

NAME: \_\_\_\_\_ INDEX NUMBER: \_\_\_\_\_ CLASS: \_\_\_\_\_



**BUKIT PANJANG GOVERNMENT HIGH SCHOOL  
SECONDARY ONE EXPRESS/NORMAL ACADEMIC  
FINAL EXAMINATION, 2006  
MATHEMATICS  
PAPER I**

Date: 6<sup>th</sup> October 2006  
Time: 1020 - 1135

Time: 1 hour 15 mins

/50

**INSTRUCTIONS TO CANDIDATES**

Write your name, class and register number at the top of this page.

Answer **ALL** the questions in this paper.

Write the answers and show all the workings, diagrams on the answer sheets.

**Omission of essential working will result in the loss of marks.**

**INFORMATION FOR CANDIDATES**

Calculator is not allowed in the Paper.

The number of marks is given in brackets [ ] at the end of each question or part question.

The total marks for this paper is 50.

If the degree of accuracy is not specified in the question, and if the answer is not exact, give your answer correct to 3 significant figures. Give answers in degrees to one decimal place.

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THIS QUESTION PAPER CONSISTS OF 10 PRINTED PAGES

[ Turn over ]

1. Evaluate

a)  $2\frac{2}{7} \div 4\frac{2}{3}$  [1]

b)  $3 \times [7 \times (-4) \div 14 \div (-3)]$  [2]

Answer: (a) \_\_\_\_\_ [1]

(b) \_\_\_\_\_ [2]

2. a) Estimate the following, giving your answers correct to 2 significant figures :

$$\frac{36.04 \times \sqrt{48.97}}{23.96}$$
 [2]

b) If a 3 digit number rounded up to 2 significant figures is 800, and the first 2 digits are 8 and 0 respectively; state the possible value(s) of the last digit.

[2]

Answer: (a) \_\_\_\_\_ [2]

(b) \_\_\_\_\_ [2]

3. Simplify  $9a - [3a + 2a(2a - 1)]$  [2]

Answer: \_\_\_\_\_ [2]

4. a) Express 3675 as a product of its prime factors in the index notation. [2]

b) Hence, find the smallest whole number by which 3675 must be multiplied to in order for the product to be a perfect square.

Answer: (a) \_\_\_\_\_ [2]

(b) \_\_\_\_\_ [1]

5. Express

(a)  $257 \text{ cm}^2$  in  $\text{m}^2$ ; [1]

(b)  $2830 \text{ kg/m}^3$  in  $\text{g/cm}^3$ . [2]

Answer (a) \_\_\_\_\_ [1]

Answer (b) \_\_\_\_\_ [2]

6. a) Given that  $\frac{2x}{3} = \frac{3y}{4}$  find the ratio of  $x : y$ . [2]

(b) A wire 76 cm long is cut into 2 pieces and bent to form a rectangle and a circle. Given that the length and width of the rectangle is 9 cm and 7 cm respectively, find the radius of the circle. (Take  $\pi$  to be  $\frac{22}{7}$ )

Ans: (a) \_\_\_\_\_ [2]

(b) \_\_\_\_\_ [2]

7. Given that  $y + \frac{3a}{b} = 3x + \frac{14c}{5}$ ; find the value of  $c$  if  $y = 4$ ,  $a = 2$ ,  $b = -3$  and  $x = -4$ . [2]

Answer: \_\_\_\_\_ [2]

8. Solve the equations :

(a)  $\frac{c}{4} + 6 = 2c - 8$  [2]

b)  $\frac{3b-2}{2} - \frac{b+3}{5} = \frac{4b-5}{3}$  [3]

Answer: (a) \_\_\_\_\_ [2]

(b) \_\_\_\_\_ [3]

