

**GAUTENG DEPARTMENT OF EDUCATION  
SENIOR CERTIFICATE EXAMINATION**

**COMMERCIAL MATHEMATICS SG**

POSSIBLE ANSWERS / MOONTLIKE ANTWOORDE SUPP 2007

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**QUESTION 1  
RATIO AND PROPORTIONS, MIXTURES AND STATISTICS**

- 1.1 5 parts at R6,66/kg = R33,30ü  
 4 parts at R7,20/kg = R28,80ü  
 ∴ 9 parts cost: R62,10ü  
 ∴ Cost of 1 kg of mixture:  $R62,10 \div 9$   
 = R6,90ü (4)
- 1.2  $1\frac{7}{8} \div \frac{5}{7} - 3\frac{5}{8}$  or  $\frac{21}{8} - \frac{29}{8}$  üü  
 =  $\frac{15}{8} \times \frac{7}{5} - \frac{5}{8}$  =  $-\frac{8}{8}$  ü  
 =  $2\frac{5}{8} - 3\frac{5}{8}$  = -1 ü (4)
- 1.3 1.3.1 the mean:  $(0,9 + 0,9\% + 0,3\% + 2,6\% + 27,8\% + 67,5\%) \div 6$   
 =  $100 \div 6$  ü  
 =  $16\frac{2}{3}\%$  ü (2)
- 1.3.2 the mode: 0,9% üü (2)
- 1.3.3 the median (order) 0,3; 0,9; 2,6; 27,8%; 67,5%
- Median :  $\frac{0,9 + 2,6}{2}$  ü  
 =  $\frac{3,5}{2}$  ü  
 = 1,75 ü (3)
- 1.4  $\frac{1}{3} : \frac{1}{4} : \frac{1}{6} = \frac{4}{12} : \frac{3}{12} : \frac{2}{12}$  üü
- A's share:  $\frac{4}{9} [\frac{1}{3} \div \frac{3}{4}] \times \frac{1375}{1} = R611,11$  ü  
 [0,3 ÷ 0,75]
- B's share:  $\frac{3}{9} [\frac{1}{4} \div \frac{3}{4}] \times \frac{1375}{1} = R458,33$  ü
- C's share:  $\frac{2}{9} [\frac{1}{6} \div \frac{3}{4}] \times \frac{1375}{1} = R305,56$  ü (5)

**[20]**

**QUESTION 2  
INSOLVENCY**

2.1 Creditor's claim

$$R14\ 000 \div 33\frac{1}{3} \times 100$$

$$= 14\ 000 \div \frac{1}{3} \text{ üüü}$$

$$= 14\ 000 \times 3 \text{ ü}$$

$$= R42\ 000 \text{ üü}$$

(6)

2.2 Realisation of Assets:

Fixed Properties	R150 000 ü	
Cash on Hand	R 2 700 ü	
Book debts	<u>R8 690 ü</u>	
	<u>R161 390 ü</u>	

Less preferent claims

Bond	R6 000 ü	
Rent	R2 390 ü	
Sequestration costs	<u>R3 000 ü</u>	<u>R11 390 ü</u>

Amount available for concurrent creditors R150 000 üü

Total creditors claims R250 000

Dividend

$$= \frac{150\ 000}{250\ 000} \times \frac{100}{1} \text{ üü}$$

$$= 60 \text{ c in the Rand üü}$$

(14)  
[20]

**QUESTION 3  
PARTNERSHIP**

3.1 Ratio in which profit shared:  $80\ 000 \times 12 : 60\ 000 \times 10 \text{ üüüü}$   
 $960\ 000 : 600\ 000 \text{ üü}$   
 $8 : 5 \text{ üü}$

(8)

3.2 X : Int on Cap.  $60\ 000 \times 10,5\%$  = R6 300ü  
 Y : Int on Cap.  $80\ 000 \times 10,5\%$  = R8 400ü  
 Total interest = R14 700ü  
 Add Bonus = R30 000  
 Total int + bonus = R44 700ü

Remaining net profit:	R68 000 – 44 700	
=	R23 300ü	
Reserve fund	= 15% of R23 300ü	
=	R3 495ü	
Remainder of profit :	R23 300 – 3 495ü	
=	R19 805ü	
X's share of net profit	: $R^{2/5} \times 1^{9805}/_1 \text{ ü}$	(12)
=	R7 922 ü	<b>[20]</b>

**QUESTION 4  
PROFIT AND LOSS**

4.1 Cost price of article :  $\frac{100 \times 22\,500\text{üü}}{112,5\text{üü}}$

(6)

= R20 000üü

4.2 CP = R1254

Profit : 22,5% of R1254üü

= R282,15ü

SP before discounts: 1254 + 282,15ü

= R1536,15ü

MP is  $1536,15/1 \times 100/82,5 \times 100/95\text{üüüü}$

= R1960 ü (10)

