

**BDS SECOND PROFESSIONAL EXAMINATION 2007
SCIENCE OF DENTAL MATERIALS
MODEL PAPER (MCQs)**

Marks: 45

Time: 45 minutes

Total No. of MCQs 45

One mark for each MCQ

01. The knoop hardness number of which one of the following materials is closest to that of dentin (KHN 65)?

- a. Tooth enamel.
- b. Amalgam.
- c. Pure Gold.
- d. Silicate cement.
- e. Dentine.

Key: d

02. KHN of enamel is:

- a. 90-100.
- b. 100.50.
- c. 300.
- d. 600.
- e. 60-90.

Key: d

03. Which of the following impression materials is elastic?

- a. Impression compound.
- b. Zinc oxide – Eugenol paste.
- c. Wax.
- d. Polyether rubber base.
- e. Low fusing compound

Key: d

04. Which one of the following is the safest and most reliable method of regulating setting time of gypsum products?

- a. Altering the water and powder ratio.
- b. Controlling the temperature of water to be used for mixing.
- c. Speed of hand spatulation.
- d. Length of hand spatulation.
- e. Adding salt in mixing.

Key: b

05. Which of the following impression materials can be electroplated without risk of distortion?

- a. Polysulphide.
- b. Condensation silicone.
- c. Addition silicone.
- d. Hydrocolloid impressions.
- e. Polyether.

Key: a

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06. Which of the following statements relates best regarding cavity varnish?

- a. Varnishes are synthetic resins dissolved in acetone.
- b. Varnishes are calcium hydroxide in a resin base.
- c. Varnishes are used to insulate the pulp thermally.
- d. Varnishes are used beneath restorative resins to insulate the pulp against chemical irritants.
- e. Varnishes are base of ZnO eugenol.

Key: a

07. Setting expansion of casting investment is approximately:

- a. 0.1-0.2%.
- b. 0.1-0.5%.
- c. 0.8-1%.
- d. 1.1-1.7%.
- e. 1.7%-2%.

Key: b

08. Stiffness refers to

- a. Resistance to elastic deformation.
- b. Degree of elastic deformation.
- c. Expandability on heating.
- d. Shrinkage on cooling.
- e. Expansion on cooling.

Key: a

09. What is trituration

- a. Surface discoloration of metal.
- b. Mixing of amalgam alloy with mercury.
- c. Same as erosion.
- d. Same as corrosion.
- e. Mixing of alloy particles.

Key: b

10. The dental amalgam alloys and mercury are mixed in ratio of:

- a. 1:1
- b. 2:1
- c. 1:2
- d. 1:3
- e. 1:4

Key: a

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- 11. Most common drawback of amalgam restoration is:**
- Secondary expansion.
 - Porosity.
 - Marginal break-down.
 - Contraction on setting.
 - Contraction away from margins.
- Key: c**
- 12. What are the consequences of prolonged heating of a dental casting investment?**
- Disintegration of the investment.
 - Rough moulds of investment.
 - Contamination of the alloys.
 - Any of the above.
 - Expansion of alloys.
- Key: d**
- 13. Regarding dental Amalgam:**
- It is a mixture of silver alloy and mercury.
 - It is be composed of spherical tin and mercury.
 - It is a mixture of irregular particles of silver and tin.
 - Amalgamation process is formed during heating of silver-mercury.
 - The process of mixing amalgam is called Amalgamation.
- Key: a**
- 14. Which part of an amalgam restoration has the highest mercury concentration?**
- Marginal area.
 - Centre of the restoration.
 - Pulpal area.
 - Proximal surface of restoration.
 - Inclined plane.
- Key: a**
- 15. What is the maximum level of occupational exposure considered safe with regard to mercury vapors?**
- 5 *mg* of mercury
 - 50 *mg* of mercury
 - 35 *mg* of mercury
 - 25 *mg* of mercury
 - 1 *mg* of mercury
- Key: b**

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16. The cement which has antibacterial property is:

- a. Copper oxide cement.
- b. Glass ionomer cement.
- c. Polycarboxylate cement.
- d. Zinc phosphate cement.
- e. Zinc oxide Eugenol cement.

