

**Federal Statebudgetary Educational Institution  
North Ossetian State Medical Academyof the Ministry of Health of the Russian Federation**

**Department of Dentistry No. 1**

**APPROVED**

by the minutes of the meeting of  
the Central Coordination  
Educational and Methodological  
Council

" 22 " March 2022 2022 pr No. 4

**FOND OF ESTIMATED FUNDS**

по specialty **Dentistry: Materials Science**

For студентов **2nd** year students

по specialty 31.05.03 Dentistry

**Reviewed and approved at the meeting of the  
department**

dated "17" March 202.22, Protocol No. 3.

**Head of the Department MD,**



signature

Associate Professor M. G.  
Dzgoeva

**Vladikavkaz 2022г.**

## **FEEDBACK FORM STRUCTURE**

1. Title page
2. Feedback Form structure
3. Feedback Form review на ФОО
4. Passport of valuation tools
5. Set of evaluation tools:
  - benchmarks of test tasks (with a title page and table of contents),
  - e-examination tickets /test tickets

**Passport of the Department of assessment tools for the discipline  
Dentistry: Materials Science**

<b>n /</b>	<b>a Name of the supervised section (topic) of the discipline / module</b>	<b>Code of the formed competence(stage)</b>	<b>Name of the evaluation tool</b>
1	2	3	4
<b>Type of control</b>	<b>Intermediate</b>		
<b>1</b>	Subject of dental materials science. Classification of dental materials. Properties of materials.	OPK7	Standards of test tasks; exam tickets
<b>2</b>	Basic construction materials in orthopedic dentistry	OPK7	Standards of test tasks; exam tickets
<b>3</b>	Auxiliary materials in dentistry.	OPK7	Standards of test tasks; exam tickets
<b>4</b>	Basic requirements for dental materials used in the clinic of therapeutic dentistry.	OPK7	Standards of test tasks; exam tickets
<b>5</b>	Dental amalgam.	OPK7	Standards of test tasks; exam tickets
<b>6</b>	Dental cements.	OPK7	Standards of test tasks; exam tickets
<b>7</b>	Polymer materials for dental restoration. Polymer composites, general characteristics and classification. Adhesives and sealants.	OPK11	Standards of test tasks; exam tickets
<b>8</b>	Dental materials used for filling root canals.	OPK11	Standards of test tasks; exam tickets
<b>9</b>	Materials for surgical dentistry. General characteristics of materials for reconstructive surgery of the face and dental implants.	OPK11	Standards of test tasks; exam tickets
<b>10</b>	Temporary materials in dentistry	OPK11	Standards of test tasks; exam tickets

**FEDERAL STATE BUDGETARY EDUCATIONAL INSTITUTION OF HIGHER EDUCATION  
"NORTH OSSETIAN STATE MEDICAL ACADEMY" OF THE MINISTRY OF HEALTH OF  
THE RUSSIAN FEDERATION**

**review  
to the evaluation funds fund**

по специальности Dentistry: Materials Science  
For 2nd year students  
по специальности 31.05.03 Dentistry

The fund of evaluation funds was compiled at the Department of Dentistry No. 1 on the basis of the work program of the academic discipline approved on 22.03.2022 and meets the requirements of the Federal State Educational Standard for Higher Education in the specialty 31.05.03 Dentistry, approved by the Ministry of Education and Science of the Russian Federation on 19.08.2020, No.984..

The evaluation fund includes a bank of test tasks, exam tickets (test tickets).

The bank of test tasks includes the following elements: test tasks, variants of test tasks, and response templates. All tasks correspond to the work program of the discipline Dentistry: Materials Science and cover all its sections. The number of test tasks is 70. The difficulty of tasks varies. The number of tasks for each section of the discipline is sufficient to control knowledge and eliminates the repeated repetition of the same question in different versions. The bank contains answers to all test tasks and tasks.