4.3 4.3.1 Selling price of article

$$R640 \times \frac{87\frac{1}{2}}{100} \text{üüü} \quad R640 \times \frac{87\frac{1}{2}}{100}$$

= R560üü

CP of article  $R^{560}/_1 \times \frac{75}{100} \text{üüü}$

= R420 üü

(10)

4.3.2 New marked price:

$$^{640}/_1 \times \frac{85}{100} \text{üüü}$$

= R544 ü

CP of article  $R^{544} \times \frac{75}{100} \text{üüü}$

= R408 ü

Profit: R544 – 408ü

= R136ü

$$\begin{aligned} \text{Profit \%: } & \frac{136}{408} \times \frac{100}{1} \% \text{ üüü} \\ & = 33 \frac{1}{3} \% \text{ ü} \end{aligned}$$

(14)  
[40]

### QUESTION 5 STOCKS AND SHARES

5.1 5.1.1 R133 is the cost of R100 stock  
Therefore R2660 is the cost of  $\frac{5320}{1} \times \frac{100}{133}$  üüü  
= R4 000 üü

i.e nominal value of stock purchased is R4 000 (5)

5.1.2 Annual income derived from stock  
12.5% of 4 000  
=  $\frac{25}{200} \times \frac{4\,000}{1}$  üüü  
= R500 üü (5)

5.1.3 Income percentage on money invested:  
 $\frac{R500 \times 100}{5320 \times 1}$  or  $\frac{12,5 \times 100}{133}$  üüü  
= 9,4% üü (5)

5.2 Total value of shares:  $5\,000 \times 3,75$ ü  
= 18 750ü

Income :  $\frac{12}{100} \times \frac{18\,750}{1}$  üüü  
= R2 250ü (5)

5.3 5.3.1 % income :  $\frac{6}{36} \times \frac{100}{1} = 16 \frac{2}{3} \% \text{üüü}$  (3)

5.3.2 Dividend : 15% of 75 = 11,25 centsüü

Income :  $\frac{11,25}{90} \times \frac{100}{1} \% \text{ üü}$   
= 12,5% ü (4)

5.3.3 Return on Govt. Stock:  $\frac{18}{90} \times \frac{100}{1}$  üü  
= 20% ü (3)

$$5.3.4 \text{ Dividend} : 15\% \text{ of R3 } \dot{\text{ü}} \\ = 45 \text{ cents } \dot{\text{ü}}$$

$$\% \text{ income} : \frac{45}{2,25} \times \frac{100}{1} \% \dot{\text{ü}} \dot{\text{ü}} \\ = 20\% \dot{\text{ü}}$$

Investments 5.3.3 and 5.3.4 most profitable  $\dot{\text{ü}}$

(5)  
[35]

### QUESTION 6 MENSURATION

$$6.1 \text{ Area of circle: } ?r^2 = 616 \\ r^2 = 616 \times \frac{7}{22} \dot{\text{ü}} \dot{\text{ü}} \\ = 196 \\ r = 14 \dot{\text{ü}} \dot{\text{ü}}$$

$$\text{Circum of circle} \quad ? \times 2 \times 14 \\ = \frac{22}{7} \times \frac{2}{1} \times \frac{14}{1} \dot{\text{ü}} \dot{\text{ü}} \dot{\text{ü}} \\ = 88 \dot{\text{ü}}$$

$$\text{Circum of wheel:} \quad \frac{88}{176} = 0,5\text{m} \quad \dot{\text{ü}} \dot{\text{ü}} \dot{\text{ü}} \quad (10)$$

6.2 Vol of concrete used:  
Area of ring x height

$$= ? (R + r) (R - r) \times h \\ = \frac{22}{7} (.45 + .25)(.45 - .25).2 \dot{\text{ü}} \dot{\text{ü}} \dot{\text{ü}} \dot{\text{ü}} \dot{\text{ü}} \dot{\text{ü}} \\ = \frac{22}{7} (.7)(.2)2 \\ = 0,88\text{m}^3 \quad \dot{\text{ü}} \dot{\text{ü}} \quad (8)$$

6.3 Surface area of sphere

$$4 ? r^2 \\ = \frac{4}{1} \times \frac{22}{7} \times \frac{7}{1} \times \frac{7}{1} \dot{\text{ü}} \dot{\text{ü}} \dot{\text{ü}} \dot{\text{ü}} \\ = 616\text{m}^2 \quad \dot{\text{ü}} \dot{\text{ü}} \quad (6)$$

