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MCQs in Dentistry

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Preface

Attempts to learn by attending lectures or even reading, are largely passive. Most of us acquire information very slowly by these means and often only after frequent repetition.

Unfortunately, acquisition of a considerable body of knowledge is an essential prerequisite for the practice of clinical subjects. Faced with a patient's specific complaint, the clinician cannot unfortunately just nip off and look it up. Under these circumstances, qualifying examinations become a necessary evil and, whatever their limitations, there seems to be no satisfactory alternative.

Nevertheless, however much work has been done, no amount of insight will tell one how much has been learnt. Self-assessment by using multiple choice questions is one way of helping to overcome this difficulty. Though we are fully aware of the many criticisms of MCQs there is no doubt that they can be useful both in making clear any gaps in knowledge and in helping to acquire information.

These MCQs are deliberately varied in type in order not to lull the user into any unjustified complacency for having worked out the system. The most appropriate answer should be chosen; more than one answer, or even none, may be correct. The questions also range from easy to difficult so no one should feel ashamed that they fail to achieve 100%.

The questions have been grouped together according to the main specialty to which they apply but since there is always overlap it should be appreciated that any individual contributor may not be entirely responsible for a specific section.

All of these questions have been tested on groups of staff or students and we trust that any ambiguities have been eliminated. We can only apologise for any that have eluded correction and it has to be accepted that some 'facts' are controversial.

Not every subject can be included within a book of this size and price and again we can only apologise for the omissions. We hope very much however that these MCQs will contribute to the users' success in their battles with the examiners.

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Bristol, 1985

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Contents

1 Prosthetics (including materials)

1.1 Epidemiology. In a 1978 Adult Dental Health Survey it was found that

A over 45% of the adult population of England and Wales were edentulous
B a significantly higher proportion of men than women were edentulous
C the proportion of adults wearing partial dentures was increasing
D more adults wear upper partial dentures than lowers

1.2 In which one of these situations following extraction is alveolar ridge resorption least?

A Anterior edentulous mandible with denture
B Anterior edentulous maxilla with denture
C Anterior mandible with 3/3 retained to support an overdenture
D Anterior edentulous maxilla with denture opposed to a lower complete overdenture

1.3 Following extraction of all teeth

A half of the total change in alveolar ridge form will be complete after 1 month
B in the mandible a greater loss of ridge height occurs in the incisor region than in the molar region
C the zone of attached gingiva is lost
D the centre of the incisive papillae remains between 8–10 mm behind the original position of upper central incisal edges

1.4 During the setting of alginate impression materials

A trisodium phosphate reacts preferentially with calcium sulphate
B trisodium phosphate reacts preferentially with sodium alginate
C the colloidal gel state changes to a sol
D the material in contact with the soft tissues sets last

(Answers overleaf)

Answers

1.1 A **False** 29% of the adult population of England and Wales were edentulous
B **False** 32% of females over the age of 16 were edentulous compared to 24% males
C **False** in 1978 20% of the population had partial dentures compared to 22% in 1968
D **True**

1.2 A **False** resorption is greatest in A followed by D, then B and least in C
B **False**
C **True**
D **False**

1.3 A **False** approximately one-third of the total change in ridge contour will be complete after the first month
B **True**
C **False** the zone often remains as a band of keratinised epithelium on the alveolar ridge
D **True**

1.4 A **True**
B **False** see A
C **False** the sol state changes to a gel
D **False** the material in contact with the soft tissues is at a higher temperature and sets first

1.5 An alginate impression
- **A** should be rapidly displaced from the mouth
- **B** may exhibit fluid exudate on the surface as a result of imbibition
- **C** will take up water and expand if kept wet
- **D** will shrink as a result of syneresis.

1.6 Alginate impression materials
- **A** are hydrophilic
- **B** are mucostatic in comparison to zinc oxide/eugenol paste
- **C** are more dimensionally accurate than reversible hydrocolloids
- **D** can be sterilised in formaldehyde when set

1.7 Reversible hydrocolloid impression materials have the following properties
- **A** Contain potassium sulphate to promote the setting of dental stone
- **B** The material in contact with the soft tissues sets first
- **C** Hysteresis
- **D** They can be reused after use in the mouth

1.8 Impression plaster (plaster of Paris)
- **A** is calcined calcium sulphate hemihydrate prepared by heating the dihdyrate under steam pressure
- **B** produces less mucosal displacement than alginate
- **C** contains borax to control the setting expansion
- **D** should be cast up on removal from the mouth without any further treatment.