The number of exam tickets is 80, which is sufficient for conducting the exam and excludes repeated use of the same ticket during the exam in the same academic group on the same day. Exam tickets are made on a single sample letterhead in a standard form, on paper of the same color and quality. The exam ticket includes 3 questiona's. The wording of the questions matches the wording of the list of questions submitted for the exam. The content of the questions of one ticket relates to different sections of the program, which allows you to more fully cover the material of the academic discipline.

The difficulty of the questions in the exam tickets is evenly distributed.

There are no comments on the reviewed pool of evaluation tools.

In general, the fund of assessment tools for the discipline Dentistry: Materials Science contributes to a qualitative assessment of the level of students ' proficiency in general cultural and professional competencies.

The reviewed fund of assessment tools for the discipline Dentistry: Materials Science can be recommended for use for intermediate certification at the Faculty of Dentistry for 2nd-year students.

Reviewer:

Chairman of the Central Committee of Dental  
Disciplines with the Sub-commission on  
evaluation of evaluation tools , Doctor of  
Medical Sciences, Associate Professor



signature

G. V. Toboev

**Federal State Budgetary Educational Institution of Higher Education  
North Ossetian State Medical Academy  
Ministry of Health of the Russian Federation**

**Department of Dentistry No. 1**

**Benchmarks for test tasks**

по специальности Dentistry: Materials Science  
For 2nd year students  
по специальности 31.05.03 Dentistry

**Reviewed and approved at the meeting of the  
Department**

dated March 17, 2022, Protocol No. 3.

**Head of the Department, MD, Associate  
Professor M.**



signature

M. G. Dzgoeva

### Table of contents

#	Name of the supervised section (topic) of the discipline / module	Number of tests (total)	Code of the competencies being formed	page from __ to __
1	2	3	4	5
<b>Type of control</b>	<b>Intermediate</b>			
1.	Subject of Dental Materials Science. Classification of dental materials. Properties of materials.	7	OPK7	p. 9
2.	Basic construction materials in orthopedic dentistry	7	OPK7	p. 9-10
3.	Auxiliary materials in dentistry.	7	OPK7	p. 10-11
4.	Basic requirements for dental materials used in the clinic of therapeutic dentistry.	7	OPK7	p. 11-12
5.	Dental amalgam.	7	OPK7	p. 13-14
6.	Dental cements.	7	OPK7	p. 14-15
7.	Polymer materials for dental restoration. Polymer composites, general characteristics and classification. Adhesives and sealants.	7	OPK11	p. 16-17
8.	Dental materials used for filling root canals.	7	OPK11	p. 17-18
9.	Materials for surgical dentistry. General characteristics of materials for reconstructive surgery of the face and dental implants.	7	OPK11	p. 18-19
10.	Temporary materials in dentistry	7	OPK11	p. 19-20

## Section 1

### **1. Which of the named material properties is considered physical:**

1. density
2. hardness
3. strength

### **2. Which of the named material properties is considered mechanical:**

1. strength
2. thermal conductivity
3. thermal expansion

### **3. Which of the material properties is considered chemical:**

1. solderability
2. erasability
3. oxidation

### **4. Which of the material properties is considered technological:**

1. malleability
2. fatigue
3. resilience

### **5. Fluidity is:**

1. the ability of the material to fill out the form
2. the ability of the material to melt
3. the ability of the material to take shape under pressure

### **6. The main types of deformations are:**

1. stretching
2. compression
3. shift
4. torsion
5. bend
6. all of the above

### **7. Abrasive materials belong to :**

1. basic structural elements
2. auxiliary services
3. clinical experience

## Section 2

### **1. Melting point of stainless steel:**

1. 700 ° C;
2. 1100 ° C;
3. 1400 ° C;

### **2. What metal is the basis of CCS:**

1. iron

2. cobalt
3. chrome

**3. What is the main purpose of silver in a gold alloy:**

1. increasing the alloy's resistance to acids
2. lowering the melting point
3. improving the thermal conductivity of the alloy

