

# Question Paper

Exam Date & Time: 03-Jan-2024 (02:15 PM - 05:00 PM)



**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**SECOND BDS DEGREE EXAMINATION - JANUARY 2024**  
**SUBJECT: DENTAL MATERIALS**  
**(REGULAR BATCH)**

**Marks: 10**

**Duration: 165 mins.**

**Answer all the questions**

- 1A) Define ductility, malleability and brittleness. With the help of a stress-strain diagram depict the distinct difference in the behaviour of ductile and brittle materials under tensile load. (3+1 = 4 marks)
- 1B) With suitable examples, explain the clinical significance of ductile or brittle behaviour of dental materials with respect to the following (2+2+2 = 6 marks)
- Burnishability Index;
  - Swaging Technique;
  - Fabrication of orthodontic appliances
- 2A) Classify dental composites based on the filler size and mode of curing (2+2 = 4 marks)
- 2B) Explain the significance following aspects of fillers and their effect on the properties of dental Composites (1+1+1+1 = 4 marks)
- Filler size and distribution;
  - Filler loading;
  - Refractive index
  - Radiopacity
- 2C) Justify the reasons for using fibrous fillers in condensable composites. (1+1 = 2 marks)
- 3) **Write Short notes on:**
- 3A) Explain the effect of rake angles and clearance angles on the cutting efficiency of dental burs (2+2=4 marks)
- 3B) Explain the following aspects of Investment soldering technique: (1+1+1+1 = 4 marks)
- Type of investment to be used
  - Part of the flame used for soldering
  - Gap between the parts to be maintained at the time of investing
  - Need for the use of flux during soldering
- 3C) Explain in detail about setting of gypsum products based on the differences in the solubility of hemihydrate and dihydrate. What is effect of boiling water on the rate of setting of gypsum products (3+1 = 4 marks)
- 3D) Explain various methods used to measure setting times of gypsum products (4)
- 3E) Describe the composition and setting reaction of polyether impression materials (2+2 = 4 marks)
- 3F) Compare heat activated and chemically activated acrylic denture base resins (4)
- 3G) Explain the following properties of Glass ionomer cement along with its clinical significance
- Bonding to the tooth structure
  - Early moisture sensitivity

(2+2 = 4 marks)

- 3H) Describe the method used for the manufacturing of lathe-cut amalgam alloy powder (4)
- 3I) Explain the mechanism, causes and remedies for the localized shrinkage porosity and hot spot porosity in dental castings (4)
- 3J) Explain various methods used to strengthen the dental ceramics by Interruption of crack propagation (4)

-----End-----