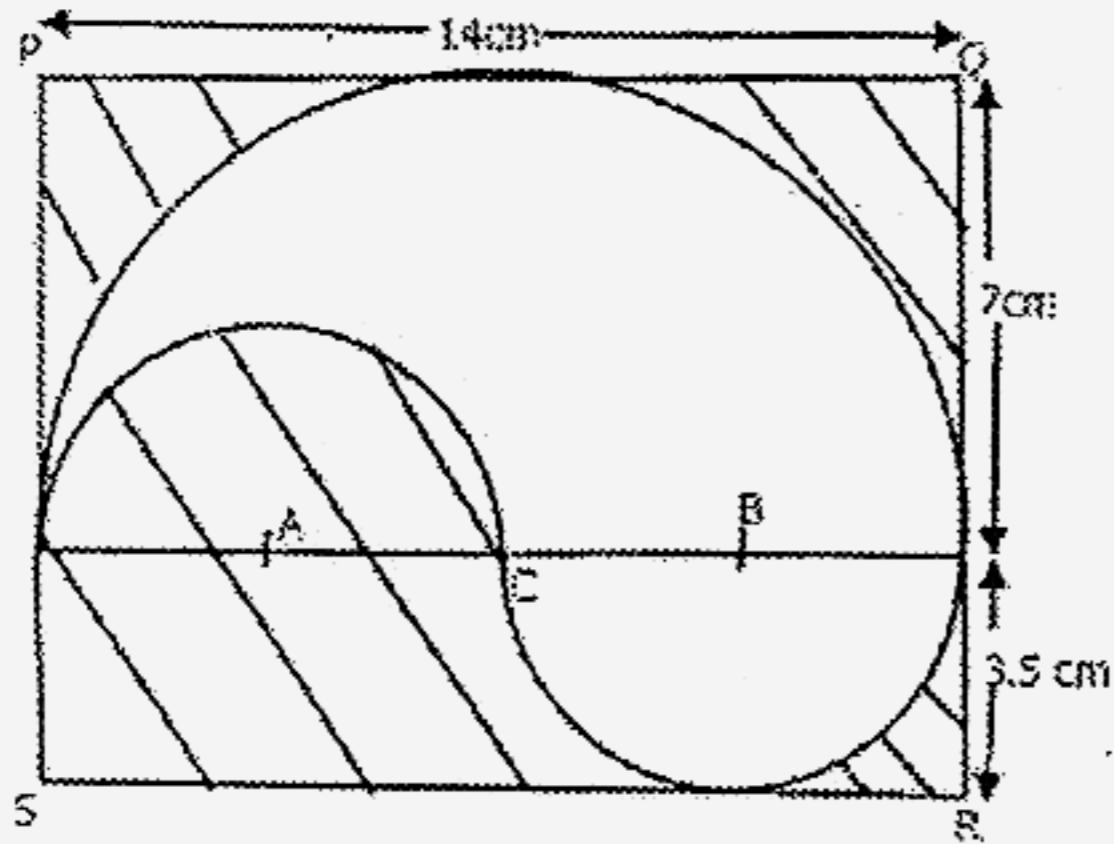
9. a) If  $x : y = 6 : 5$  and  $y : z = 3 : 2$ , find the ratio  $x : z$  in its simplest form. [1]

(b) Decrease 192 in the ratio 3 : 8. [1]

Ans : (a) \_\_\_\_\_ [1]

(b) \_\_\_\_\_ [1]

10. The figure is formed by 3 semi-circles inside a rectangle as shown. A, B and C are the centres of the circles. The diameter of the 2 smaller circles is 7 cm. Find the
- area of the shaded region and [2]
  - perimeter of the unshaded region. (Take  $\pi$  to be  $\frac{22}{7}$ ) [2]



Ans : (a) \_\_\_\_\_ [2]  
 (b) \_\_\_\_\_ [3]

11. The length of a rectangle is  $x$  cm. It is 3cm longer than its width. If both the length and width are decreased by 1cm, write down the expressions in terms of  $x$ ,

a) i) the new length and the new width, [1]

ii) the perimeter of the new rectangle, [1]

b) If the perimeter of the new rectangle is 36cm form an equation in  $x$  and use it to find the value of  $x$ . [2]