**4. What sample of gold alloy is used for the manufacture of stamped crowns:**

1. 750
2. 900
3. 999

**5. What is the purpose of copper in a gold alloy:**

1. increasing the hardness of the alloy
2. giving a nice color
3. improving the casting properties of the alloy

**6. Casting -**

1. the process of heating at a given temperature and slow cooling of alloys
2. the process of manufacturing castings by filling pre-prepared molds with liquid metal
3. the process of heating, holding at a given temperature and rapid cooling

**7. Stainless steel formula:**

1. 20X18H9T
2. Ca CO<sub>2</sub>
3. 90Cu10Al

**Section 3**

**1. The group of alginate impression materials includes:**

1. U-pin 2. Gypsum 3. Speedex

**2. The group of silicone impression materials includes:**

1. Stomalgin 2. Stomaflex 3. Gypsum

**3. What impression materials does gypsum belong to:** 1. Silicone 2. Alginate 3. Crystallizing

**4. Group of impression materials:**

1. Thermoplastic 2. Elastic 3. Polymerizable 4. True 1 2 5. True 1 2 3

**5. What are the deadlines for obtaining a plaster model from stomalgin:**

1. 20 minutes 2. Within one hour 3. During the day

**6. Which of the impression materials is classified as thermoplastic:** 1. Algix 2. Altex 3. Orthokor



## 7. Silicone materials are mainly used:

1.

For removing impressions from toothless jaws 2. For removing impressions in the manufacture of cermets 3. For repairing dentures

## Section 4

### 1. Temporary filling materials must be

- 1) ensure tight closure of the tooth cavity
- 2) be resistant to abrasion
- 3) match the appearance of natural teeth
- 4) easy to enter and exit the cavity

### 2. Materials for insulating gaskets must be

- 1) resist the pressure force
- 2) increase dentin permeability
- 3) prevent the movement of fluid in the dentinal tubules and seal them tightly
- 4) be a temperature and chemical insulator
- 5) break down under the action of gingival and dentinal fluid

### 3. Materials for medical pads should

- 1) provide anti-inflammatory, antimicrobial, odontotropic effect
- 2) ensure a strong sealing of the underlying dentin, communication with tooth tissues, padding and permanent fillings materials
- 3) irritate the tooth pulp
- 4) break down under the influence of gingival and dentinal fluid

*Set a match*

### 4. Classification of permanent filling materials

<b>Група</b>	<b>Representatives Group</b>
A) cements	1) silver amalgam
B) plastics	2) copper amalgam
C) metal	3) zinc-phosphate cement
	4) silico-phosphate cement
	5) silicate cement
	6) polycarboxylate cement
	7) filled plastics
	8) unfilled plastics
	9) glass ionomer cement

**5. The therapeutic pad has the following effects:**

1. indifferent ones.
2. proteolytic properties.
3. anti-inflammatory;
4. necrotizing drugs.
5. mummifying.

**6. The treatment pad covers:**

1. bottom and walls.
2. bottom;
3. walls.
4. bottom and walls up to the enamel-dentine border;
5. contact surface.

**7. Времы Dentin paste hardening times:**

1. 2-3 minutes.
2. 3-5 minutes.
3. 40 minutes.
4. 2-3 hours.
5. 10-12 hours.

**Section 5**

**1. Temporary filling materials must be**

- 1) ensure tight closure of the tooth cavity
- 2) be resistant to abrasion
- 3) match the appearance of natural teeth
- 4) easy to enter and exit the cavity

**2. Materials for insulating gaskets must be**

- 1) resist the pressure force
- 2) increase dentin permeability
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6. indifferent ones.
7. proteolytic properties.
8. anti-inflammatory;
9. necrotizing drugs.
10. mummifying.

