



# A

## ONDOKUZ MAYIS UNIVERSITY INTERNATIONAL STUDENT EXAM

April 30, 2016

ENGLISH

NAME	:	.....
SURNAME	:	.....
ID NUMBER	:	.....
SIGNATURE	:	SEAT NUMBER: .....

### IMPORTANT INFORMATION

- This booklet includes test questions for international students who wish to study in certain Turkish universities.  
The number of questions are as follows:  
**Mathematics** 40  
**Basic Learning Skills** 40
- This is an "A" type booklet. Please mark the type of your booklet on the answer sheet as shown below, and make sure it has been confirmed by the exam supervisor.  
**If you do not code the booklet type correctly on the answer sheet, your exam will be invalid.**
- You have **120 minutes** to complete the exam.
- Each question has only one correct answer. Multiple selections will be considered as incorrect.
- The answers to the questions given in the booklet should be marked by pencil on the answer sheet provided with this booklet. Please use a pencil. Do not fold the answer sheet and do not write anything not required on it.
- Inappropriate markings on the answer sheet will not be read by the optical reader. The candidate is responsible for the mistakes incurred by inappropriate markings.**
- Only correct answers will be calculated in this exam. You will not lose any points for incorrect answers.
- Further information about the examination rules are printed on the back cover of this booklet.

TYPE OF THE QUESTION BOOKLET			
A ●	B ○	C ○	D ○
PARAPH	PARAPH	PARAPH	PARAPH

EXAMPLE

## MATHEMATICS

$$1. \frac{(1-2)\left(\frac{1}{5}+3\right)}{\frac{7}{5}-1}=?$$

- A) -8    B) -5    C) 1    D) 5    E) 8

$$5. a=0,\bar{7}=0,777\dots7\dots \Rightarrow \sqrt{a}=?$$

A)  $\frac{\sqrt{2}}{2}$

B)  $\frac{\sqrt{3}}{2}$

C)  $\frac{\sqrt{5}}{2}$

D)  $\frac{\sqrt{5}}{3}$

E)  $\frac{\sqrt{7}}{3}$

$$3. \left. \begin{array}{l} A+2B=3 \\ B+C=8 \\ 2C+D=17 \end{array} \right\} \Rightarrow A+D=?$$

- A) 4    B) 6    C) 7    D) 9    E) 12

$$6. \text{ Let } x \text{ be a real number and } \sqrt{\frac{\sqrt{x}+5}{\sqrt{x}-5}} = \sqrt{x}+5.$$

What is  $x$  ?

- A) 24    B) 23    C) 26    D) 20    E) 5

7. Let  $x$  and  $y$  be positive integers. What is the sum of  $y$ 's satisfying  $2x + 5y = 25$  ?

- A) 4      B) 5      C) 6      D) 7      E) 8

10. 
$$\left. \begin{aligned} -1 \leq a \leq \frac{1}{2} \\ -2 < b \leq -\frac{1}{2} \end{aligned} \right\} .$$

Which one of the following intervals contains  $a^4 + b^3$  ?

- A)  $\left[-7, \frac{1}{2}\right)$       B)  $\left(-7, \frac{1}{8}\right]$       C)  $\left(-8, \frac{7}{8}\right]$   
 D)  $\left(-8, -\frac{7}{8}\right)$       E)  $\left[-8, \frac{1}{8}\right]$

9. Let  $a$  be an integer. If  $a + \frac{b}{a} = 4$  then, which one of the following is a factor of  $b$  ?

- A)  $a - 2$   
 B)  $2 - a$   
 C)  $-(a + 4)$   
 D)  $4 + a$   
 E)  $4 - a$

12. Which one of the following satisfies the equation  $3 - \frac{5}{3-x} = x + \frac{1}{x-3}$  ?

- A) 3      B) -5      C) -1      D) 5      E)  $\frac{1}{2}$

15. Let  $f, g : \mathbb{R}^2 \rightarrow \mathbb{R}$ ,  $f(x, y) = \max\left(x - y, \frac{x}{y}\right)$  and  $g(x, y) = \min(x + y, xy)$  be two functions.

What is  $f(f(-1, 3), g(4, 4))$  ?