1.9 The setting of plaster of Paris is accelerated by
- **A** the addition of potassium sulphate
- **B** mixing with hot water
- **C** rapid vigorous mixing
- **D** increasing the ratio of water to powder

1.10 Zinc oxide/eugenol impression paste
- **A** cannot be used to record undercut areas
- **B** is a thermoplastic impression material
- **C** has a setting time, the rate of which decreases as humidity increases
- **D** is both an irritant and an allergen

(Answers overleaf)

1.5 A **True**
B **False** imbibition is the uptake of water. Fluid exudate is a result of syneresis
C **True** **True**
D **True**

1.6 A **True**
B **True**
C **False** reversible hydrocolloids exhibit a high level of dimensional accuracy and may be used for crown and bridge impressions
D **False** they undergo surface deterioration and dimensional changes

1.7 A **True**
B **False**
C **True**
D **False** the material cannot be satisfactorily sterilised

1.8 A **False** heating the dihydrate under steam pressure at 120–130°C produces dental stone which is chemically identical to plaster of Paris but has different physical properties
B **True**
C **False** borax is added to retard the rate of setting
D **False** a separating agent such as alginate mould seal is required to prevent bonding with the model material

1.9 A **True**
B **False** setting is gradually retarded as the temperature increases above 50°C until it is completely inhibited by water close to boiling point
C **True**
D **False** increasing the proportion of water decreases the number of nuclei of crystallisation per unit volume resulting in a longer setting time

1.10 A **True**
B **False** it is not used as a thermoplastic impression material but may be heat-softened to aid removal from the cast
C **False** the opposite is true
D **True**

1.11 A separating agent is used when flasking and packing acrylic resin dentures
- **A** so that investing plaster in one half of the flask will not adhere to that in the other half
- **B** to prevent water from the investing plaster affecting polymerisation of the resin
- **C** to minimise the thickness of the flash
- **D** to prevent monomer from soaking into the investing plaster

1.12 The following materials are effective as plaster separating agents
- **A** A solution of potassium alginate
- **B** Tinfoil
- **C** Liquid paraffin
- **D** Soap solution

1.13 The lingual extension of a lower denture is limited by
- **A** the sublingual salivary gland
- **B** the modiolus
- **C** the mylohyoid muscle
- **D** the origin of the genioglossus muscle

1.14 Occlusal rims for complete dentures provide the following information when trimmed
- **A** centric jaw relationship
- **B** dimension of the freeway space
- **C** overjet or horizontal incisor overlap
- **D** orientation of the occlusal plane

1.15 The resting face height
- **A** is equal to the occluding face height together with the interocclusal clearance
- **B** remains constant through life
- **C** is increased when a lower denture is placed in the mouth
- **D** is decreased when the head is tilted back

1.16 The ala-tragal line is
- **A** the line running from the tragus of the nose to the ala of the ear
- **B** parallel to the Frankfort plane
- **C** a guide to the occluding face height in complete dentures
- **D** a guide to the orientation of the occlusal plane in complete dentures.

1.17 A face bow records the following information
- **A** The relationship of the upper jaw to the hinge axis of the condyle
- **B** The sagittal condyle angle
- **C** The orientation of the occlusal plane to the axis-orbital and Frankfort planes
- **D** The relationship of the upper and lower jaws to each other

1.11 A **True**
B **True**
C **False** excess acrylic dough or flash must be removed after a trial closure of the flask
D **True**

1.12 A **True**
B **True**
C **True**
D **True**

1.13 A **True**
B **False** the modiolus is a decussation of muscles fibres at the corner of the mouth
C **True**
D **True**

1.14 A **True**
B **False**
C **True**
D **True**

1.15 A **True**
B **False** longitudinal studies have shown that it may increase with age in dentate subjects and decrease in the edentulous
C **True**
D **False**

