

CA' FOSCARI UNIVERSITY OF VENICE

Degree in Business Administration - Economics and
Management (curriculum Economics and Management)

UNIVERSITY OF TRIESTE

Degree in Economics, International Trade and Financial
Markets (curriculum in Economics of Financial and Insurance
Markets and Economics and Management of Innovation)

QUESTIONNAIRE**DO NOT OPEN**

the plastic envelope until you are told
the test is starting

PROVA P00000

1. **Sara, Sonia and Silvia produce necklaces. When they work together they create 10 necklaces in 2 hours. Sara alone would take 5 hours to create 10 necklaces, while Sonia alone would take 10 hours to create 10 necklaces. How would employ Silvia alone to create 10 necklaces?**
☐ A. 5 hours
☐ B. 4 hours
☐ C. 3 hours
☐ D. 2 hours
2. **In the academic year 2014-2015, among the 150 students of the Degree's Course of Psychology are 30 males. What is the female sex percentage of the group?**
☐ A. 20%
☐ B. 70%
☒ C. 80%
☐ D. 90%
3. **In a day a graduand writes $\frac{2}{5}$ of his 300 page thesis. The next day he writes $\frac{2}{3}$ of the remaining pages. How many pages are left to write?**
☐ A. 30
☐ B. 40
☐ C. 50
☒ D. 60
6. **Which of the following couples of numbers if added give as result 14 and if subtracted give as result 4?**
☐ A. 10 - 4
☐ B. 8 - 6
☒ C. 9 - 5
☐ D. 8 - 4
7. **Which of the following triads give a product that is 20 times their sum?**
☐ A. 3 - 6 - 7
☐ B. 2 - 4 - 5
☒ C. 6 - 8 - 10
☐ D. 7 - 8 - 9
8. **How many people are sitting in the tenth row of a cinema, knowing that in the first row there are three people, and in each subsequent row there are two more people than in previous?**
☐ A. 19
☒ B. 21
☐ C. 13
☐ D. 23
9. **There are 300 animals in a Zoo, of which 15 new arrived this year. Calculate the percentage of new arrivals.**
☐ A. 3 %
☒ B. 5 %
☐ C. 7,5 %
☐ D. 5,8 %
10. **Which of the numbers below is the next in the sequence 25, 32, 22, 29, ...**
☒ A. 19
☐ B. 35
☐ C. 39
☐ D. 42
11. **Determine the number whose triple, plus 20 equals 77.**
☐ A. 14
☐ B. 27
☐ C. 17
☒ D. 19

- 12. Three heirs must share a sum of € 18.000. Determine their portion of inheritance, knowing that they are proportional respectively to the numbers 9, 12, 15.**
- X A. € 4.500 - € 6.000 - € 7.500
 B. € 4.000 - € 6.500 - € 7.500
 C. € 4.000 - € 6.000 - € 8.000
 D. € 4.500 - € 6.500 - € 7.000
- 13. Which of the numbers below is the next in the sequence 3, 12, 48, ...?**
- X A. 192
 B. 144
 C. 123
 D. 145
- 14. Which of the numbers below is the next in the sequence 5, 17, 53, ...?**
- A. 171
 X B. 161
 C. 173
 D. 165
- 15. If dog = 9, fish = 12, monkey = 18, elephant = ...?**
- A. 37
 X B. 24
 C. 14
 D. 20
- 16. A black female cat may have a white kitten only if she mates with a white male. Which of the following statements follows from the previous?**
- A. If none of the kittens is white, then the male is not white
 B. If the male is white, then all kittens are white
 X C. If the male is not white, then no kitten is white
 D. If the kitten are in part black and in part white, then the male may be black
- 17. If you answer to 20 questions of this test, and at least 15 answers are correct, then:**
- A. You earn at least 15 points
 X B. You earn at least 12,5 points
 C. You earn at least 17,5 points
 D. You earn less than 12,5 points
- 18. Marco collects two shells in a minute, and every minute doubles the number of collected shells. How many shells has Marco collected after 10 minutes?**
- A. 20
 B. 512
 X C. 1024
 D. 2048
- 19. All brokers are canny. Antoinette loves sewing. All people who enjoy sewing are cautious. If the above statements are true, which of the following statements is necessarily true?**
- A. Antoinette could not work as a broker
 B. Brokers are not cautious
 C. Antoinette does not trust brokers
 X D. Antoinette is cautious
- 20. Two jars A and B contain an unknown number of beans. If 18 are moved from A to B, then B has 4 beans less than those left in A. If, afterwards, 8 beans are moved from B to A, in the end A contains 3 times the beans left in B. Compute the initial number of beans in the two jars.**
- A. 58 and 18
 X B. 40 and 0
 C. 10 and 30
 D. 18 and 22

