

An Roinn Cideachais  
(Department of Education)

Branse na Scrúduithe  
(Examinations Branch)

Scrúduithe Teastais na nGairmchúrsaí Lae 1979

(Day Vocational Certificate Examinations 1979)

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Matamaitic - Páipéar II  
(Mathematics - Paper II)

Do Gach Feitheoir  
To Gach Superintendent

I dtreo is nach mbeidh aon mí-thuisctint ann, iarrtar ort a chur in iúl dos na hiarrthóirí gurb é "O" an pointe a ghearrann an dá ais a chéile i gCeist 25 sa Scrúdpháipéar seo.

In order to avoid any misunderstanding, please advise candidates that "O" is the point of intersection of the two axes in Question 25 in this Examination Paper.

S. Ó Breacáin.

FOR EXAMINERS USE ONLY
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CANDIDATE'S EXAMINATION NUMBER \_\_\_\_\_

AN ROINN OIDEACHAIS  
BRAINSE NA SCRÚDUITHE

DAY VOCATIONAL CERTIFICATE EXAMINATION 1979

MATHEMATICS—PAPER II

MONDAY, 11 JUNE — 2-4 p.m.

### INSTRUCTIONS

- Before attempting to answer any question you should write your examination number in the space provided on top of this page.
- This booklet is to be returned to the Supervisor at the end of this examination period.
- The total time allowed for this paper is 2 hours. You are allowed five minutes to read these instructions and to write your examination number on top of this page. You will then get 10 minutes to look through the questions but may not write down any answers during this time. You will then have 100 minutes in which to answer the questions and the remaining five minutes is for final checking.
- You will be given one mark for each question answered correctly in Section One and two marks for each question answered correctly in Section Two.
- Four suggested answers, A, B, C, and D, are given for each question and only one of these is correct. You are required to select the correct response and to record it by encircling the letter opposite the right answer as shown in the following item:

A. -1  
B. 1  
C. 7  
D. 12

You will not get credit for any answer unless it is marked in this way. No credit will be given if more than one response is thus marked. However if you make a mistake you may cancel the wrong answer by putting an X across it thus ~~C~~.

- Answer as many questions as you can. If you find a question too difficult go on to the next, but go back and attempt it later if you have sufficient time and then choose the response which you judge most likely to be correct.
- If you wish to do any calculations or other work you may do it in this booklet but do not do it on the left hand side where the letters A, B C and D appear.  
You may also carry out calculations on paper available from the Supervisor.
- The official Mathematical Table book may be used in answering this paper. Ask the Supervisor for the tables when you need them.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

OVER

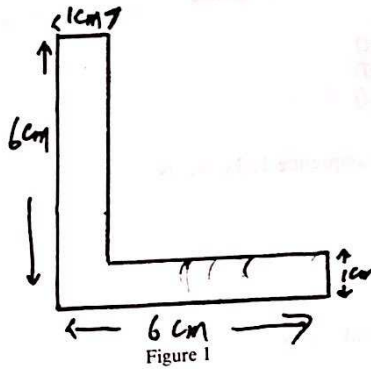
1.  $\frac{1}{4}$  of  $\frac{1}{2}$  is equal to
  - A.  $\frac{2}{4}$
  - B.  $\frac{1}{8}$
  - C.  $\frac{5}{4}$
  - D.  $\frac{16}{4}$
  
2. If a school opens at 9.00 hrs and closes at 16.45 hrs, how many hours is it open?
  - A.  $5\frac{3}{4}$
  - B.  $6\frac{3}{4}$
  - C.  $7\frac{3}{4}$
  - D.  $8\frac{3}{4}$
  
3. Expressed correct to 3 significant figures  $38 \cdot 4672$  is
  - A.  $38 \cdot 5$
  - B.  $38 \cdot 467$
  - C.  $38 \cdot 4$
  - D.  $38 \cdot 0$
  
4. The product of two numbers is obtained by
  - A. Subtracting one number from the other
  - B. Adding the two numbers and dividing the result by 2.
  - C. Dividing the larger number by the smaller number.
  - D. Multiplying the two numbers.
  