1.16 A **False** the line runs from the inferior border of the ala of the nose to the tragus of the ear. The point on the tragus may be taken as the superior border or more commonly the mid-point of the tragus
B **False** the line forms an angle of approximately 8° with the Frankfort plane
C **False** the vertical dimension is independent of the ala-tragal line
D **True**

1.17 A **True**
B **False** this must be done using a protrusive record
C **True**
D **False** this must be done using an occlusal record

1.18 The Bennett angle
- **A** is the angle between the sagittal condylar path and the Frankfort plane
- **B** is the angle which the path of the balancing side condyle makes with the sagittal plane during lateral excursion
- **C** is measured using a face bow
- **D** has an average value of 150

1.19 Bilateral balanced occlusion
- **A** is dental articulation which is unobstructed by cuspal interference
- **B** is simultaneous contact of the occluding surfaces of the teeth of both sides of the mouth in the retruded jaw relationship
- **C** is simultaneous contact of the occluding surfaces of the teeth of both sides of the mouth in various jaw positions
- **D** results in Christensen's phenomenon

1.20 When setting up teeth for complete dentures having bilateral balanced occlusion, separation of the posterior teeth during protrusion can be reduced by
- **A** increasing the antero-posterior occlusal curve
- **B** using teeth with a shallow cusp angle
- **C** increasing the angle of orientation of the occlusal plane
- **D** increasing the incisal guidance angle

1.21 Which of the following features of the masticatory system are stated by Hanau to determine the articulation of the teeth?
- **A** condyle guidance
- **B** incisal guidance
- **C** interocclusal clearance or freeway space
- **D** inclination or orientation of the occlusal plane

1.22 Porcelain denture teeth
- **A** have a higher coefficient of thermal expansion than acrylic teeth
- **B** have a lower abrasion resistance than enamel
- **C** should be used where inter-alveolar clearance is small
- **D** have a higher abrasion resistance than gold

1.23 The stability of a mandibular complete denture will be enhanced when
- **A** the level of the occlusal plane is above the dorsum of the tongue
- **B** the tongue rests on the occlusal surface
- **C** the lingual contour of the denture is concave
- **D** the posterior teeth on the denture have a broad bucco-lingual width

(Answers overleaf)

1.18 A **False** this is the sagittal condyle angle
B **True**
C **False** the Bennett angle is estimated from a protrusive occlusal record or set from lateral records
D **True**

1.19 A **False** this is a definition of free articulation
B **False** balanced occlusion refers to various jaw positions of which the retruded position is only one
C **True**
D **False** Christensen's phenomenon is the development of a wedge-shaped gap between the posterior ends of opposing occlusal rims during mandibular protrusion

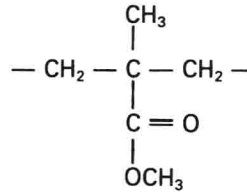
1.20 A **True**
B **False** teeth with a steeper cusp angle could be used or the effective cusp angle increased by tilting the teeth
C **True**
D **False** this would result in greater separation

1.21 A **True**
B **True**
C **False** the interocclusal clearance cannot influence articulation since the teeth are apart when the mandible is in the rest position
D **True** Hanau's five determinants also include the curvature of the occlusal surfaces (compensating curves) and the cusp height and inclination

1.22 A **False** the coefficient of thermal expansion of porcelain is much lower (7×10^{-6} per °C) than that of acrylic resin (81×10^{-6} per °C). This differential causes stress in the denture base
B **False** the abrasion resistance of dental porcelain is very high and when used for jacket crowns the porcelain may show less wear than adjacent natural teeth
C **False** acrylic teeth which have a chemical bond to the denture base should be used as they can be ground to fit the limited space
D **True**

1.23 A **False** restriction of the tongue space both vertically and laterally reduces stability
B **True**
C **False** the tongue tends to engage the concavity causing displacement
D **False** see A

1.24 Methyl methacrylate
- **A** has a boiling point below that of water
- **B** has a boiling point above that of water
- **C** does not react with fully polymerized acrylic resin
- **D** has the chemical formula