- A)  $-\frac{1}{3}$       B)  $\frac{25}{3}$       C)  $\frac{1}{24}$   
 D)  $-\frac{1}{24}$       E)  $-\frac{25}{3}$

16. Let  $f$  be an even,  $g$  is an odd function and  $f(2) = 1$ ,  $g(2) = 3$ .

If  $h(x) = \frac{\frac{f(x)}{g(x)} - f(x)}{g(x) + f(x)}$ , then

$h(-2) = ?$

- A) 0      B)  $-\frac{1}{3}$       C)  $\frac{2}{3}$   
 D)  $-\frac{2}{3}$       E)  $\frac{1}{3}$

14.  $\frac{5^{4x} - 2 \cdot 5^{2x+y} + 5^{2y}}{5^{2x+y} - 5^{2y}} = ?$

- A)  $1 - 5^{2x+y}$       B)  $1 + 5^{2x+y}$       C)  $1 - 5^{y-2x}$   
 D)  $1 - 5^{2x-y}$       E)  $5^{2x-y} - 1$

19. If  $\log_5 7 = a$ , then what is  $\log_7 35$ ?

A)  $\frac{a}{a+2}$

B)  $\frac{a+1}{a}$

C)  $\frac{a}{a+1}$

D)  $\frac{a-1}{a}$

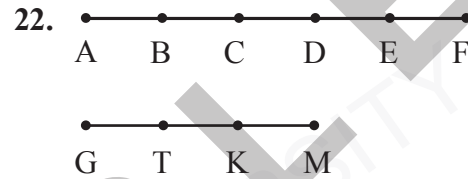
E)  $\frac{a}{a-1}$

20. What is the remainder of  $2(2015)^{22} + 3(2016)^{23} + 4(2017)^{24}$  if it's divided by 10 ?

- A) 0    B) 2    C) 3    D) 5    E) 7

21. Let  $A = 9!$ . What is  $11! + 10! - 9!$  in terms of A?

- A) 90.A    B) 120.A    C) 110.A  
D) 119.A    E) 91.A



How many triangles can be constructed by using the dots in the figure?

- A) 105    B) 135    C) 120  
D) 90    E) 96

24. Among two brothers, elder one is  $7x - 10$  and younger one is  $x + 13$  years old.

What is the minimum age of the elder brother?

- A) 12    B) 14    C) 16    D) 18    E) 20

25. If  $f(x) = \left| \begin{array}{cc} 3 & -2 \\ \ln e^{3x} & |3x| \end{array} \right|$ , then what is  $f\left(-\frac{1}{3}\right)$ ?

- A) 1    B) -1    C) 0    D) 3    E) -3

26. Let  $*$  be an operation on complex numbers with  $Z_1 * Z_2 = Z_1 + 3|Z_1 \cdot Z_2|$ .

What is  $(1+i) * (\sqrt{7}-i)$ ?

- A)  $i - 13$     B)  $i + 13$     C)  $13 - i$   
D)  $13i + 1$     E)  $13i - 1$

27. If  $\sin \alpha = \frac{4}{5}$  and  $\cos \beta = \frac{6}{10}$ , then what is  $\sin(\alpha - \beta)$ ?

- A) 0    B)  $\frac{3}{5}$     C)  $\frac{1}{5}$     D) 1    E)  $\frac{1}{2}$

29. Let  $f(x) = \frac{|x^3 - 8|}{x^3 - 8} + \sqrt{x-1} + \frac{1}{x^2 - 9}$

At which one of the following points  $f(x)$  is continuous?

- A) 4    B) 3    C) 2    D)  $\frac{\sqrt{2}}{2}$     E) -3

31. If  $\int_a^b f(x)f'(x)dx = 42$  and  $f(b) - f(a) = -7$ ,  
then what is  $f(a)$  ?

A)  $-\frac{19}{2}$

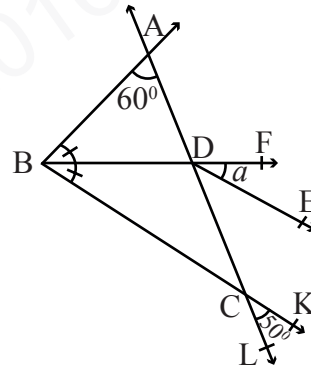
B)  $-\frac{5}{2}$

C) 0

D)  $\frac{5}{3}$

E) 5

34.