5. The value of  $8 + (2 \times 10) - (9 \div 3)$  is
  - A. 22
  - B. 25
  - C.  $30\frac{1}{3}$
  - D. 97
  
6. The correct order for the numbers  $\frac{1}{2}$ ,  $\frac{1}{4}$  and  $\frac{3}{4}$  using the symbol  $<$  (less than) is
  - A.  $\frac{3}{4} < \frac{1}{4} < \frac{1}{2}$
  - B.  $\frac{1}{4} < \frac{1}{2} < \frac{3}{4}$
  - C.  $\frac{1}{2} < \frac{3}{4} < \frac{1}{4}$
  - D.  $\frac{1}{4} < \frac{1}{2} < \frac{3}{4}$
  
7. In which of the following is  $x \in Z$  (an integer)?
  - A.  $x = \frac{2}{3}$
  - B.  $x = 2\frac{1}{2}$
  - C.  $x = -3$
  - D.  $x = -2 \cdot 5$
  
8. Given that  $P = \{1, 2, 3, 4\}$ ,  $R = \{2, 3, 4, 5\}$ ,  $S = \{5, 6, 7, 8\}$ ,  $T = \{4, 5, 6, 7\}$ ,  $W = \{3, 4, 5, 6\}$ , which of the following sets is empty?
  - A.  $P \cap R$
  - B.  $P \cap S$
  - C.  $P \cap T$
  - D.  $P \cap W$
  
9. How many pieces of wire  $2 \cdot 4$  m long can be cut from 72 m?
  - A. 3
  - B. 30
  - C. 36
  - D. 300
  
10. The simple interest on £550 for 4 years @ 5% per annum is
  - A. £660
  - B. £110
  - C. £100.50
  - D. £27.50



11. Given that  $y = x^2 - 3x$  and  $x = -2$  which of the following is the correct value of  $y$ ?
- 10
  - 2
  - 2
  - 10
12. The factors of  $ac - ad + bc - bd$  are
- $(a + b)(c - d)$
  - $(a - b)(c + d)$
  - $(a + b)(c + d)$
  - $(a - b)(c - d)$
13. The next term in the sequence 1,  $3x$ ,  $9x^2$  is
- $12x^3$
  - $18x^4$
  - $27x^3$
  - $81x^4$
14. The difference of  $x$  and  $-y$  is
- $y - x$
  - $-xy$
  - $x + y$
  - $x - y$
15. If  $x = 3$  and  $y = 2$  which of the following represents the number 32?
- $x + y$
  - $xy$
  - $10y + x$
  - $10x + y$
16. Which of the following is the correct solution set of the equation  $x^2 + 12x - 64 = 0$
- $\{+4, -16\}$
  - $\{+4, +16\}$
  - $\{-2, +32\}$
  - $\{-4, +16\}$
17. The product of 1101 by 111 in the binary scale is
- 1001101
  - 1010011
  - 1011011
  - 1101011
18. The denary number 23 written in base two is
- 10010
  - 10111
  - 11001
  - 11101
19. If  $\log x$  is  $2 \cdot 7782$  then  $x$  is
- 18.95
  - 60.01
  - 189.5
  - 600.1
20. It is State policy to plant 30 new trees every year in a wood which contains 75 trees originally. In how many years will there be 2805 trees in the wood?
- 27
  - 37
  - 91
  - 92
21. In a sale certain articles were reduced by 25%. If the sale price of an item is £60, its pre-sale price was
- £80
  - £75
  - £62.50
  - £45

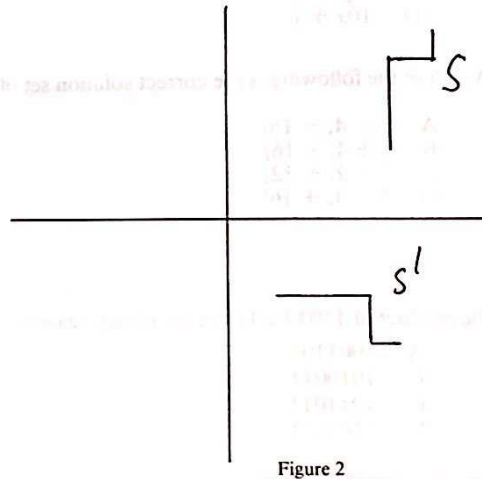
22. A water tank is filled by 2 pumps in 35 minutes. 5 similar pumps will fill it in
- 5 mins.
  - 7 mins.
  - 10 mins.
  - 14 mins.

