CHAPTER 11

YEAR 10 [Advanced]

EXAM PAPER 3 — **SECTION 1**

Instructions for SECTION 1

- This part consists of 10 questions each worth 1 mark
- Calculators are NOT to be used in this section
- Time for this section is 15 minutes
- Fill in only ONE CIRCLE for each question

Marks

1 $\frac{2x-2}{2}$ equals

Ⓐ x Ⓑ $x-1$ Ⓒ $x-2$ Ⓓ $2x-1$ — 1

2 $\frac{(a^3)^3}{a^2}$ equals

Ⓐ a^2 Ⓑ a^3 Ⓒ a^7 Ⓓ a^9 — 1

3 $3x + y = 6$ cuts the x-axis at the point

Ⓐ (2, 0) Ⓑ (6, 0) Ⓒ (0, 2) Ⓓ (0, 6) — 1

4 $3a \times 5b$ equals

Ⓐ $8ab$ Ⓑ $15ab$ Ⓒ a^3b^5 Ⓓ None of these — 1

5 Simplify $3(2P+6)+3(P-2)$.

Ⓐ $9P+24$ Ⓑ $9P+12$ Ⓒ $9P+4$ Ⓓ $9P-12$ — 1

6 If 1000 km is divided in the ratio 3 : 7, the smaller distance is

Ⓐ 300 km Ⓑ 600 km Ⓒ 700 km Ⓓ 800 km — 1

7 Express $2^{-2}+3^{-2}$ as a single fraction.

Ⓐ $\frac{1}{13}$ Ⓑ $\frac{2}{13}$ Ⓒ $\frac{1}{36}$ Ⓓ $\frac{13}{36}$ — 1

8 A chair, damaged by smoke, was reduced from \$300 to \$200. Its price was discounted by

Ⓐ 100% Ⓑ 50% Ⓒ $33\frac{1}{3}\%$ Ⓓ $66\frac{2}{3}\%$ — 1

9 In a cake recipe the ratio of dried fruit to flour to sugar is 7 : 4 : 1. A 200 g packet of flour is used to make the cake. How much dried fruit is needed?

Ⓐ 50 g Ⓑ 350 g Ⓒ 700 g Ⓓ 1400 g — 1

10 Solve $\frac{2a}{3}-\frac{a-1}{2}=4$.

Ⓐ 1 Ⓑ 3 Ⓒ 21 Ⓓ 27 — 1

End of Section 1

Total marks achieved for SECTION 1 ____/10

CHAPTER 11

EXAM PAPER 3 — SECTION 2 — PART

Instructions for SECTION 2 (PART A)

- This part consists of 25 questions each worth 1 mark
- Calculators may be used
- Time for this section is 25 minutes
- Only provide your final answer in the space provided

	Questions	Answers	Mar
11	What is the gradient of the line $3x - 5y + 7 = 0$?		1
12	Simplify $(p^2q)^2 \times \frac{p}{q}$.		1
13	How many cents in x dollars?		1
14	Find $\frac{2}{3} \div \frac{2}{3} \div \frac{2}{3}$.		1
15	Find 10% of 1.6.		1
16	Factorise $x^2 - 25$.		1
17	Simplify $\frac{5x}{2} - \frac{x}{3}$.		1
18	Evaluate $(-2 - 4) - (-7 - 8)$.		1
19	In a test out of 40 marks, a person scored 60%. What mark did he get?		1
20	The area of a square is 64 cm^2. What is its perimeter?		1
21	Simplify $\frac{a(1-r^2)}{a-ar}$.		1
22	An item sells for \$19.30 after a 22% discount. What was its original price?		1
23	Solve simultaneously: $2y + x = 15$ $3y - 2x = 5$		1
24	$7\sqrt{3} = \sqrt{x}$, find x.		1
25	Express $\frac{2\sqrt{3}}{\sqrt{3}-1}$ with a rational denominator.		1

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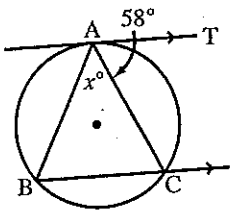
Questions	Answers	Marks