[DE // [BK

$m(\widehat{BAL}) = 60^\circ$

$m(\widehat{KCL}) = 50^\circ$

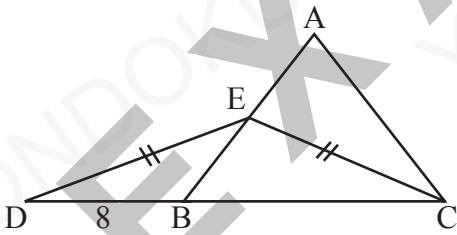
$m(\widehat{ABD}) = m(\widehat{DBC})$

$m(\widehat{FDE}) = a = ?$

A) 25    B) 35    C) 55    D) 60    E) 80



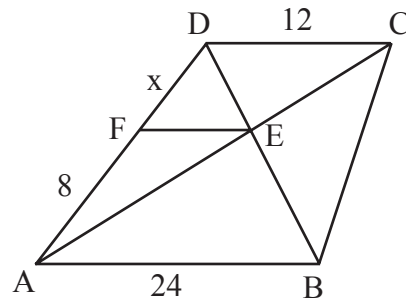
36.



ABC equilateral triangle,  
 D, B, C collinear points  
 $|DE| = |EC|$ ,  $|BD| = 8$  cm  
 $|AE| = ?$

- A) 8      B) 9      C) 10      D) 12      E) 13

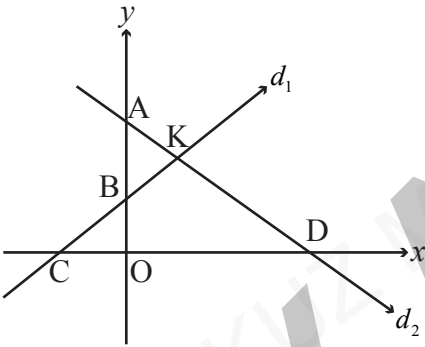
38.



ABCD trapezoid,  $[DC] \parallel [AB] \parallel [FE]$   
 $|DC| = 12$  br,  $|AF| = 8$  br,  
 $|AB| = 24$  br  
 $|DF| = x = ?$

- A) 3      B) 4      C) 5      D) 6      E) 7

40.



$$A(0, 4)$$

$$B(0, 2)$$

$$C(-2, 0)$$

$$D(4, 0)$$

$$\text{Area}(KCD)=?$$

$$A) 9$$

$$B) 16$$

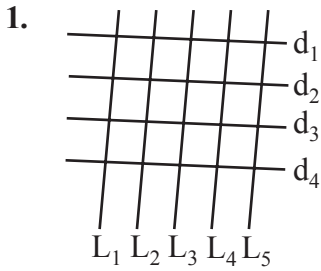
$$C) 18$$

$$D) 24$$

$$E) 36$$

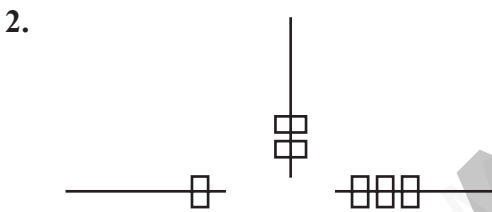
Mathematics Test is completed.

**BASIC LEARNING SKILLS**



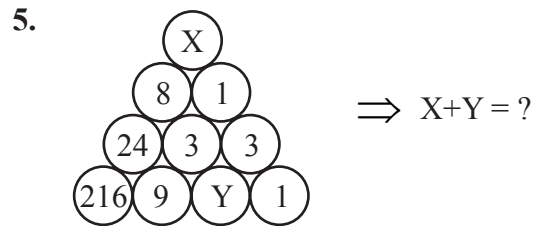
How many parallelograms are there in the above figure?

- A) 20    B) 30    C) 40    D) 50    E) 60



What is the next figure in the above sequence?

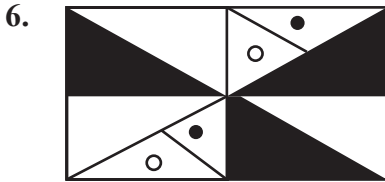
- A)    B)    C)
- D)    E)



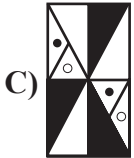
- A) 6    B) 8    C) 11    D) 13    E) 16

3. If 1, 5, 13, 29, A, B, then  $B - A = ?$

- A) 16    B) 32    C) 64    D) 128    E) 256



If the above figure is rotated at angle of 90° clockwise which one of the following is obtained?