1.25 The polymer/monomer ratio for heat-cured acrylic resin
- **A** is about 1 to 3.5 by volume
- **B** is about 3.5 to 1 by volume
- **C** if too low will result in excessives shrinkage
- **D** if too high will result in granularity of the acrylic

1.26 The liquid (monomer) component of heat cured acrylic resin has the following components
- **A** Hydroquinone
- **B** Methyl methacrylate
- **C** Dimethyl-*p*-toluidine
- **D** Ethylene glycol dimethacrylate

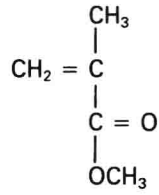
1.27 Self polymerising acrylic resins differ from heat-cured resins in that they
- **A** have a higher molecular weight
- **B** have a higher residual monomer content
- **C** are more porous
- **D** have a greater transverse strength

1.28 The advantages of cold-cured resins over heat-cured resins for the repair of acrylic dentures are
- **A** better colour stability
- **B** shorter processing time
- **C** warpage of the denture is less likely
- **D** repair of the denture can safely be carried out in the mouth

1.29 Porosity in an acrylic denture
- **A** may result from failure to apply adequate pressure to the flask during processing
- **B** may result from a short curing cycle with rapid temperature build up
- **C** contraction porosity is found mainly in thicker sections of the denture
- **D** gaseous porosity appears as small buboles evenly distributed throughout the denture

(Answers overleaf)

1.24 A **False** the boiling point of the monomer is 100.3°
B **True**
C **False** acrylic resin crazes on contact with monomer
D **False** this is the polymeric form. The monomer has the formula



1.25 A **False** see B
B **True**
C **True**
D **True**

1.26 A **True**
B **True**
C **False** dimethyl-*p*-toluidine is an activator used in self-cure resins
D **True**

1.27 A **False** the molecular weight of cold-cured materials is lower
B **True**
C **True**
D **False** the strength of cold-cured resins is about 80% of that of heat-cured

1.28 A **False** the tertiary amine used as an activator tends to oxidise resulting in poor colour stability
B **True**
C **True**
D **False** use in the mouth is contraindicated because of the possibility of mucosal irritation from free monomer and heat of polymerisation

1.29 A **True**
B **True**
C **False** contraction porosity (as in A) is diffusely distributed
D **False** gaseous porosity (as in B) is seen in the thicker sections where the polymerisation exotherm is greatest and monomer volatizes

1.30 The residual monomer level in denture bases
- **A** is about 3% in correctly polymerised heat cured resin
- **B** is about 0.3% in correctly polymerised heat cured resin
- **C** is likely to be high if a short curing cycle is employed
- **D** is higher in thick sections of acrylic than in thin sections

1.31 The bonding of denture teeth to denture base materials
- **A** is stronger with heat-cured base materials than cold-cured materials
- **B** is chemical when the teeth are constructed of cross-linked acrylic
- **C** is entirely mechanical in porcelain teeth
- **D** is weaker for lateral incisors than for canines

1.32 An anterior open occlusion (open bite) in complete dentures may result from
- **A** the posterior of the lower occlusal rim lifting away from the mucosa during the recording of the jaw relationship
- **B** the anterior of the lower occlusal rim lifting away from the mucosa during the recording of the jaw relationship
- **C** the use of anterior teeth of too short a length
- **D** interferences between the heels of the opposing casts as they are mounted on the articulator

1.33 The (occluding) vertical dimension of acrylic complete dentures may increase during processing as a result of
- **A** a high ratio of monomer to polymer
- **B** the resin being packed at the advanced dough stage
- **C** an incorrect powder to water ratio in the investing plaster
- **D** failure to coat the investing plaster with a separating agent

1.34 Split cast remounting on an articulator is carried out
- **A** to correct occlusal errors arising during the processing of dentures
- **B** to verify the occlusal records for study casts
- **C** when the record of the jaw relationship is found to be incorrect
- **D** in conjunction with a pre-centric check record

1.35 The stability of complete dentures is
- **A** the ability to resist horizontal and rotational displacing forces
- **B** the ability to resist vertical dislodging forces
- **C** dependant upon an effective postdam in maxillary dentures
- **D** increased in mandibular dentures by raising the level of the occlusal plane

(Answers overleaf)