6.4 6.4.1  $l : b = 2 : 1$  i.e  $l = 2b$

$$2b \cdot b = 800 \quad (l \times b = \text{area})$$

$$2b^2 = 800 \quad \dot{\text{ü}} \quad b = 20 \dot{\text{ü}}$$

$$\text{Length of lawn} = 2 \times 20 = 40\text{m} \dot{\text{ü}}$$

$$\text{Breadth of lawn} = 20\text{m} \dot{\text{ü}} \quad (4)$$

$$\begin{aligned}
 6.4.2 \text{ Area of lawn + path} &= (40 + 3) (20 + 3) \text{ üü} \\
 &= 43 \times 23 \text{ üü} \\
 &= 989\text{m}^2 \text{ ü} \\
 &\quad \text{(given)} \\
 \text{Area of lawn: } 40 \times 20 &= 800\text{m}^2 \\
 \text{Area of path: } 989 - 800 &= 189\text{m}^2 \text{ ü} \quad (7)
 \end{aligned}$$

$$\begin{aligned}
 6.5 \text{ Vol of circular reservoir} &: \quad \pi r^2 h \\
 &= \quad \frac{22}{7} \times 3 \times 3 \times 10,5 \text{ üüüü} \\
 &= \quad 297\text{m}^3 \text{ üüü} \\
 1 \text{ litre} &= 1000\text{cm}^3 \\
 1 \text{ kilolitre} &= 1000000\text{cm}^3 \\
 &= 1\text{m}^3 \text{ ü} \\
 \text{Capacity of circular reservoir} &: 297 \text{ kilolitres üü} \quad (10) \\
 &\quad \mathbf{[45]}
 \end{aligned}$$

**QUESTION 7**  
**INTEREST, DEPRECIATION, INSURANCE**

$$\begin{aligned}
 7.1 \quad P &= \frac{100 \times A}{100 + rt} \\
 &= \frac{100 \times 742 \text{ üü}}{100 + 24 \times (.25) \text{ üüü}} \\
 &= \frac{74\,200}{106 \text{ ü}} \\
 &= \frac{74\,200}{106} \text{ ü} \\
 &= \text{R}700 \text{ üüü} \quad (10)
 \end{aligned}$$

$$\begin{aligned}
 7.2 \text{ Residual value after 3 years} &= 12\,500 \times .67 \times .67 \text{ üüüüü} \\
 &= \text{R}5\,611,25 \text{ üü} \quad (6)
 \end{aligned}$$

$$\begin{aligned}
 7.3 \text{ Premium (p)} &= \frac{\text{R}40}{100} \times \frac{100\,000}{100} \text{ üü} \\
 &= \text{R}400 \text{ üü} \\
 &\text{Premium payable to also cover premium}
 \end{aligned}$$

$$\begin{aligned}
 &\frac{Vp}{V - p} \\
 &= \frac{10\,000 \cdot 400 \text{ üü}}{100\,000 - 400 \text{ üü}}
 \end{aligned}$$

$$= \frac{40000000}{99600}$$

$$= R401,61 \quad (10)$$

7.4

$$\begin{aligned} \text{Amt} &= P (1 + r/200)^{2n} \\ &= 7\,000(1 + 13/200)^{2 \times 5/2} \\ &= 7\,000(1 + 13/200)^5 \\ &= 7\,000(1 + 0,065)^5 \\ &= 9590,61 \end{aligned}$$

$$\begin{aligned} \text{Total amt of interest} &= R9\,590,61 - 7\,000 \\ &= R2\,590,61 \end{aligned} \quad (14)$$

**[40]**

### QUESTION 8 ANNUITIES

8.1 Principal:  $\frac{A}{S_{10} \text{ at } 4\frac{1}{2}\%}$

$$= \frac{70\,000}{12,2882}$$

$$= R5696,52 \quad (4)$$

8.2 Present value of annuity due of 3000 for 5 years

$$\begin{aligned} &= \text{inst } (a_4 + 1) \text{ at } 6\% \\ &= 3000 (3,465 + 1) \\ &= 3000 (4,465) \\ &= R13395 \end{aligned}$$

(6)

8.3 Annual instalment =  $\frac{\text{amt to be redeemed}}{A_{21} \text{ at } 3\frac{1}{2}\%}$

$$= \frac{102\,886}{14,698}$$

$$= 7\,000 \quad (4)$$

8.4 Amount due at end of 20 years =  $P(S_2 - 1) t 8\%$

$$\begin{aligned} &= 6\,000 (50,4229 - 1) \\ &= 6\,000 (49,4229) \\ &= R296\,537,40 \end{aligned}$$

(6)  
**[20]**

**QUESTION 9**  
**RATES OF EXCHANGE, TAXES**

9.1 No of British pounds =  $1496,49/11,9057$  üü  
=  $£125,70$ üü (4)

9.2 Cost of USA computer:  $R200 \times 6,5005 = R1300,10$ üüüü

Cost of Japan computer:  $\frac{25\,000 \times 6,5005}{109,27}$ üüü

=  $R1487,27$ ü

Import computers from USA ü (10)