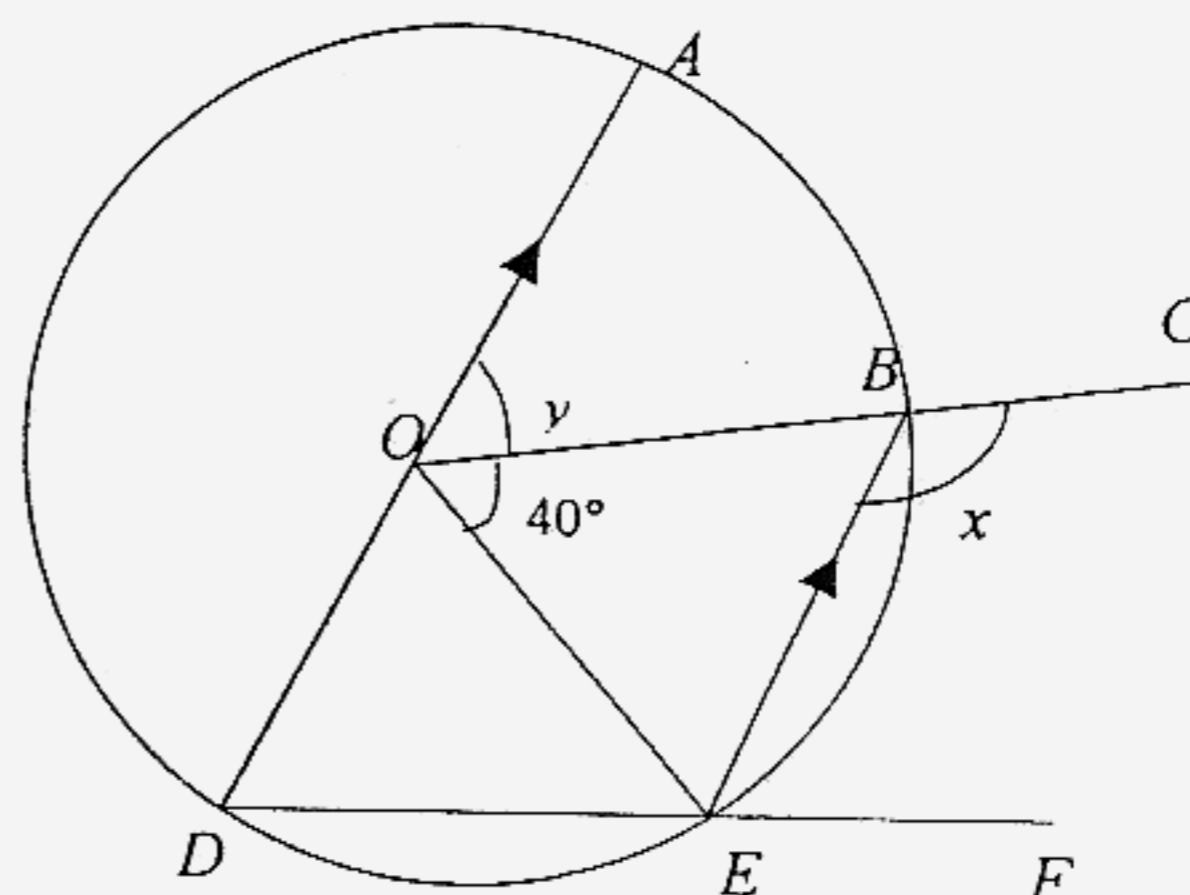
Ans: a. i) Length = \_\_\_\_\_

Width = \_\_\_\_\_ [1]

ii) \_\_\_\_\_ [1]

b) \_\_\_\_\_ [2]

12. The diagram shows a circle of center  $O$ . Given that  $DA$  is a parallel to  $EB$ , find the values of  $x$  and  $y$ . If  $OE = 6$  cm, find the length of  $AD$



Ans:  $x =$  \_\_\_\_\_ [2]

$y =$  \_\_\_\_\_ [2]

$AD =$  \_\_\_\_\_ [1]



13. At 0845 a tourist boarded a taxi from a hotel. The taxi reached the Singapore Zoological Garden at 0905 after travelling a distance of 20 km.

a) Find the average speed, in km/h, of the taxi from the hotel to the zoo. [2]

The taxi driver picked up a second tourist and reached the foot of Jurong Hill at 0950; and drove to the top of the hill. After resting for 20 minutes up there, he drove downhill using the same route and reached the foot of the hill at 1025. If his average speed for the two journeys (going up and down the hill) is 36 km/h, find

b) The time taken to travel up and down hill, excluding resting time. [1]

c) The distance from the foot of the hill to the top of Jurong Hill. [2]

Ans : (a) \_\_\_\_\_ [2]

(b) \_\_\_\_\_ [1]

(c) \_\_\_\_\_ [2]

14. The data below represents the results of a Maths Quiz marked out of 50 conducted for a class of 30 students.

6	44	30	33	31	32	33	37	44	38
15	18	45	40	26	47	47	33	9	18
25	30	28	47	26	46	24	49	25	33

- a. By using the information above, complete the stem and leaf diagram below.  
[2]

Stem	Leaf
0	6
1	5 8
2	4 5 5 6
3	0 0 1 2 3 3
4	0 4 4 5 6 7 7

- c) Based on the scores of the quiz, the top 20% of the students will represent their class in an inter-class Math competition. What is the minimum score required in order to qualify for the competition?  
[2]

END OF PAPER