Which one of the following should be replaced in the question mark (?)?



8. If  $\square \times \square = \triangle$   
 $\triangle - \square = \square + \square + \square$   
 then  $\triangle = ?$

- A) 4      B) 16      C) 28      D) 30      E) 42

12.  $\triangle \blacksquare \blacktriangle \hexagon \rightarrow 1431$   
 $\pentagon \square \blacktriangle \blacklozenge \rightarrow 1136$   
 $\blacksquare \square \triangle \blacklozenge \rightarrow ?$

Which one of the following should be replaced in the question mark (?)?

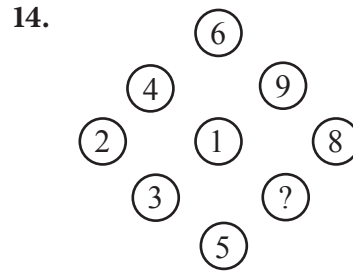
- A) 4115      B) 3114      C) 4111  
 D) 1115      E) 5114

13.

5	17	34
63	79	82
21	48	?

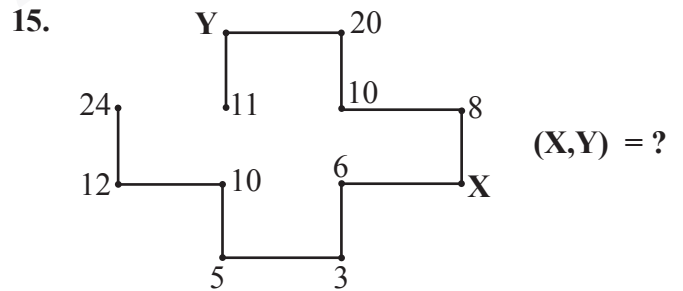
Which one of the following should be replaced in the question mark (?)?

- A) 30    B) 33    C) 36    D) 39    E) 42

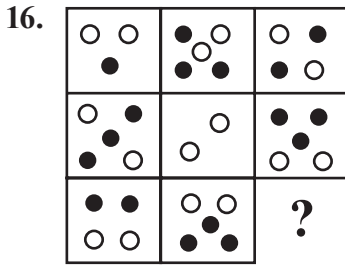


Which one of the following should be replaced in the question mark (?)?

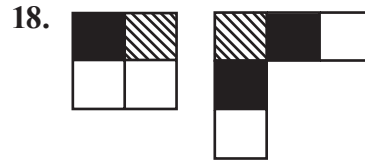
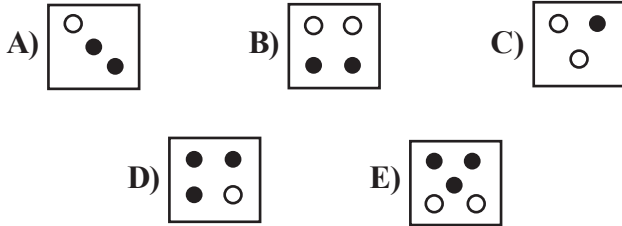
- A) 5    B) 6    C) 7    D) 8    E) 9



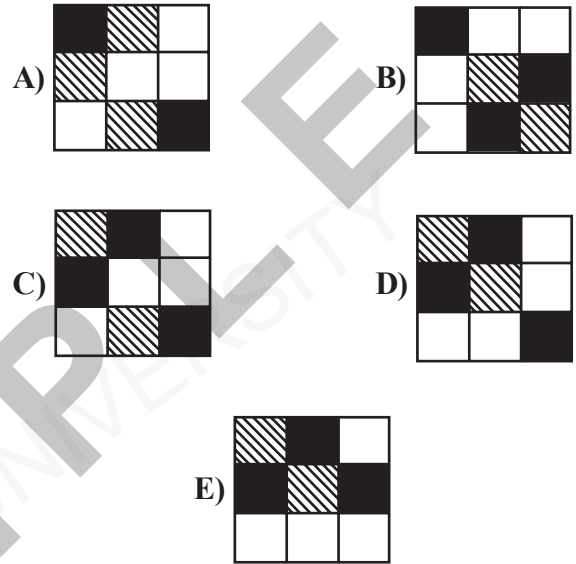
- A) (3, 10)      B) (4, 18)      C) (10, 18)  
 D) (4, 22)      E) (18, 4)

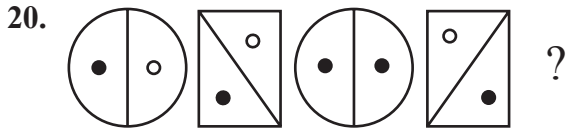


Which one of the following should be replaced in the question mark (?)?

