

01	☐ A	☐ B	☐ C	☐ D	☐ E
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39	☐ A	☐ B	☐ C	☒ D	☐ E

PRACTICE QUESTIONS

Saudi Commission For Health Specialties (SCFHS)

DLTO

Dental Lab Technologist

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

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QUESTION 1

MULTIPLE CHOICE

Which of the following dental gypsum products are classified as Type IV (high-strength, low-expansion) according to the ADA/ISO specification for dental gypsum? (Choose two.)

- ☒ **A** Die stone, used for fabricating accurate casts and dies for fixed prosthodontics
- ☐ **B** Plaster of Paris (Type II), used for study casts and articulation
- ☐ **C** Improved stone (Type III), used for denture flasking casts
- ☒ **D** High-strength die stone (Type IV), used for crown and bridge dies
- ☐ **E** Impression plaster (Type I), used for primary impressions of edentulous arches

ANSWER A • D

WHY Type IV gypsum (high-strength die stone) is specifically formulated with a low water–powder ratio to yield high compressive strength, high surface hardness, and minimal setting expansion. It is the material of choice for fabricating master casts and individual dies used in the construction of inlays, onlays, veneers, and crown-and-bridge restorations, where dimensional accuracy is critical. Plaster of Paris is Type II, improved stone is Type III, and impression plaster is Type I — none of which meet the criteria for Type IV. Therefore, the correct selections are die stone (Type IV application) and high-strength die stone (Type IV).

QUESTION 2

MULTIPLE CHOICE

Which of the following statements regarding infection control and disinfection in the dental laboratory are correct? (Choose two.)

- ☒ **A** All incoming items from the clinic should be considered contaminated and disinfected prior to handling.
- ☐ **B** Heat sterilization in an autoclave is the method of choice for finished acrylic removable prostheses.
- ☒ **C** Intermediate-level hospital-grade disinfectants (e.g., iodophors, chlorines, or quaternary ammonium compounds with alcohol) are commonly used to disinfect impressions and prostheses.
- ☐ **D** Personal protective equipment (PPE) such as gloves, masks, and protective eyewear is unnecessary if impressions are disinfected immediately on receipt.
- ☐ **E** Hand hygiene and PPE are required only when the technician is performing prosthodontic procedures involving sharp instruments.

ANSWER A • C

WHY The Centers for Disease Control and Prevention (CDC) and standard dental infection-control guidelines recommend that every item received from the clinic be treated as contaminated and disinfected before handling in the laboratory. Intermediate-level disinfectants registered with the EPA (such as iodophors, sodium hypochlorite, and certain quaternary ammonium–alcohol products) are commonly used to disinfect impressions, prostheses, and other appliances that cannot be heat-sterilized. Heat sterilization (autoclaving) is NOT suitable for finished acrylic dentures as the high temperature will distort the resin. PPE must be worn at all times during laboratory handling of incoming items, regardless of immediate disinfection. Therefore, statements A and C are correct.

QUESTION 3

SINGLE CHOICE

During the processing of a heat-cured polymethyl methacrylate (PMMA) denture base, the recommended conventional long curing cycle is:

- ☐ A Place the flask in boiling water for 5 minutes and immediately bench-cure.
- ☒ B Place the flask in cold water, raise the temperature to 74 °C (165 °F) and hold for 90 minutes, then raise to 100 °C and boil for 30–60 minutes.
- ☐ C Place the flask directly into a preheated water bath at 100 °C for 10 minutes.
- ☐ D Microwave the flask at full power for 3 minutes without any water bath.

ANSWER B

WHY The conventional long-curing cycle for heat-activated PMMA denture bases involves placing the flask in cold water, slowly raising the temperature to approximately 74 °C (165 °F) and holding for about 90 minutes to allow the monomer to penetrate the polymer beads, and then raising the temperature to 100 °C and holding for 30–60 minutes to complete polymerization. This slow, controlled heating minimizes dimensional change, reduces porosity, and helps avoid boiling of unreacted monomer. Boiling water placement and immediate bench-curing (A), direct placement into 100 °C (C), and microwave curing without appropriate protocol (D) are not the conventional long-curing technique. Answer B is correct.

QUESTION 4

SINGLE CHOICE

Which of the following dental waxes is specifically classified as an inlay casting wax used to fabricate the pattern for a cast metal inlay or crown?

- ☐ A Baseplate wax
- ☐ B Boxing wax
- ☐ C Sticky wax
- ☒ D Type I inlay casting wax

ANSWER D

WHY According to ANSI/ADA Specification No. 4, inlay casting waxes are classified into three types: Type I (medium), used for inlays and Class II patterns; Type II (soft), used for full crown patterns over dies that require minimal handling; and Type III (hard), used for bridge patterns. Baseplate wax is used for recording occlusion and denture base contouring, boxing wax is used to surround an impression for pouring a cast, and sticky wax is used to temporarily join prosthetic components. The wax specifically used for an inlay or crown pattern is Type I inlay casting wax. Therefore, D is correct.