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1. bottom and walls.
2. bottom;
3. walls.
4. bottom and walls up to the enamel-dentine border;
5. contact surface.

## **12. ВремыDentin paste hardening times:**

1. 2-3 minutes.
2. 3-5 minutes.
3. 40 minutes.
4. 2-3 hours.
5. 10-12 hours.

## **Section 6**

### **1. Classification of permanent filling materials**

<b>Группа</b>	<b>Representatives Group</b>
A) cements	1) silver amalgam
B) plastics	2) copper amalgam
C) metal	3) zinc-phosphate cement
	4) silico-phosphate cement
	5) silicate cement
	6) polycarboxylate cement
	7) filled plastics
	8) unfilled plastics
	9) glass ionomer cement

### **2. The therapeutic pad has the following effects:**

13. indifferent ones.
14. proteolytic properties.
15. anti-inflammatory;
16. necrotizing drugs.
17. mummifying.

### **3. The treatment pad covers:**

1. bottom and walls.
2. bottom;
3. walls.
4. bottom and walls up to the enamel-dentine border;
5. contact surface.

**4. ВремыDentin paste hardening times:**

1. 2-3 minutes.
2. 3-5 minutes.
3. 40 minutes.
4. 2-3 hours.
5. 10-12 hours.

**5. Glass ionomer cement is used**

- 1) for aesthetic filling
- 2) for filling temporary teeth
- 3) for fixing pin structures
- 4) to create a tooth stump for the crown

**6. For the treatment of deep caries, therapeutic pads are used**

- 1) formaldehyde-containing pastes without resorcinol
- 2) formalin-resorcinol paste
- 3) preparations based on calcium hydroxide

**7. As an insulating gasket in cavities of class II according to Black for composite materials, use**

- a) water dentin
- b) dentin paste
- c) silicophosphate cement
- d) glass ionomer cement
- e) silicate cement

**Section 7**

**1. To repair significant defects in hard molar tissues restoration is shown**

- a) tabs
- b) cements of the silicophosphate group
- c) with a computer
- d) microphilic composite material
- e) cements of the silicate group

**2. Indications for filling carious cavities with silver**

**The following Black classes are an amalgam**

- a) I ,II, V class in the area of chewing teeth
- b) Class I, III, IV
- c) Class II, IV
- d) I , III, V class
- e) II, III, V class

**3. As an insulating gasket in полостях II Black Class II cavities for composite materials, use**

- a) glass ionomer cement
- b) dentin paste
- c) silicophosphate cement
- d) water dentin
- e) silicate cement

**4. Etching of hard tissues of teeth is carried out in order to**

- a) to improve the adhesive properties of the filling material
- b) remineralizing effect on enamel
- c) for the diagnosis of dental caries in the spot stage
- d) improving the aesthetic properties of the filling material
- e) for anesthesia of hard tooth tissues

**5. Концентрация Acid concentration for etching enamel before filling**

- a) 37%
- b) 10%
- c) 20%
- d) 5%
- e) 40%

**6. The term "total etching" means**

- a) etching of enamel and dentin
- b) dentin etching
- c) pulp etching
- d) etching of enamel
- e) etching of enamel, dentin, pulp

**7 As an insulating pad when filling a carious cavity cavities cements are used**

- a) glass ionomers
- b) silicophosphate
- d) silicate

**Section 8**

**1 Contraindications to the use of amalgam are**

- a) a class III cavity with access to the vestibular surface
- b) class II cavity
- c) class I cavity
- d) class IV cavity
- e) Class V cavity in molars

**2 Materials used for making tabs**

- a) metal alloys, composites
- b) composites
- c) cements
- d) compomers

**3 Materials for insulating gaskets must be**

- 1) resist the force of pressure, be a temperature and chemical insulator
- 2) increase dentin permeability
- 3) prevent the movement of fluid in the dentinal tubules and seal them tightly
- 4) break down under the influence of gingival and dentinal fluid

