

**51. In which devices direct synthesis of concentrated nitric acid is carried out:**

- A) cyclones;
- B) reactors;
- C) autoclaves;
- D) scrubbers;
- E) furnaces.

**52. What catalysts are used to oxidize ammonia in nitric acid production technology:**

- A)  $\text{Fe}_2\text{O}_3$ ;
- B)  $\text{Cr}_2\text{O}_3$ ;
- C) Ni-Pd-Rh;
- D) Pt-Pd-Rh;
- E)  $\text{Al}_2\text{O}_3$ .

**53. What equation corresponds to the reaction of ammonia oxidation:**

- A)  $2\text{NO}_2 = \text{N}_2\text{O}_4$ ;
- B)  $2\text{NO} + \text{O}_2 = 2\text{NO}_2$ ;
- C)  $4\text{NH}_3 + 5\text{O}_2 = 4\text{NO} + 6\text{H}_2\text{O}$ .
- D)  $\text{NO} + \text{NO}_2 = \text{N}_2\text{O}_3$ ;
- E)  $3\text{NO}_2 + \text{H}_2\text{O} = 2\text{HNO}_3 + \text{NO}$ ;

**54. In the presence of a catalyst, the oxidation reaction of ammonia can go with the formation of:**

- A)  $\text{N}_2$ ;
- B)  $\text{NH}_4\text{NO}_3$ ;
- C)  $\text{N}_2\text{O}_5$ ;
- D)  $\text{HNO}_3$ ;
- E)  $\text{NO}$ .

**55. Reaction:  $4\text{NH}_3 + 5\text{O}_2 \rightarrow 4\text{NO} + 6\text{H}_2\text{O}$  - is one of the stages of the following production:**

- A) 1<sup>st</sup> stage of nitric acid production;
- B) 2<sup>nd</sup> of the nitrous method for producing sulfuric acid;
- C) 1<sup>st</sup> stage for the production of ammonia;
- D) 3<sup>th</sup> stage of nitric acid production;
- E) the stage of oxidation of the nitrogen-hydrogen mixture of ammonia production.

**56. The chemical-technological scheme for the production of diluted nitric acid includes the following stages:**

- A)  $3\text{NO}_2 + \text{H}_2\text{O} \rightarrow 2\text{HNO}_3 + \text{NO}$ ;
- B)  $4\text{NH}_3 + 5\text{O}_2 \rightarrow 4\text{NO} + 6\text{H}_2\text{O}$ ;  $\text{NO} + 0,5\text{O}_2 \leftrightarrow \text{NO}_2$ ;
- $4\text{NO}_2 + \text{O}_2 + 2\text{H}_2\text{O} \rightarrow 4\text{HNO}_3$ ;