

Question Paper

Exam Date & Time: 08-Jun-2024 (02:15 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION
SECOND BDS DEGREE EXAMINATION - JUNE 2024
SUBJECT: DENTAL MATERIALS
(IR BATCH)

Marks: 60

Duration: 165 mins.

Answer all the questions.

1A) What is the difference between Elastic, anelastic and plastic behaviour? Show typical behaviour of viscoelastic material using a Strain vs Time diagram and label the areas of elastic, anelastic and plastic behaviour

(3+1 = 4 marks)

1B) Explain the clinical significance of viscoelastic behaviour of following:

- i) Impression materials
- ii) Tissue conditioner
- iii) Dental Amalgam

(2+2+2 = 6 marks)

2A) What is the rationale for the development of microfilled composites? Give reasons for poor filler loading in microfilled composites along with its clinical implications

(2+2 = 4 marks)

2B) Explain various methods used to enhance the filler loading in microfilled composites

(4 marks)

2C) Justify the reasons for preference of amorphous silica as a filler over quartz in dental composites.

(2 marks)

3) **Write short notes on:**

3A) Give the reasons for supplying diamond based abrasive instruments as bonded abrasives. Explain special bonding process used to extend the service life of diamond instruments. What are the precautions to be taken during the use of such instruments?

(1+2+1 = 4 marks)

3B) Define flux. Classify fluxes according to their function. Give the composition of borax flux

(1+1+2 = 4 marks)

- 3C) Explain the method of manufacturing of dental gypsum products
(4 marks)
- 3D) Compare and contrast normal setting expansion and hygroscopic setting expansion of dental gypsum products. What is the significance of setting expansion of gypsum products when used for the fabrication of working cast and as a mold material during casting of dental alloys?
(2+2 = 4 marks)
- 3E) State the role played by the following ingredients on the properties of irreversible hydrocolloid impression materials
- i) Trisodium phosphate
 - ii) Potassium titanium fluoride.
 - iii) Quaternary ammonium compounds
 - iv) Diatomaceous earth
- (1+1+1+1 = 4 marks)
- 3F) Compare and contrast the properties of acrylic teeth and porcelain teeth
(2+2 = 4 marks)
- 3G) Explain the clinical significance of low strength and high solubility of conventional zinc oxide eugenol cement. Enumerate the compositional modifications done to address these shortcomings.
(2+2 = 4 marks)
- 3H) Explain in detail about various methods used for the trituration of dental amalgam along with their pros and cons
(4 marks)
- 3I) Describe the composition, advantages, disadvantages and uses of Phosphate bonded investment materials.
(1+1+1+1 = 4 marks)
- 3J) Discuss in detail about various procedures followed in the laboratory and their mechanism to achieve bonding between ceramic and metal in porcelain fused to metal restorations.
(4 marks)

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