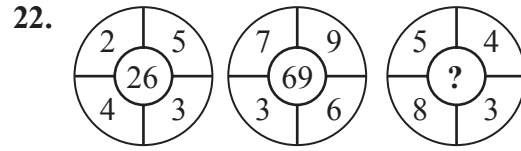
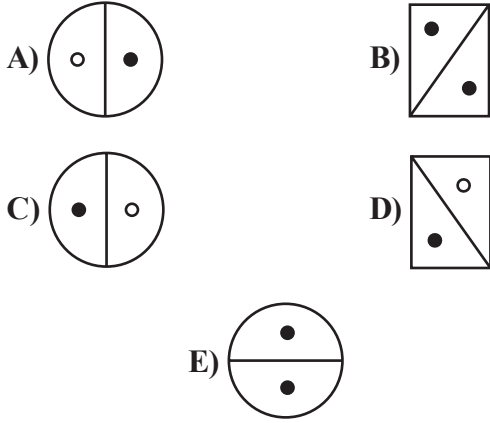


Which one of the following is obtained if two figures are merged?





Which one of the following should be replaced in the question mark (?)?



Which one of the following should be replaced in the question mark (?)?

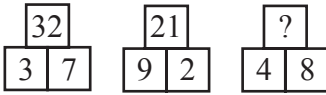
- A) 68    B) 47    C) 36    D) 53    E) 24



Which one of the following should be replaced in the question mark (?)?

- A) 284396  
 B) 28436  
 C) 34826  
 D) 34846  
 E) 34816

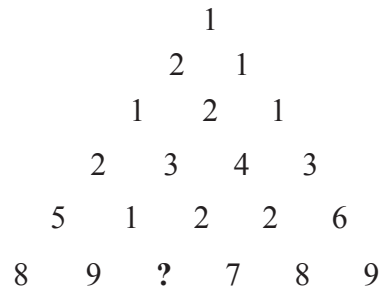
25.



Which one of the following should be replaced in the question mark (?)?

- A) 18    B) 32    C) 48    D) 56    E) 64

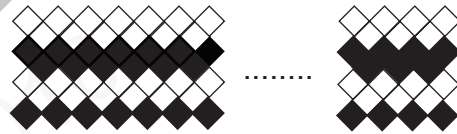
29.



Which one of the following should be replaced in the question mark (?)?

- A) 3    B) 4    C) 5    D) 6    E) 7

30.



There are 77 equilateral black quadrangles in the above figure. What is the number of white ones?

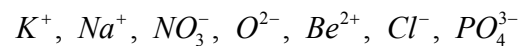
- A) 100    B) 102    C) 104  
D) 106    E) 108

28. If  $6+3+5=183033$   
 $4+8+3=321265$   
 $3+9+4=271236$

then  $5+6+5 = ?$

- A) 253060  
 B) 253006  
 C) 302560  
 D) 302506  
 E) 063025

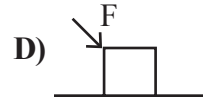
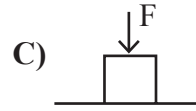
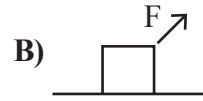
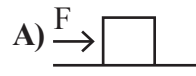
31. How many of the following are anion?



- A) 1    B) 2    C) 3    D) 4    E) 5



34. A force  $F$  is acting on an object of mass  $m$ . In which one of the following the work done by the force is the biggest?



35. Which one of the following number of protons and neutrons belongs to a different element?

- A) 12p, 13n
- B) 12p, 10n
- C) 12p, 14n
- D) 12p, 11n
- E) 13p, 12n

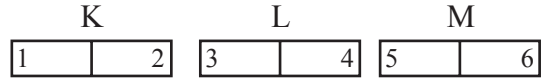
37. A potted plant and a grasshopper are put under each of the two identical bell jars. Then, one of the bell jars is kept in a dark place, the other is kept in a bright one; and the following statements are given:

- I. Two grasshoppers die at the same time.
- II. The grasshopper in the dark place lives longer.
- III. The grasshopper in the bright place lives longer.