QUESTION 5

SINGLE CHOICE

A dental technician is investing a wax pattern for a metal-ceramic crown. The critical function of the ring liner (such as a ceramic-based or cellulose liner) placed inside the casting ring prior to investment is to:

- ☐ **A** Increase the hardness of the refractory investment during the burnout procedure.
- ☒ **B** Allow for the setting expansion of the investment and provide cushioning for the casting shrinkage of the alloy.
- ☐ **C** Prevent the wax pattern from melting during burnout.
- ☐ **D** Eliminate the need for a sprue in the investing procedure.

ANSWER B

WHY The ring liner (typically a wet asbestos-alternative or ceramic-based liner) is placed inside the casting ring to provide two essential effects: (1) it compensates for and allows the setting and thermal expansion of the investment, and (2) it provides a resilient cushion that accommodates the casting shrinkage of the gold or base-metal alloy as it cools, reducing the risk of a restricted casting. The liner does not primarily influence investment hardness (A), prevent wax melting (the wax is eliminated during burnout by heating, C), or eliminate the need for a sprue (D). Therefore, B is the correct answer.

QUESTION 6

SINGLE CHOICE

When layering feldspathic porcelain onto a metal framework for a metal-ceramic restoration, the principal purpose of the opaque porcelain layer is to:

- ☐ A Provide the final glaze for the restoration
- ☒ B Mask the metallic color of the alloy and establish the bond between metal and porcelain
- ☐ C Increase the translucency of the final restoration
- ☐ D Compensate for the firing shrinkage of the dentin porcelain

ANSWER B

WHY The opaque (first) porcelain layer serves two principal functions: (1) it masks the underlying color of the metal framework so that the metal does not show through the subsequent dentin and enamel layers, and (2) it forms a chemical/physical bond with the metal substructure when the metal has been properly deoxidized and porcelain opaque is fused onto it. Opaque porcelain is generally opaque (not translucent), so option C is incorrect. Glazing is a separate firing step after all layers are applied, not a function of the opaque layer, and the opaque layer does not primarily compensate for firing shrinkage of dentin porcelain. Therefore, B is correct.

QUESTION 7

SINGLE CHOICE

A semi-adjustable articulator used in the dental laboratory requires that the casts be mounted using a facebow record. The primary purpose of the facebow transfer is to:

- ☐ A Record the centric relation position of the mandible
- ☒ B Orient the maxillary cast on the articulator in the same spatial relationship to the condylar axis as the patient's maxilla is to the patient's temporomandibular joints
- ☐ C Establish the vertical dimension of occlusion
- ☐ D Set the incisal guidance table of the articulator

ANSWER B

WHY A facebow is used to record the spatial relationship of the maxillary arch to the transverse horizontal axis (the condylar hinge axis) of the temporomandibular joints. This record is then transferred to a semi-adjustable articulator so that the maxillary cast is mounted in the same relationship to the instrument's condylar elements as the patient's maxilla is to the patient's TMJs. This ensures accurate simulation of mandibular movements. A facebow does not record centric relation (which is recorded with a centric relation bite registration), does not determine vertical dimension of occlusion, and does not directly set the incisal guidance table. Therefore, B is correct.

QUESTION 8

SINGLE CHOICE

Which impression material is generally considered the most dimensionally stable over an extended storage period prior to pouring of the cast?

- ☐ A Alginate (irreversible hydrocolloid)
- ☐ B Condensation silicone
- ☒ C Polyvinyl siloxane (addition silicone)
- ☐ D Polysulfide rubber

ANSWER C

WHY Polyvinyl siloxane (PVS, addition silicone) exhibits excellent dimensional stability because its polymerization reaction does not produce a volatile by-product (contrast with condensation silicone, which releases ethyl alcohol as it sets, causing shrinkage). PVS impressions can be stored and poured hours or even days later with minimal dimensional change. Alginate impressions must be poured within about 10–15 minutes because they lose water through syneresis and imbibe water through imbibition, both of which distort the impression. Polysulfide is dimensionally reasonably stable but still undergoes slow continued polymerization and is messy. Hence, PVS is the most dimensionally stable of the options listed, making C correct.

QUESTION 9

SINGLE CHOICE

When constructing a Hawley-type removable orthodontic retainer, the function of the acrylic baseplate that covers the anterior palatal or lingual surfaces of the teeth is primarily to:

- ☐ A Transmit orthodontic forces to move the teeth
- ☒ B Provide retention and anchorage for the active labial bow and other wire components
- ☐ C Act as a fixed reference plane to record centric relation
- ☐ D Produce functional mandibular movements during mastication

ANSWER B

WHY The acrylic baseplate of a Hawley retainer is the passive component that fits against the palatal or lingual surfaces of the teeth and provides retention of the appliance as well as anchorage for the labial bow and any auxiliary clasps or springs. It is not used to generate active orthodontic forces (which are produced by the labial bow and adjustment loops, A), nor does it record centric relation (C) or produce functional mandibular movements (D). Therefore, B is correct.