23. The area of the figure in the diagram is
- $10 \text{ cm}^2$
  - $11 \text{ cm}^2$
  - $12 \text{ cm}^2$
  - $24 \text{ cm}^2$



24. If the ratio of  $P$ 's share to  $Q$ 's share of the profits from a business is  $3 : 2$  how much will  $Q$  receive when  $P$  receives £75?
- £30
  - £45
  - £50
  - £112.50

25. Which of the following maps  $S$  onto  $S'$ ?
- A translation
  - An axial symmetry
  - A central symmetry
  - Clockwise rotation of  $90^\circ$  about  $O$ .



26.  $X$ ,  $Y$ ,  $R$  and  $T$  are four different lines such that  $X \perp Y$ ,  $Y \perp R$  and  $R \parallel T$ . Which one of the following statements is true?
- $Y \parallel T$
  - $X \perp R$
  - $X \perp R \perp Y$
  - $X \parallel T \parallel R$

27. The average speed for an outward journey was  $10 \text{ km/hr}$ . The average speed for the return journey over the same route was  $16 \text{ km/hr}$ . What was the average speed for the outward and return journey combined?
- $26 \text{ km/hr}$
  - $13 \text{ km/hr}$
  - $8 \text{ km/hr}$
  - $6 \text{ km/hr}$

28. The relation graphed on the set  $R = \{2, 4, 5, 7, 8\}$  as shown in the diagram is
- $\{(4, 2), (4, 7), (8, 7), (5, 5)\}$
  - $\{(2, 4), (4, 7), (8, 7), (5, 5)\}$
  - $\{(4, 2), (7, 4), (7, 8), (5, 5)\}$
  - $\{(2, 4), (7, 4), (8, 7), (5, 5)\}$

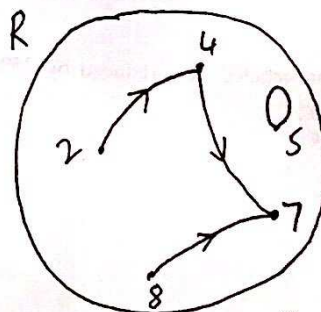


Figure 3

29. Which of the following statements is true about this diagram?

- A.  $M \cap P = \{x, y\}$
- B.  $N \cap P = \{y, z\}$
- C.  $M \cap N = \{ \}$
- D.  $M \cap P \cap N = \{z\}$

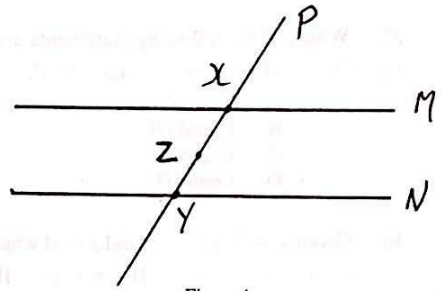


Figure 4

30. In this diagram

$P$  represents the set of people unemployed  
 $Q$  represents the set of people on holidays  
 $R$  represents the set of people employed  
 $S$  represents the set of people ill.

The percentage of people unemployed is

- A. 9%
- B. 25%
- C.  $33\frac{1}{3}\%$
- D. 90%

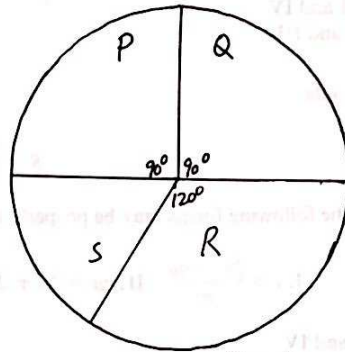


Figure 5

SECTION TWO

31. If  $M = \{3, 5, 8\}$ ,  $N = \{8, 3, 5\}$ ,  $P = \{1, 3, 5, 6, 7\}$ , and  $R = \{3, 5, 6, 7, 8\}$ , which of the following statements are true

- I  $P$  is equivalent to  $R$
- II  $M$  is a subset of  $R$
- III  $P$  is equal to  $R$
- IV  $R$  is a subset of  $N$

- A. I, IV
- B. II, III
- C. I, II
- D. II, IV

32. Which of the following statements are true?

- I.  $A \cap A' = \{ \}$ ; II.  $B \cup B' = U$ ; III.  $U \setminus C' = C$ ; IV.  $\{ \} \neq \{0\}$

- A. I, II and IV
- B. I, III and IV
- C. II, III and IV
- D. I, II, III and IV

33.  $M, N$  and  $P$  are sets as in Figure 6. Which of the following statements are true.