26 Simplify $3xy^3 \div 12x^2y^3$. _____ 1

27 Find A if $\sin A = \cos 30°18'$. _____ 1

28 If AT is a tangent, $BC \parallel AT$ and $\angle TAC = 58°$, find $\angle BAC$.



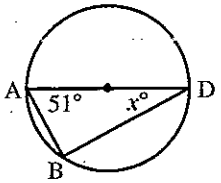
_____ 1

29 What are the x and y intercepts of $y = (2x+1)(x-3)$? _____ 1

30 The sum of the first n positive integers is given by $S = \frac{n}{2}(n+1)$.
How many integers are needed for a sum of 15? _____ 1

31 A person buys a car on the following terms: deposit \$2400, repayments \$389.11 per month for 5 years. Find the total cost of the car. _____ 1

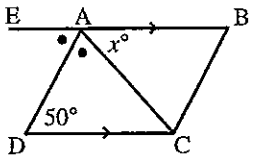
32 AD is a diameter. Find the value of x.



_____ 1

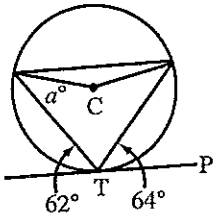
33 A block of land is valued at \$135 000. It appreciates at 20% p.a. Find its value at the end of three years. _____ 1

34 If $AB \parallel DC$ and $\angle DAE = \angle DAC$, calculate the value of x.



_____ 1

35 PT is a tangent. C is the centre of the circle. Find the value of $a°$.



_____ 1

End of Part A — Go on to Part B

Total marks achieved for SECTION 2 — PART A ____/25

CHAPTER 11

EXAM PAPER 3 — SECTION 2 — PART B

Instructions for SECTION 2 (PART B)

- This part consists of 3 questions each worth 5 marks
- Calculators may be used
- Time for this section is 20 minutes
- Show all neccesary working
- Marks may be deducted for untidy or badly arranged work

		Questions	Answers	Marks
36	a	Simplify $\left(\frac{1}{3}ab^3\right)^3$.	_____	1
	b	Factorise $x^2 - 5x + 6$.	_____	1
	c	Factorise $8x^2 - 18y^2$.	_____	1
	d	Solve $\frac{3x-1}{5} + 2 = \frac{1-4x}{3} + 6$.	_____	1
	e	Solve $7x^2 - 5x - 1 = 0$.	_____	1
37	a	In the first year after purchase, a new car costing \$32 000 depreciates 15%. What is its value after 1 year?	_____	1
	b	Sue invested \$8500 for 5 years at 12.5% p.a. simple interest. How much interest did she earn?	_____	1

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Questions	Answers	Marks
c Find the monthly repayments for a loan of \$50 000 taken over 5 years at a flat rate of 16% p.a.		1
d A salesman works on a flat payment of \$300 per week plus 8% commission on any sales in that week. Find his income for the week if he sells \$8000 worth of goods.		2
38 a Evaluate $\log_5 125$.		1
b If $\log_a 5 = 1.8$ and $\log_a 3 = 1.5$, find $\log_a 45$.		1
c Simplify $\log_5 80 - \log_5 16$.		1
d Solve $3^{x+1} = 27$.		1
e Find the value of m if $\log_a 4m - \log_a 3 = \log_a (m+4)$.		1

End of Exam

Total marks achieved for SECTION 2 — PART B /15

Answers

Page 106 1 B 2 C 3 A 4 B 5 B 6 A 7 D 8 C 9 B 10 C

Page 107 11 $\frac{3}{5}$ 12 p^5q 13 $100x$ cents 14 $1\frac{1}{2}$ 15 0.16 16 $(x-5)(x+5)$ 17 $\frac{13x}{6}$ 18 9 19 24 20 32 cm 21 $(1+r)$ 22 \$24.74 23 $x=5, y=5$ 24 $x=147$ 25 $3+\sqrt{3}$

Page 108 26 $\frac{1}{4x}$ 27 59°42′ 28 64° 29 $x=-\frac{1}{2}, 3; y=-3$ 30 5 31 \$25 746.60 32 $x=39°$ 33 \$233 280 34 $x=65°$ 35 $a=28°$

Page 109 36 a $\frac{1}{27}a^3b^9$ b $(x-2)(x-3)$ c $2(2x+3y)(2x-3y)$ d $x=2\frac{10}{29}$ e $x=\frac{5\pm\sqrt{53}}{14}$ 37 a \$27 200 b \$5312.50

Page 110 37 c \$1500 d \$940 38 a 3 b 4.8 c 1 d $x=2$ e $m=-12$