BUCHAREST UNIVERSITY OF ECONOMIC STUDIES
Admission 2024 - Undergraduate programme
FACULTY OF ECONOMIC CYBERNETICS, STATISTICS AND INFORMATICS

Test code: ***MEnb1***

MULTIPLE-CHOICE TEST
in MATHEMATICS

1. (10p) If $A = \{x \in \boldsymbol{R} | x^2 - 7x + 10 \leq 0\}$, then

a. $A = [2,5]$
b. $A = (2,5)$
c. $A = [-2,5]$
d. $A = [0, \infty)$
e. $A = [2,5)$

2. (5p) Let $f: \boldsymbol{R} \to \boldsymbol{R}, f(x) = x^2 - 6x + q$ with $q \in \boldsymbol{R}$. The value of q for which f has minimal value $y = f(x) = -1$ is:

a. $q = 0$
b. $q = 2$
c. $q = 4$
d. $q = 6$
e. $q = 8$

3. (5p) The geometric progression $(b_n)_{n \geq 1}$ with terms $b_6 = 64$ and $b_3 = 8$ has common ratio:

a. $q = 0$
b. $q = 2$
c. $q = -2$
d. $q = 4$
e. $q = 2\sqrt{2}$

4. (10p) The number of solutions, denoted K, of the system $\begin{cases} x^2 + 2^y = 8 \\ x + 2^{y+1} = 10 \end{cases}$, is:

a. $K = 0$
b. $K = 1$
c. $K = 2$
d. $K = 3$
e. $K = 5$

5. (10p) The value of parameter $a \in \boldsymbol{R}$ for which the matrix $A = \begin{pmatrix} -2 & 1 \\ 4 & a \end{pmatrix} \in M_2(\boldsymbol{R})$ is not invertible, is:

a. $a = 0$
b. $a = -1$
c. $a = 2$
d. $a = 1$
e. $a = -2$

6. (10p) If $P = xyz$, where $(x, y, z) \in \boldsymbol{R} \times \boldsymbol{R} \times \boldsymbol{R}$ is the solution of the system of equations

$$\begin{cases} 2x + 3y - 4z = 0 \\ -4x + 6y + 4z = 5 \\ 6x - 3y + 4z = 4 \end{cases}$$

then:

a. $P = \frac{1}{2}$
b. $P = \frac{2}{3}$
c. $P = \frac{3}{4}$
d. $P = \frac{1}{3}$
e. $P = \frac{1}{4}$

7. (10p) If $L = \lim\limits_{\substack{x \to 1 \\ x>1}} \frac{e^{x^2-1}-1}{x^2-1}$, then:

a. $L = 0$
b. $L = -1$
c. $L = e$
d. $L = 2$
e. $L = 1$

8. (10p) The value $k \in \boldsymbol{R}$ for which the function $f: \boldsymbol{R} \to \boldsymbol{R}$, defined by

$$f(x) = \begin{cases} e^{2x} + k, & x \in (-\infty, 0) \\ 2 - x, & x \in [0, +\infty), \end{cases}$$

is continuous on $\boldsymbol{R}$, is:

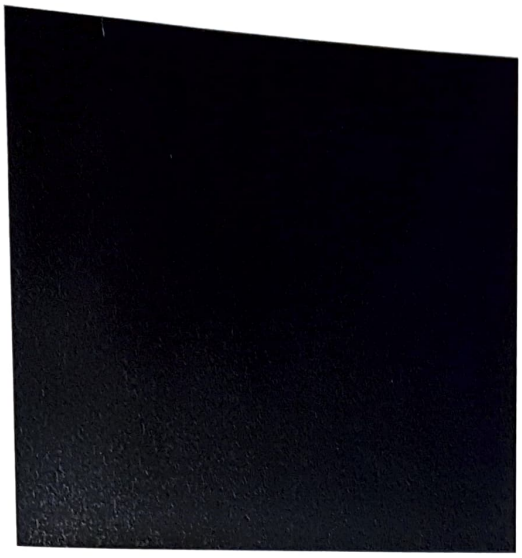
a. $k = -1$
b. $k = 1$
c. $k = 0$
d. $k = 2$
e. $k = e$

9. (10p) If $L = \lim\limits_{n \to +\infty} \frac{2+4+6+\cdots+(2n)}{n^2+1}$, then:

a. $L = 0$
b. $L = 2$
c. $L = +\infty$
d. $L = 1$
e. $L = e$

10. (10p) If $I = \int_0^1 (e^x + 2x - 3)dx$, then:

a. $I = e + 1$
b. $I = e$
c. $I = e - 1$
d. $I = e - 2$
e. $I = e - 3$



ACADEMIA DE STUDII ECONOMICE DIN BUCUREȘTI
FACULTATEA DE CIBERNETICĂ, STATISTICĂ ȘI INFORMATICĂ ECONOMICĂ
Admitere programe de studii universitare de licență – *sesiunea iulie 2024*
BAREM
Cod grilă:MEn b1

Cod Grilă

1	2	3	4	5	6
●	○	○	○	○	○

Disciplină

- ○ Matematică (în limba română)
- ● Matematică (în limba engleză)
- ○ Limba Română + Economie

Nr.	A	B	C	D	E	Pct.
1	●	○	○	○	○	10
2	○	○	○	○	●	5
3	○	●	○	○	○	5
4	○	○	●	○	○	10
5	○	○	○	○	●	10
6	○	○	○	○	●	10
7	○	○	○	○	●	10
8	○	●	○	○	○	10
9	○	○	○	●	○	10
10	○	○	○	○	●	10