulders.	2	0	
d. Turned contaminated outside of gown toward the inside.	2	0	
e. Folded gown into bundle being careful not to touch contaminated outside of gown.	2	0	
f. Discarded gown in designated area.	2	0	
11. Washed hands or used alcohol-based hand-rub for hand hygiene.	2	0	
<b>TOTAL POINTS - SKILL VIII</b> <b>70% Mastery for Skill VIII = 56</b>		<b>80</b>	