9.3 Cost of electricity:  $938\text{kw} \times 23,67/100 = R222,02$  üüü

Cost of water (35kl = 6+4+5+5+15)

6kl Free ü

4 x 3,60 kl  $R14,40$ ü

5 x 4,80 per kl  $R24,00$ ü

5 x 6,00 per kl  $30,00$ ü

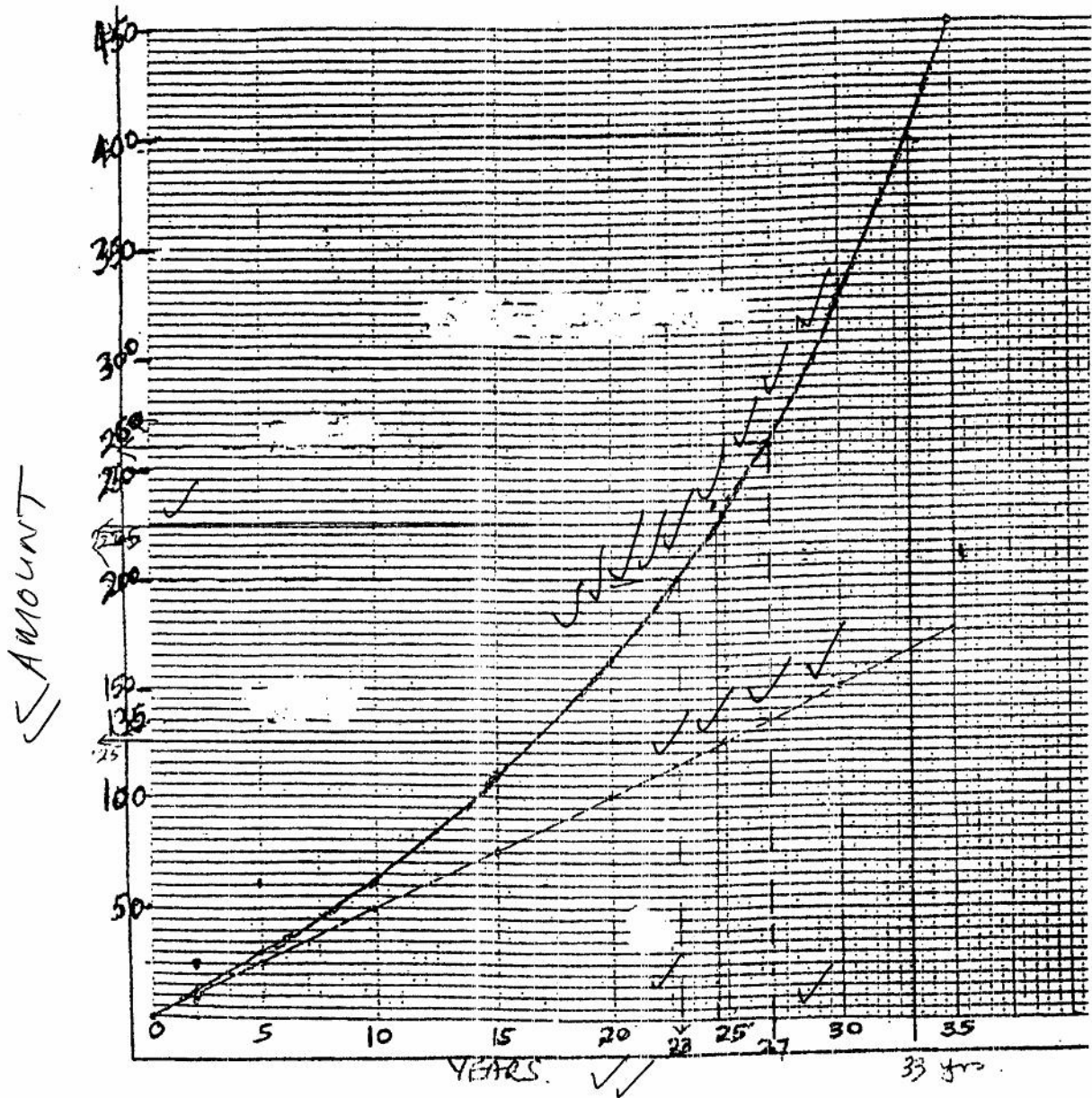
15 x 7,19  $107,85$ ü

$108,30$  ü

Total cost to consumer  $R222,02 + R176,25 = R398,27$  üü (11)  
**[25]**



QUESTION 10



10.1 Graphs (20)

10.2 10.2.1 Simple interest R125 (3)  
 Compound interest R239 (3)

10.2.2 33 yrs (3)

10.2.3  $3(273 - 135) = 3(138)$  (3)  
 $= R414$  (6)

[35]

TOTAL: 300