

CAML
MCQ #1
Thursday, September the 11th 2025

Remarks (valid for all MCQs) :

- This is an MCQMA, that is to say a Multiple Choice Question and Multiple Answer test, which means that, there may be several right answers.
 - CAML :
 - All questions are about the interpreted mode of CAML as studied in class.
 - Unless otherwise stated, the environment is assumed to be **empty** for each question. (except "predefined" functions: float_of_int, int_of_float ...)
-

1. What is the evaluation result of the following phrase?

```
let year = 2025 + 5 ;;
```

- (a) - : int = 2030
 - (b) val year = 2030 : int
 - (c) val year : int = 2030
 - (d) val year : int = 2025 + 5
 - (e) An error.
-

2. What is the evaluation result of the following phrase?

```
let a = 3 / 2 and b = 3. /. 2.;;
```

- (a) val a : int = 1
 - (b) val b : float = 1.5
 - (c) val a : int = 1
val b : float = 1.5
 - (d) An error.
-

3. What is the evaluation result of the following phrase?

```
let c = c + 1;;
```

- (a) - : int = 1
 - (b) val c : int = 1
 - (c) val c : float = 1
 - (d) An error.
-

4. What is the evaluation result of the following phrase?

```
let a = true and b = false in not a && b ;;
```

- (a) - : bool = true
- (b) - : bool = false
- (c) - : bool = not a && b
- (d) An error.

5. What will be the last result after successive evaluations of the following phrases?

```
let a = 1;;  
let a = 2 in float_of_int a;;  
a *. a ;;
```

- (a) - : int = 1
- (b) - : int = 4
- (c) - : float = 1.
- (d) - : float = 4.
- (e) An error.

6. What is the evaluation result of the following phrase?

```
let f x = let a = x + 1 and b = x + 2;;
```

- (a) val f : int -> int = <fun>
- (b) val f : int -> int -> int = <fun>
- (c) val f : int -> bool = <fun>
- (d) An error.

7. What is the evaluation result of the following phrase?

```
let g x = float_of_int (int_of_float x + 2);;
```

- (a) val g : int -> float = <fun>
- (b) val g : float -> int = <fun>
- (c) val g : int -> int = <fun>
- (d) val g : float -> float = <fun>
- (e) An error.

8. What will be the last result after successive evaluations of the following phrases?

```
let f x = (let a = 2 * x and b = x + 2 in a + b)  
+ (let a = 3 + x and b = 3 * x in b - a) ;;  
f 2 ;;
```

- (a) - : int = 8
- (b) - : int = 9
- (c) - : int = 10
- (d) - : int = 11
- (e) An error.

9. The following definition might be incorrect. What is the problem?

```
let f n = let test = n <> 0 && 12 / n > 5 in n * test ;;
```

- (a) A syntax error
- (b) A "Division_by_zero" exception
- (c) A type error
- (d) An "Unbound value" exception
- (e) The function is correct.

10. What does the following function calculate?

```
let g x =  
  let f1 x = x * x in  
  let f2 x = f1 (f1 x) in  
  let f3 x = f2 (f2 x) in  
  f3 x * f1 x ;;
```

- (a) x^8
- (b) x^{10}
- (c) x^{12}
- (d) x^{16}
- (e) x^{18}

MCQ 1

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Question 11

The fraction $F = \frac{9}{18}$ is equal to $\frac{9 \times 18}{4}$

- a. True
- b. False

Question 12

Consider the polynomial P defined by: $\forall x \in \mathbb{R}, P(x) = 2x^2 + bx + c$, where b and c are real numbers. Assume that P admits two distinct roots: 1 and -2 . Then:

- a. $P(x) = (x - 1)(x + 2)$
- b. $P(x) = 2(x - 1)(x + 2)$
- c. $P(x) = (x + 1)(x - 2)$
- d. $P(x) = 2(x + 1)(x - 2)$
- e. None of the others

Question 13

Select the correct answer(s)

- a. The definition domain of the function $x \mapsto e^x$ is $]0, +\infty[$.
- b. The definition domain of the function $x \mapsto e^x$ is \mathbb{R} .
- c. $e^0 = 0$
- d. $e^1 = 1$
- e. None of the others

Question 14

Select the correct answer(s)

- a. The definition domain of the function $x \mapsto \ln(x)$ is $]0, +\infty[$.
- b. The definition domain of the function $x \mapsto \ln(x)$ is \mathbb{R} .
- c. $\ln(0) = 0$
- d. $\ln(1) = 1$
- e. None of the others

Question 15

Let $x \in \mathbb{R}$ and consider the properties

$$P: "x > 4" \text{ and } Q: "-2 \leq x < 6"$$

- a. If $x = 7$, P is true
- b. If $x = 7$, Q is true
- c. If $x = 7$, $\neg P \vee \neg Q$ is true
- d. If $x = 7$, $\neg P \vee \neg Q$ is false
- e. None of the others

Question 16

Consider the properties P : "It is raining" and Q : "There are clouds in the sky". Then:

- a. It is sufficient that P is true for Q to be true.
- b. It is sufficient that Q is true for P to be true.
- c. $P \iff Q$
- d. None of the others

Question 17

Let $x \in \mathbb{R}$. Then:

- a. $x = 0 \implies \sin(x) = 0$
- b. $\sin(x) = 0 \implies x = 0$
- c. $x < 1 \implies |x| < 1$
- d. $|x| < 1 \implies x < 1$
- e. None of the others

Question 18

Let P and Q be two properties. The contrapositive of $P \implies Q$ is:

- a. $\neg P \implies \neg Q$
- b. $\neg P \wedge Q$
- c. $Q \implies P$
- d. $\neg Q \implies \neg P$
- e. None of the others

Question 19

Select the correct answer(s):

- a. $\forall x \in \mathbb{R}, x + 1 \geq 0$
- b. $\exists x \in \mathbb{R}, x + 1 \geq 0$
- c. $\forall x \in \mathbb{R}, \exists y \in \mathbb{R}$ such that $x^2 + y \geq 0$
- d. $\exists x \in \mathbb{R}, \exists y \in \mathbb{R}$ such that $x^2 + y \geq 0$
- e. None of the others

Question 20

The negation of "All the fishes are red" is:

- a. "Some fishes are blue"
- b. "No fish is red"
- c. "Some fishes are not red"
- d. None of the others

ALGO	
1	C
2	C
3	D
4	B
5	E
6	D
7	D
8	B
9	C
10	E

MATH PC	
11	B
12	B
13	B
14	A
15	AC
16	A
17	AD
18	D
19	BCD
20	C