**4. Materials for medical pads should**

- 1) provide anti-inflammatory, antimicrobial, odontotropic effect
- 2) ensure a strong sealing of the underlying dentin, communication with tooth tissues, padding and permanent fillings materials
- 3) irritate the tooth pulp
- 4) break down under the influence of gingival and dentinal fluid

**5 The main active substance of preparations for chemical expansion of channels is**

- 1) ethylenediaminetetraacetic acid (EDTA)
- 2) orthophosphoric acid
- 3) hydroxyethylenediphosphonic acid

**6 According to the modern classification materials**

**for filling root canals, they are divided into the following groups:**

- 1) temporary, permanent, primary hard (pins)
- 2) plastic hardening materials
- 3) plastic non-hardening
- 4) permanent, ductile non-solidifying
- 5) primary hard (pins)

**7 Therapeutic pads with long-lasting odontotropic effect and antiseptic effect, contain**

- 1) calcium hydroxide
- 2) antibiotics
- 3) non-steroidal anti-inflammatory drugs
- 4) corticosteroids

**Section 9**

**1 The filling material protecting the dentin must be**

- 1) prevent the movement of fluid in the dentinal tubules and hermetically seal them, be a temperature and chemical insulator
- 2) pass dentine fluid freely
- 3) be a temperature and chemical insulator
- 4) increase dentin permeability

**2 Etching of enamel and dentin is carried out**

- 1) composites to eliminate the smudged layer
- 2) to strengthen the edge fit
- 3) to enhance the bactericidal properties

**3 Restoration filling materials include**

- 1) glass ionomer cement, composite materials, compomers
- 2) zinc-eugenol paste
- 3) potassium hydroxide
- 4) composite materials
- 5) compomers

**4 The composition of the composite material includes**

- 1) resin, filler, silanes
- 2) filler
- 3) silanes
- 4) orthophosphoric acid



**5 Glass ionomer cement is used**

- 1) for aesthetic filling
- 2) for filling temporary teeth, for fixing pin structures
- 3) for fixing pin structures

**6 Groups of composite materials include**

- 1) hybrid, microphylls, macrophylls
- 2) macrophylls
- 3) microphylls
- 4) neutrophils

**7 K Bonded systems include**

- 1) primer
- 2) acid
- 3) polishing paste

**Section 10**

**1 For the restoration of the frontal group of teeth is used**

- 1) microfilled composites
- 2) amalgam
- 3) cement phosphate
- 4) dentin paste

**2 For the sandwich filling technique, the following is used:  
combination of materials**

- 1) glass ionomer cement + composite
- 2) phosphate cement + amalgam
- 3) apexit + dentin paste

**3 For filling cavities of class 1 and 2 according to Black use**

- 1) hybrid composites, packable composites
- 2) microfilled composites
- 3) packable composites

**4 According to the type of polymerization composite materials  
they are divided into**

- 1) light-curing, chemical curing, double curing
- 2) chemical curing
- 3) double cure
- 4) infrared curing

**5 Indications for applying arsenic paste**

- 1) root canal obstruction, myocardial infarction, individual anaesthetic intolerance
- 2) myocardial infarction
- 3) individual anaesthetic intolerance
- 4) enamel hypoplasia

**6 When sealing gutta-percha channels are used  
root sealants**

- 1) apexit
- 2) phosphate cement
- 3) sialapex

**7 For permanent filling of root canals are used  
pins**

- 1) gutta-percha plants
- 2) paper ones
- 3) parapulpar

**Federal Statebudgetary Educational Institution  
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**Department** of Dentistry No. 1  
**Faculty** of Dentistry               **Course 2**  
**Discipline Dentistry: Materials Science**

**Exam ticket # 1**

1. Classification of dental materials.
2. Dental cements
3. General characteristics of materials for reconstructive surgery of the face and dental implants

**Head of the Department, MD,**

Associate Professor M. G. Dzgoeva