CANDIDATE'S EXAMINATION NUMBER _____

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BRAINSE AN GHAIRMOIDEACHAIS

DAY VOCATIONAL CERTIFICATE EXAMINATIONS, 1970

MATHEMATICS (NEW SYLLABUS)

PAPER I

WEDNESDAY, 10th JUNE – 9.45 – 11.45 a.m.

INSTRUCTIONS

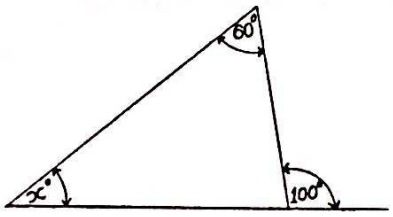
(a) Write your Examination Number in the space provided on top of this page and also on the blank paper provided.
(b) Answers are to be written down in the spaces provided. Any necessary calculations are to be done on the blank paper.
(c) All the questions may be answered.
(d) Questions 1 to 10 carry 1 mark each; questions 11 to 30 carry 2 marks each.
(e) Mathematical Tables and slide rule may be used in answering this paper.

1. How many centimetres are there in 0·52 metre ? Ans. _____

2. What is the value of $x^2 + 2x + 1$ when $x = 4$? Ans. _____

3. What is the square of 0·2 ? Ans. _____

4. What is the value of x in this triangle ?



Ans. _____

5. Use tables to find the value of log 22·8. Ans. _____

6. List the elements of the following set:
$\{x | x$ is a prime number between 15 and 25$\}$. Ans. _____

7. A rectangle is 70 mm long and 30mm wide: what is the length of its perimeter ? Ans. _____

8. What is the value of sin 38°54′? Ans. _____

9. In a table book the speed of light in metres per second is given as 299,800,000. If this number is written as $2{\cdot}998 \times 10^n$, what is the value of n ? Ans. _____

10. How many new pence (p) are there in £1·45 ? Ans. _____

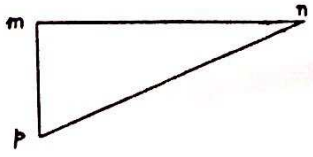
11. Factorize $x^2 - 7x + 10$. Ans. _____

12. Simplify: $2x^4 \times 4x^2$. Ans. _____

13. How would you write the denary number 15 in the binary system ? Ans. _____

14. A train travels from Dublin to Galway in 3 hours at an average speed of 70 kilometres per hour. What is the distance in kilometres from Dublin to Galway ? Ans. _____

15. Draw the image of this triangle under the translation $\vec{mn}$.



16. Write down the next greater binary number after 1011. Ans. _____

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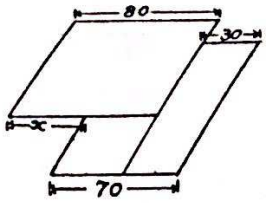
17. What is the size, in degrees, of the angle between the hands of a clock at 5.00 a.m. ?

Ans._____

18. The diagram consists of segments of two sets of parallel lines and the lengths of some of these line segments are shown. All the lengths given are in millimetres. What is the length x ?



Ans._____

19. All of the letters in the word "NOISE", as printed here, have (central) point symmetry except one letter. Draw this letter.

Ans._____

20. What is the Simple Interest on £300 for 5 years at 8% per annum ?

Ans._____

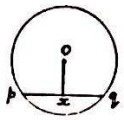
21. Use the symbol > to order the following set of rational numbers: $\{4, 6, \frac{9}{2}\}$.

Ans._____

22. List the elements of the following set: $\{x \mid 2 < x \leq 6, x \in \mathrm{N}\}$.

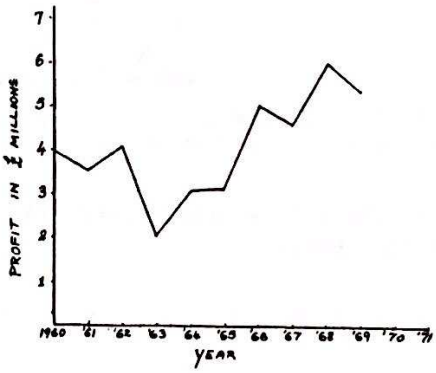
Ans._____

23. The centre of a circle of radius 5 cm is o, and ox is perpendicular to pq where p and q are points of the circle. What is $|px|$ if $|ox|$ is 4 cm ?



Ans._____

24. The graph shows the total annual profit of a manufacturing company between 1960 and 1969. How many million pounds of a difference was there between the greatest and least annual profit in this interval ?



Ans._____

25. A man insures his house for £5000. His annual premium is paid at the rate of 20p per £100. What is the amount, in pounds, of the premium ?

Ans._____

26. The figure shows a circle inscribed in a square. What is the area of the shaded portion ? (The radius of the circle is 7 cm and $\pi = \frac{22}{7}$).

Ans._____

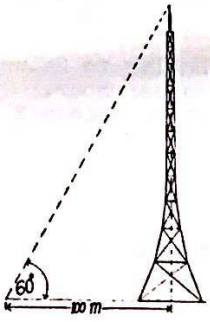
27. The area of cross-section of a measuring cylinder is 20 cm^2. To what height must it be filled to contain 1 litre ?

Ans._____

28. One of the ordered pairs listed below belongs to $\{(x, y) \mid xy = 20, x, y \in \mathrm{N}\}$. Which one is it ?
(2, 5), (2, 0), (10, 10), (4, 5).

Ans._____

29. The angle of elevation of a television tower, from a point on the ground 100 metres away from the centre of the base, is 60°. What is the height of the tower ? (Answer to the nearest metre)



Ans._____

30. Which of the following statements (a), (b), (c) or (d) is a true statement ?
$(x + 2)(x + 4) = x^2 + 6x + 8$ (a) for all values of x (b) for only two values of x (c) for only one value of x (d) for no value of x.

Ans._____