21. According to FIGURE 1, indicate the diagram that represents the relations between the sets: fruit, vegetables, apples, pears.

FIGURE 1

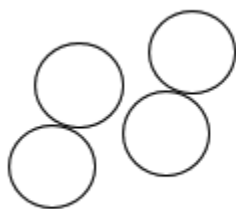


DIAGRAM 1

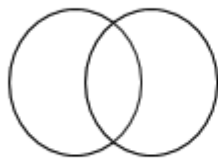


DIAGRAM 2

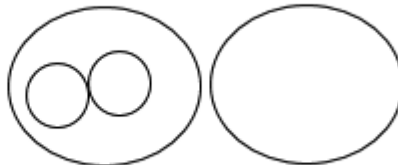


DIAGRAM 3

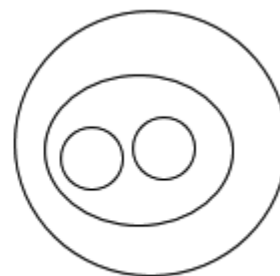


DIAGRAM 4

- A. Diagram 1
B. Diagram 2
X C. Diagram 3
D. Diagram 4
22. Given the sets $E=\{1,3,5,7,9\}$, $F=\{2,4,6,8\}$ e $G=\{1,2,3,4,5,6,7,8,9\}$, then
X A. $E \cup F = G$
B. $G = E \cap F$
C. $G \subset E$
D. $G \subset F$
23. Given the sets $X=\{x : 1 \leq x \leq 9\}$ and $Y=\{x : 5 \leq x \leq 8\}$, which of the following statement is TRUE:
A. $X \cap Y = \{x : 5 \leq x \leq 9\}$
B. $X \cup Y = \{x : 1 \leq x \leq 8\}$
C. $X \subset Y$
X D. $Y \subset X$
24. Given the sets $E=\{2n : n \text{ is natural}\}$, $F=\{4n : n \text{ is natural}\}$ and $G=\emptyset$, find the FALSE statement:
X A. $E \cap G = \emptyset$
B. $F \cup G = F$
C. $E \cap F = F$
D. $E \cup F = F$
25. Let p and q be rational numbers. Then it is FALSE that:
A. $p + q$ is always rational
X B. $2p - q$ may be irrational
C. p / q is always rational
D. $\frac{p+q}{pq+1}$ is always rational
26. Let n be a natural number. Then it is FALSE that:
A. $n / 2$ is natural for all even n
B. $(n + 1) / 2$ is natural for all odd n
C. $n / 2$ is rational for all n
X D. $(n + 1) / 2$ is not natural for some odd n
27. Which of the following numbers are rational?
 $3, \bar{3}, 3,14, \sqrt{\frac{256}{625}}, \frac{3}{e}$
A. $3, \bar{3},$ and $\sqrt{\frac{256}{625}}$ only
B. $\sqrt{\frac{256}{625}}$ only
X C. all, except $\frac{3}{e}$
D. all

28. What is the prime factorization of the number 624?

- A. $2^3 \cdot 3^2 \cdot 13$
X B. $2^4 \cdot 3 \cdot 13$
C. $2^5 \cdot 3^2 \cdot 13$
D. $2^3 \cdot 3 \cdot 13$