Key: a

17. Cement extensively used for attachment of orthodontic brackets to teeth is.

- a. Silicate cement.
- b. Resin cement.
- c. Glass ionomer cement.
- d. Copper oxide cement.
- e. ZnO Eugenol cement.

Key: b

18. Cement not irritant to pulpal tissue is.

- a. Calcium hydroxide cement.
- b. Silicate cement.
- c. Copper cement.
- d. Glass ionomer cement.
- e. Resins cement.

Key: a

19. The main resin constituent of polishable composite resin is:

- a. Polymethacrylate
- b. Polycarbonate
- c. Cyanoacrylate
- d. Urethane
- e. Dimethacrylate.

Key: d

20. Fillers are added to composite resin to:

- a. Increase working time.
- b. Increase coefficient of thermal expansion.
- c. Inhibit matrix deformation.
- d. B+C.
- e. Decrease working time.

Key: d

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21. Activating compound for visible light curing system:

- a. Hydroquinone.
- b. Ubiquinone.
- c. Camphoquinone.
- d. Benzoin methyl ether.
- e. Potassium oxide.

Key: c

22. In light cure system the wavelength of radiation is in excess of:

- a. 100 nm.
- b. 200 nm.
- c. 300 nm.
- d. 400 nm.
- e. 500 nm.

Key: d

23. In UV curing system, the activator employed is:

- a. Benzoin methyl ether.
- b. Methylmethacrylate.
- c. Hydroquinone.
- d. Dibutylphthalate.
- e. Benzoic acid.

Key: a

24. The stainless steel loses its resistance to corrosion if heated to a high temperature because:

- a. Precipitation of chromium carbide
- b. Precipitation of carbon carbide
- c. Precipitation of iron carbide
- d. Precipitation of nickel carbide
- e. Precipitation of cobalt carbide.

Key: a

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- 25. What is the function of feldspar during preparation of dental porcelain of a metal ceramic Crown?**
- a. Feldspar forms a glassphase that is able to soften and flow slightly at porcelain firing temperature
 - b. It decreases viscosity of ceramic material so that it can be applied on the metal substructure with ease
 - c. Feldspar due to its particle size interrupts crack propagation in the dental porcelain
 - d. Feldspar forms a carbon layer that flows at porcelain firing temperature
 - e. Feldspar helps to prevent porcelain cracking.

Key: a

- 26. The firing temperature of high fusing porcelain lies in the range of:**
- a. 1600-1950°F
 - b. 2000-3400°F
 - c. 2350-2500°F
 - d. 2500 – 3400°F
 - e. 1000 - 1500°F

Key: c

- 27. Dicor is:**
- a. Ceramic material with unusual strength.
 - b. Ceramic material with excellent esthetics.
 - c. Ceramic material which is castable.
 - d. New type of restorative resin with minimum porosity and excellent esthetics.
 - e. Dicor is having composite resins.

Key: c

- 28. Regarding Glass ionomers:**
- a. The powder is methyl methacrylate.
 - b. The powder is an aluminosilicate glass.
 - c. They release mercury.
 - d. They are highly irritant to pulp.
 - e. Following initial placement they should not be protected from dehydration.

Key: b

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29. Which of the following cements bonds to tooth structure, has an anticariogenic effect, has a degree of translucency and does not irritate the pulp?

- a. Polycarboxylate cement
- b. Resin cement
- c. Silicate Cement
- d. Glass ionomer cement.
- e. Zinc phosphate cement.

Key: d

30. What is the purpose of addition of orthoethoxy benzole acid to zinc oxide eugenol cement?

- a. To improve compressive strength of the cement .
- b. To limit oral solubility of the cement .
- c. To render the cement light curable.
- d. To improve ease of manipulation of cement .
- e. To improve tensile strength of the cement.

Key: a

31. Which of the following is best for 'cermet' cement:

- a. Cermet cement is glass ionomer cement with porcelain ceramic fillers.
- b. Cermet cement is glass ionomer cement with silver amalgam alloy particles in it.
- c. Cermet cement is a mixture of glass ionomer and resin cements.
- d. Cermet cement is light curable glass ionomer cement.
- e. Cermet cement is self cure composite resin.