- I.  $x \in M \cup N$ ; II.  $x \notin M \cap P$ ; III.  $x \in (M \cup N) \setminus P$ ; IV.  $x \notin (M \cap N) \cup P$

- A. I, II and IV
- B. II, III and IV
- C. I, III and IV
- D. I, II and III

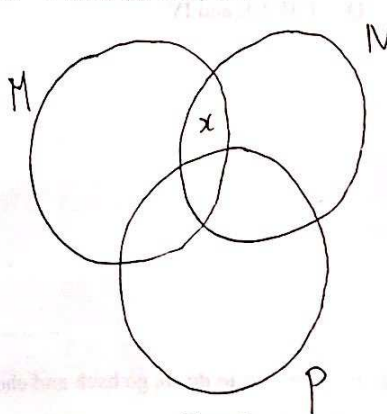


Figure 6

34. Which of the following statements are correct:

- I.  $4 - 12 = -8$ ; II.  $-12 + 4 = -16$ ; III.  $-12 \times 4 = -48$ ; IV.  $4 \div -12 = -3$

- A. II and III
- B. I and IV
- C. I and III
- D. II and IV



35. Which of the following statements are correct when  $x = 4^8$ :  
 I.  $x = 32$ ; II.  $x = \sqrt{4^{16}}$ ; III.  $x = 8^4$ ; IV.  $x = 16^4$

A. I and IV  
 B. II and III  
 C. II and IV  
 D. I and III

36. Given  $x = 5$ ,  $y = -5$  and  $z = 0$  which of the following statements are true?  
 I.  $x + y + z = 10$ ; II.  $x = -y$ ; III.  $x + z = y$ ; IV.  $z(x - y) = 0$

A. I and IV  
 B. II and III  
 C. II and IV  
 D. I and III

37. Given the formula

$$S = \frac{n}{2}(a + l)$$

which two of the following forms may be properly deduced from this formula?

I.  $l = \frac{2s - na}{n}$  II.  $na = 2s + 2l$  III.  $2s = na + l$  IV.  $n = \frac{2s}{a + l}$

A. I and IV  
 B. II and III  
 C. I and III  
 D. II and IV

38. Which of the following statements are true if  $(P, R) \uparrow (S, T)$ ?

I.  $(P, S) \uparrow (T, R)$  II.  $(T, S) \uparrow (R, P)$  III.  $PSRT$  is a parallelogram IV.  $(P, T) \uparrow (S, R)$

A. II and III  
 B. I and IV  
 C. II and IV  
 D. I and III

39. Which of the following statements are true?

I.  $\log 3 \cdot 85 = 0 \cdot 5855$  II.  $\frac{1}{3 \cdot 85} = 0 \cdot 02597$  III.  $(3 \cdot 85)^2 = 14 \cdot 82$  IV.  $\text{Anti-log } 3 \cdot 85 = 2427$

A. I and IV  
 B. II and III  
 C. II and IV  
 D. I and III

40. Which of the following are axes of symmetry of the rectangle  $PQRS$  as in Figure 7 where  $u$ ,  $v$ ,  $w$ ,  $x$  are mid-points of the respective sides.

I.  $xv$  II.  $SQ$  III.  $PQ$  IV.  $uw$

A. I and IV  
 B. II, III and IV  
 C. I, II and IV  
 D. I, II, III, and IV

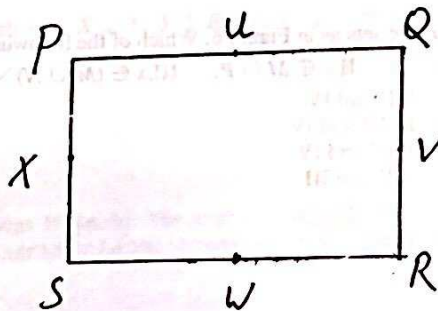


Figure 7

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If you have time to do so, go back and check your work and correct any mistakes you have made.

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