Which of the above statements are correct?

- A) Only I
- B) Only II
- C) Only III
- D) I and II
- E) I and III

39.



When the magnets K and M are moved towards to the magnet L, it doesn't move.

Which one at the following shows the magnet poles 1, 2, 3, 4, 5 and 6?

- |    |          |          |          |          |          |          |
|----|----------|----------|----------|----------|----------|----------|
|    | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> |
| A) | N        | S        | S        | N        | S        | N        |
| B) | N        | N        | S        | S        | N        | S        |
| C) | N        | S        | N        | S        | N        | S        |
| D) | S        | N        | S        | S        | S        | N        |
| E) | S        | S        | N        | N        | S        | N        |

EXAMPLE



# A

## EXAMINATION RULES

1. Following materials are prohibited in exam room: Any communication equipments e.g. pagers, walkie-talkies, PDA's, watches with any other functions, weapons, notebooks, books, dictionaries, any electronic device with dictionary function, calculators, calculation charts, compasses, goniometers, rulers and etc. If any candidate enters the exam room with the prohibited materials, his/her name will be recorded and their examinations will be considered invalid.

2. Duration of the exam is **120** minutes. Candidates are allowed to take the exam if they are not late for more than **30** minutes. Candidates are not allowed to leave the exam room in the first **40** minutes and the last **5** minutes of the examination. Candidates who completed the exam or left the examination room will not be allowed to re-enter the examination room. If you complete the exam before the end of the duration you can leave the room after submitting your question booklet and answer sheet. When the end of the examination is announced you must remain seated and may not leave the examination room until all papers are collected by the invigilators.

3. Communicating with the invigilators during the examination is prohibited. Similarly, it is prohibited for the staff to talk to candidates privately. Candidates are not allowed to exchange pencils, erasers, papers etc. during the exam.

4. The exam of any candidate who cheats, attempts to cheat or assists cheating will be considered invalid and his/her identity will be recorded. Invigilators do not have to warn the students about cheating. The candidate is responsible for his/her actions. Answers of the candidates will be examined electronically. If any suspicious case is detected regarding individual or collaborate cheating, the exams of all candidates who participate in this action will be considered invalid. If invigilators report any case of misconduct in the application of the exam or collaborate cheating, OMÜ-YÖS Coordinating Office may decide to consider all of the candidates' exams invalid for that room.

5. All candidates must obey the rules in the exam room. If necessary, your seat may be changed by invigilators. Obeying the rules is of utmost importance for validation

of the exam. Identity of any candidate who engages in misconduct and does not heed the invigilator's warning to discontinue the behavior, will be recorded and his/her examination will be considered invalid.

6. You must fill all the required fields on the answer sheet. Only pencils should be used for marking and writing on the answer sheet. Pens or ball point pens should not be used. All the answers should be marked on the answer sheet. Answers marked on the question booklet will be considered invalid.

7. Please check your question booklet for missing pages or typos after receiving it. If there are any missing pages or typos on your booklet, please immediately request for the change of the booklet from the head invigilator. You should also check if the booklet type written on the cover page is the same as the booklet type written on every page of the booklet. If you find any difference, please request a new booklet from the head invigilator. If you realise any difference about booklet types after you start the examination, request a new booklet of the same type you have answered. Please mark your booklet type on the "Question Booklet Type" area on the answer sheet. Booklet type you have marked will be checked by the invigilators and initialed with a pen. If the related area is not initialed, your answer sheet will not be evaluated. If there is difference between the booklet types that you have marked and the invigilator has marked, evaluation will be based on the one that is marked by invigilators.

8. Please write your name, surname and candidate number on the question booklet before starting to answer the questions. All the question booklets and answer sheets will be collected and examined at the end of the examination. In case of missing pages, examination of the related candidate will be considered invalid.

9. You can use the spaces on the question booklet for calculation.

10. Smoking (cigarettes, pipes, cigars etc.) is not allowed during the examination for both candidates and the staff.

11. Writing the questions and/or the answers and taking it out is strictly prohibited.

12. Do not forget to submit your question booklet and