

**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

Note: **THE FINAL PAPER WILL BE SIMILAR TO THE MODEL PAPER BUT WILL FOLLOW "TOS" EXACTLY.**

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

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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

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 engenol.

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 allow particles.

Key: b

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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

11. Most common drawback of amalgam restoration is:

- a. Secondary expansion.
- b. Porosity.
- c. Marginal break-down.
- d. Contraction on setting.
- e. Contraction away from margins.

Key: c

12. What are the consequences of prolonged heating of a dental casting investment?

- a. Disintegration of the investment.
- b. Rough moulds of investment.
- c. Contamination of the alloys.
- d. Any of the above.
- e. Expansion of alloys .

Key: d

13. Regarding dental Amalgam:

- a. It is a mixture of silver alloy and mercury.
- b. It is be composed of spherical tin and mercury.
- c. It is a mixture of irregular particles of silver and tin.
- d. Amalgamation process is formed during heating of silver-mercury.
- e. The process of mixing amalgam is called Amalgamation.

Key: a

14. Which part of an amalgam restoration has the highest mercury concentration?

- a. Marginal area.
- b. Centre of the restoration.
- c. Pulpal area.
- d. Proximal surface of restoration.
- e. Inclined plane.

Key: a

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- 15. What is the maximum level of occupational exposure considered safe with regard to mercury vapors?**
- a. 5 *mg* of mercury
 - b. 50 *mg* of mercury
 - c. 35 *mg* of mercury
 - d. 25 *mg* of mercury
 - e. 1 *mg* of mercury

Key: b

- 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. Polymethymethacrylae
 - b. Polycarbonate
 - c. Cyanoacrylate
 - d. Urethane
 - e. Dimethacrylate.

Key: d

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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

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