29. Which of the following numbers is divisible by 3?

- A. 451
B. 178
X C. 231
D. 854

30. What is the result of

$$\frac{(-2)^5 \cdot 6 \cdot (-7^3)}{3 \cdot 4^3 \cdot 7^2}$$

- A. 14
X B. 7
C. $7/2$
D. -7

31. What is the result of the expression $(2xy^2z^2)(12x^3y)$?

- A. $10x^4y^3z^2$
B. $24x^3y^4z$
C. $48x^4y^4z^2$
X D. $24x^4y^3z^2$

32. What is the result of the expression $(3xy^3z^2)^3$?

- X A. $27x^3y^9z^6$
B. $9x^3y^9z^6$
C. $27x^9y^3z^6$
D. $6x^3y^9z^6$

33. Determine the degree of the polynomial $5x^4 + 2x^3y^2 + x^3y^2z^2$

- A. 6° degree
B. 4° degree
X C. 7° degree
D. 5° degree

34. Calculate the least common multiple of the following monomials $15a^3b^2$; $24abc^3$; $12a^3c^4$

- A. $20ab^2c^4$
X B. $120a^3b^2c^4$
C. $60a^3b^2c^4$
D. $120a^3b^3c^2$

35. The result of $(a - b)^3$ is:

- X A. $a^3 - 3a^2b + 3ab^2 - b^3$
B. $a^3 + 3a^2b - 3ab^2 + b^3$
C. $a^3 - b^3$
D. $a^3 + 3a^2b + 3ab^2 + b^3$

36. The solution of the equation $x^2 - 16 = 0$ are:

- X A. $x=-4$ or $x=4$
B. all real values are solutions
C. no solution exists
D. $x=2$ or $x=-2$

37. Calculate the solution of the equation

$$\frac{2x^2+1}{x+3} + \frac{2x-x}{x+3} = \frac{2x^2+x}{x+3} + 1$$

- A. $x=2$ or $x=1/2$
B. $x=4$
X C. $x=-2$
D. $x=-2$ or $x=1$

38. Calculate the solution of the equation

$$\frac{x^2 + 2x - 8}{x + 4} = 0$$

- X A. $x = 2$
B. $x = 2$ or $x = -4$
C. $x = -2$ or $x = 4$
D. no solution exists

39. Calculate the solutions of the inequality $x^2 - 3x + 2 > x - 1$

- A. $1 < x < 3$
B. $x = 1$ or $x = 3$
C. $x < 1$ or $x > 2$
X D. $x < 1$ or $x > 3$

40. Calculate the solution of the inequality $2x(x-2)(x-4) \leq 0$

- X A. $x \leq 0$ or $2 \leq x \leq 4$
B. $x < 2$ or $x \geq 4$
C. $0 \leq x \leq 4$ or $x \geq 2$
D. $0 \leq x \leq 2$ or $x \geq 4$

41. Calculate the solution of the inequality

$$\frac{6}{x-1} \geq -1$$

- A. $x > 1$
B. $-5 \leq x < 1$
X C. $x \leq -5$ or $x > 1$
D. $x \leq -5$ or $x \geq 1$

42. Write the equation of the line through the points F(1,1) e G(2,-2)

- A. $y = -2x + 2$
B. $y = 2x + 2$
X C. $y = -3x + 4$
D. $y = 2x - 1$

43. Compute the coordinates of the point of intersection of the straight lines of equations $y = 2x + 1$ and $x + y + 5 = 0$

- A. (-2,2)
B. (-3,3)
X C. (-2,-3)
D. (-3,-2)

44. Compute the distance in the plane of the point P(-2,1) from the line of equation $y = 2x$

- A. 5
B. 2
C. $\sqrt{2}$
X D. $\sqrt{5}$

45. Determine the coordinates of the vertex of the parabola of equation $y = x^2 - 6x + 12$

- A. V(3;-3)
B. V(-3,3)
C. V(-3,-3)
X D. V(3;3)