Key: b

32. Which of the following possesses anticariogertic property?

- a. $ZnPO_4$ cement .
- b. Glass ionomer cement.
- c. Poly carboxylate cement.
- d. ZnO Eugenol cement.
- e. Calcium hydro-oxide cement.

Key: b

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- 33. Regarding zinc phosphate cements:**
- a. Powder and liquid are mixed on cold glass slab.
 - b. Powder and liquid are mixed on hot glass slab.
 - c. Zinc phosphate cements have endothermic reactions.
 - d. The cement is mixed on a waxed paper mixing pod.
 - e. Retention is via chemical bonding.
- Key: a**
- 34. Which of the following is used for pickling of casting made with gypsum bonded investments?**
- a. 100% hydrochloric acid.
 - b. Sulphuric acid.
 - c. Ultra sonic devices with 100% hydrochloric acid.
 - d. Hydrogen per oxide.
 - e. Aluminium oxide.
- Key: d**
- 35. With respect to acid etching:**
- a. It creates a microscopically rough enamel surface.
 - b. The eTchant is usually 20% phosphoric acid.
 - c. The eTchant is usually applied for one minute.
 - d. Following etching the eTchant should be washed away with phosphoric acid.
 - e. It creates macroscopically rough enamel surface.
- Key: a**
- 36. Which one of the following elastomeric rubber, resSi01tS is most likely to deform following in compression?**
- a. Addition silicone
 - b. Condensation silicone
 - c. Polyeth.
 - d. Polysulfide.
 - e. Siloxane.
- Key: d**
- 37. How soon after contamination by moisture does a zinc containing amalgam restoration start expanding?**
- a. 24 hours
 - b. 1-2 days
 - c. 3-5 days
 - d. One week
 - e. Two week
- Key: c**

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38. Creep value of which of the following is highest?

- a. LOW copper amalgam alloy
- b. Admix alloy
- c. single composition alloys
- d. Creep value of all the above mentioned alloys is same
- e. High copper amalgam alloy.

Key: a

39. Regarding alginate impression material:

- a. Alginate impression material contains sodium phosphate to act as an accelerator.
- b. The set alginate impression is a hydrocolloid gel.
- c. The impression is stored in water to prevent inhibition.
- d. Alginate impression is powdered after 2 hours.
- e. The thicker the mixture of alginate results in greater flexibility.

Key: b

40. Gold based metal ceramic alloys are best cast in which of the following?

- a. Gypsum investment.
- b. Phosphate bonded investment with carbon.
- c. Phosphate bonded investment without carbon.
- d. Silica bonded.
- e. Silica bonded investment with carbon.

Key: b

41. Regarding base metal alloys:

- a. The casting shrinkage of base metal alloys is less than that of gold alloys.
- b. Chromium added to base metal alloy acts as a solid solution hardener.
- c. Carbide precipitation to a certain extent decreases strength of the alloys.
- d. Manganese and silicon are added to base metal alloys to act as accelerator.
- e. Cobalt acts to provide flexibility to base metal alloy.

Key: b

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42. Hardness of which of the following abrasives is maximum?

- a. Sand
- b. Emery
- c. Boron carbide
- d. Silicone carbide
- e. Potash.

Key: c

43. Regarding dental implant materials?

- a. Titanium substructure is coated with tricalcium phosphate to act as disinfectant.
- b. Ceramics are used as implant materials because of their aesthetics.
- c. Co-Cr alloys (63% with other metals is- often used due to their outstanding strength.
- d. Commercially pure titanium should not be used as it can cause corrosion in vivo.
- e. Calcium hydroxyapatite crystals are bonded to titanium for better adhesion to bone.

Key: e

44. Which of the following gases used for soldering purposes has the highest temperature?

- a. Hydrogen.
- b. Natural gas.
- c. Acetylene.
- d. Oxygen.
- e. Carbon oxide.

Key: c

45. What must be added to steel in order to render it 'stainless'?

- a. Chromium 12-30%
- b. Carbon less than 1.2%
- c. Chromium oxide 3-20%
- d. Flouride 2-3%

Key: a