**Olimpiada instituțională 2020**

***ÎŢI DORIM MULT SUCCES!***

**INFORMATICA**

**clasa XII-a**

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|  | **Item** | **Punctaj** |
| 1. | Transformaţi numărul (**C,DC3**)16 în sistemele binar şi octal de numeraţie. Indicaţi transformările efectuate.

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| 2. | Alcătuiţi tabelul de adevăr pentru calcularea funcţiei $y$.$$y=(x\_{2}⋀\overbar{x}\_{1})⋁(\overline{x\_{2}}⋀x\_{3})$$

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| --- | --- | --- | --- | --- | --- | --- |
| $$x\_{1}$$ | $$x\_{2}$$ | $$x\_{3}$$ |  |  |  | $$y$$ |
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| 3. | Se consideră următorul circuit logic, la intrările căruia sunt aplicate valorile: $x\_{1}=1, x\_{2}=1, x\_{3}=0$.1. Indicaţi pe desen valorile semnalelor de la intrările şi de ieşire fiecărei porţi logice;
2. Scrieţi funcţia logică realizată de circuitul reprezentat \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_;
3. Câte porţi logice de tip **ŞI**, **SAU**, **NU** conţine circuitul prezentat?

**ŞI** - \_\_\_\_\_; **SAU** - \_\_\_\_\_; **NU** - \_\_\_\_\_\_. | L0123456 |
| 4. | Se dau două matrice **A(n, n)** şi **B(n, n)**, ale căror elemente sunt numere întregi. Să se scrie un program Pascal, care va calcula suma (**S=A+B**) şi produsul (**P=A\*B**) matricelor.**Intrare:** Dimensiunea n şi elementele matricelor **A** şi **B**.**Ieşire:** Matricele **A**, **B** şi matricele **S** şi **P**.

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| 5. | Fie dată integrala definită . 1. Scrieţi un program Pascal, care va calcula valoarea aproximativă a acestei integrale prin metoda dreptunghiurilor de mijloc, utilizând 30 de divizări ale intervalului de integrare.

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1. Bifaţi imaginea care corespunde ilustrării grafice a metodei dreptunghiurilor de dreapta pentru calcularea integralei definite.

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| 6. | Fie dată ecuaţia $14x^{3}+3x^{2}+12x+11=0$. Scrieţi un program Pascal, care va calcula soluţia aproximativă a acestei ecuaţiei pe segmentul [-2; 0] prin metoda coardelor cu exactitatea ***eps=10-3***.**Intrare:** Valorile extremităţilor segmentului şi exactitatea.**Ieşire:** Soluţia aproximativă a ecuaţiei.

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 **Nu uita să completezi formularul de participare la OLIMPIADA ON-LINE 2020 și să-l expediezi la adresa** **olimpiada.online2020@mail.ru**

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