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1725

Reg. No. :

Name :

First Year B.D.S. Degree Examination, April 2009
Paper – III : DENTAL MATERIALS

Time : 3 Hours

Max. Marks : 100

PART – A
(Restorative Dental Materials)

Time : 1½ Hours

Marks : 50

Essay :

- I. Define dental composite. Classify dental composite and write in detail on the composition of a dental composite. (1+2+7)
- II. Types of abrasives used in dentistry. Add a note on the composition of a typical dentrifice. (6+4)

Short notes : (5×3=15 Marks)

1. Glass ionomer cement – composition, setting reaction, and mechanism of adhesion to tooth.
2. Phosphate bonded investment.
3. Factors affecting strength of dental amalgam.

Multiple Choice Questions : (15×1=15 Marks)

1. Eutectic alloy temperature is
 - a) 649° C
 - b) 779° C
 - c) 500° C
 - d) 1400° C

P.T.O.



2. If the usage test is performed in humans it is called
 - a) clinical trial
 - b) level I test
 - c) level IV test
 - d) sensitization test

3. Aluwax contains
 - a) copper
 - b) silica
 - c) aluminium
 - d) zinc oxide

4. In a casting, subsurface porosity can be diminished by controlling the
 - a) mould temperature
 - b) sprue length
 - c) melt temperature
 - d) rate at which the molten metal enters the mould

5. Procedure which is used to shape the abrasive instruments as well as to remove clogged debris from the instrument
 - a) truing
 - b) dressing
 - c) sintering
 - d) buffing



6. Sandwich technique of restoration uses
 - a) amalgam and glass ionomer
 - b) polycarboxylate and glass ionomer
 - c) composite and glass ionomer
 - d) only composite
7. Radiant energy required for maximum curing of a 2 mm thick layer of resin is
 - a) 16 milli joules / cm²
 - b) 16,000 milli joules / cm²
 - c) 1600 milli joules / cm²
 - d) 160,000 milli joules / cm²
8. Enamel bonding agents are used
 - a) to enhance the wettability of etched enamel
 - b) to increase the adhesion of composite to enamel
 - c) to increase the tag length
 - d) to improve chemical bonding
9. Setting time of zinc phosphate cement can be retarded by
 - a) diluting the liquid with small amounts of H₂O
 - b) accelerating the rate of addition of powder to liquid
 - c) increasing the ratio of powder to liquid
 - d) decreasing the rate of addition of powder to liquid
10. Cavity varnish is a material which
 - a) develops an impermeable resin film
 - b) develops semipermeable membrane of resin film
 - c) is a calcium hydroxide powder in an aqueous medium
 - d) is a eugenol solution in an organic solvent



11. E-Z gold is a type of
 - a) gold foil
 - b) crystalline gold
 - c) powdered gold
 - d) fibrous gold
12. 24 hour compressive strength is highest for
 - a) zinc phosphate cement
 - b) GIC
 - c) polycarboxylate cement
 - d) zinc-oxide eugenol cement
13. Material having coefficient of thermal expansion similar to that of the tooth enamel
 - a) composite
 - b) amalgam
 - c) type II GIC
 - d) direct filling gold
14. Strength in gypsum investment is provided by
 - a) quartz
 - b) dental stone
 - c) silica
 - d) tridymite and cristoballite together
15. Component of inlay wax that contributes more to the glossiness of the wax surface is
 - a) paraffin wax
 - b) gum dammar
 - c) carnauba wax
 - d) candelilla wax



PART – B
(Prosthodontics)

Time : 1½ Hours

Marks : 50

- I. Define soldering and welding. Enumerate the desirable qualities of an ideal solder. Write in detail about investment soldering and free hand soldering techniques. **10**
- II. Write the composition and setting reaction of irreversible hydrocolloid impression material. Give the causes and remedies for different types of failure encountered with the use of irreversible hydrocolloid impression material. **10**
- III. Write short notes on : **15**
- a) Viscosity.
 - b) Galvanic corrosion.
 - c) Separating medium.
- IV. Multiple Choice Questions : **15**
- 1) Increasing the Water-Powder ratio of dental stone would
 - a) Increase the setting expansion
 - b) Increase the 1-Hr compressive strength
 - c) Lengthen the setting time
 - d) Decrease the amount of excess water used to mix the material
 - 2) The setting time of zinc oxide eugenol impression paste can be prolonged by
 - a) Mixing for a longer time
 - b) Adding chemical modifier, zinc acetate
 - c) Decreasing the amount of base paste
 - d) Cooling the glass slab and spatula not below the dew point



- 3) The main purpose of adding butadiene styrene rubber to acrylic resin is to increase its
- a) Impact strength
 - b) Compressive strength
 - c) Tensile strength
 - d) Shear strength
- 4) Cristobalite is a high expansion form of
- a) SiO_2
 - b) Al_2O_3
 - c) K_2O
 - d) Na_2O
- 5) The yield stress of metals can be improved by
- a) Chemical tempering
 - b) Transformation toughening
 - c) Thermal tempering
 - d) Work hardening
- 6) Crazeing of dentures occurs as a result of
- a) Relaxation of internal surface stresses
 - b) Lack of conduction of heat from inside to outside
 - c) Lack of adequate pressure
 - d) Leaching out of the plasticizer
- 7) Agar hydrocolloid gel should be liquefied by heating at
- a) 37°C
 - b) 45°C
 - c) 65°C
 - d) 100°C
- 8) The boiling point of methyl methacrylate monomer is
- a) 100.8°C
 - b) 180.1°C
 - c) 108.0°C
 - d) 108.8°C
- 9) Hardness of which of the following abrasives is maximum ?
- a) Sand
 - b) Emery
 - c) Boron carbide
 - d) Silicon carbide



- 10) What is a wrought metal ?
- a) When metal is worked in cold state
 - b) When metal is heated and then cooled
 - c) When copper is added to a metal
 - d) When more than two metals are mixed in molten state
- 11) Siliconized alginates have better
- a) Impact strength
 - b) Transverse strength
 - c) Tear strength
 - d) Fatigue strength
- 12) Phenol and formaldehyde are polymerized to a resultant product known as
- a) Vulcanite
 - b) Bakelite
 - c) Cryolite
 - d) Cellulose nitrate
- 13) In which of the following hardness tests, hardness is measured as the depth of penetration
- a) Brinell
 - b) Rockwell
 - c) Vickers
 - d) Knoop
- 14) The binder used in gypsum bonded investments is
- a) Sodium phosphate
 - b) Ethyl silicate
 - c) Calcium sulfate alpha hemihydrate
 - d) Ammonium phosphate
- 15) Hardness of elastomers is measured by using
- a) Oscillating rheometer
 - b) Shore a durometer
 - c) Vicat penetrometer
 - d) Gillmore needle
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