

GAUTENG DEPARTMENT OF EDUCATION
GAUTENGSE DEPARTEMENT VAN ONDERWYS

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POSSIBLE ANSWERS FOR :
COMMERCIAL MATHEMATICS SG

403-2/0

K

QUESTION 1 (B)

R 1.1 $\frac{5}{6} \div \frac{2}{27} + (0,2)^3$

$$= \frac{5}{6} \times \frac{27}{2} + (0,008) \quad \checkmark \checkmark$$

$$= \frac{45}{4} + 0,008 \quad \checkmark \checkmark$$

$$= 11,25 + 0,008$$

$$= 11,258 \quad \checkmark \checkmark \quad (6)$$

R 1.2 $\frac{1}{3} : \frac{1}{4} : \frac{1}{6}$

$$= \frac{4}{12} : \frac{3}{12} : \frac{2}{12}$$

$$= \text{Total: } 4 + 3 + 2 = 9$$

A's share: $\frac{4}{9} \times \frac{720}{1} = 4 \times 80 = 320 \quad \checkmark \checkmark$

B's share: $\frac{3}{9} \times \frac{720}{1} = 3 \times 80 = 240 \quad \checkmark \checkmark$

C's share: $\frac{2}{9} \times \frac{720}{1} = 2 \times 80 = 160 \quad \checkmark \checkmark \quad (6)$

R ← 1.3 Speed = $\frac{\text{Distance}}{\text{Time}}$

$$= \frac{22\ 00}{1\ 000} \div \frac{5\ \frac{1}{2}}{60} \quad \checkmark \checkmark$$

$$= \frac{2,2}{1} \times \frac{120}{11} \quad \checkmark \checkmark$$

$$= 24\ \text{km/hr} \quad \checkmark \checkmark \quad (6)$$

R 1.4 Amount : \$ $\frac{15\ 000}{9,79}$ $\checkmark \checkmark$

$$= \$1532,18 \quad \checkmark \checkmark \quad (6)$$

R 1.5 A : B = 8 : 7

A's share: $\frac{8}{15}$

$\frac{8}{15}$ represent 300

$\therefore \frac{7}{15}$ represent : $\frac{300}{1} \times \frac{7}{15} \div \frac{8}{15} \quad \checkmark \checkmark \checkmark \checkmark$

$$= \frac{300}{1} \times \frac{7}{15} \times \frac{15}{8}$$

B's share = R262,50 $\checkmark \checkmark \quad (6)$

R 1.6 Remaining side 2 : $169 - 144 = 25 \quad \checkmark \checkmark$

Remaining side = 5 $\checkmark$

Area of triangle : $\frac{1}{2}bh$

$$= \frac{1}{2} \cdot \frac{12}{1} \times \frac{5}{1} \quad \checkmark \checkmark$$

$$= 30\ \text{mm}^2 \quad \checkmark \quad (6)$$

1.7 S.I. = $\frac{4\,500}{1} \times \frac{2}{5} \times \frac{15}{100}$ ✓ ✓ ✓
 = R270 ✓ ✓
 Amount: R4 500 + 270
 = R4 770 ✓

(6)

1.8 Property tax : $\frac{150\,000}{1} \times \frac{5.5}{100} \div \frac{1}{2}$ ✓ ✓ ✓ ✓
 = R4125 ✓ ✓

(6)

1.9 Average price of mixture R15 per kg.
 Loss on R16,50 per kg : $16,50 - 15 = R1,50$ ✓
 Gain on 13 per kg : $15 - 13 = R2,00$ ✓
 Ratio of Loss : Gain : $150 : 200$
 = 3 : 4 ✓ ✓

To have no loss or gain
 5 part of R16,50 per kg and 3 part of R13 per kg must be mixed
 ∴ the required ratio is 4 : 3 of R16,50 / kg to R13 / kg ✓ ✓

(6)

1.10

SP	CP	Profit/Loss
100	107,5	7,5
500	?	

CP : $\frac{500 \times 107,5}{100}$ ✓ ✓ ✓ ✓
 = R537,50 ✓ ✓

(6)
[60]

QUESTION 2

2.1	Fixed Property	37 000 ✓
	Book debts 37 ½ % of R80 000	30 000 ✓ ✓
		<u>67 000</u> ✓
	Liabilities	85 000 ✓
	- Pref. Debts	17 000 ✓
		<u>68 000</u>
	+ Liquidation Cost	17 000
		<u>2 400</u> ✓
		<u>19 400</u> ✓

Amount available to concurrent creditors: R67 000 – 19 400
= R47 000

$$\begin{aligned} \text{Dividend} &= \frac{47\,600}{68\,000} \times \frac{100}{1} \quad \checkmark \checkmark \\ &= 70 \text{ cents in the Rand} \quad \checkmark \checkmark \end{aligned} \quad (14)$$

2.2.1 Profit sharing ratio is:

$$\begin{array}{rclcl} 60\,000 \times \frac{12}{72} & : & 40\,000 \times \frac{9}{36} & \checkmark \checkmark \\ & : & 36 & \checkmark \\ & : & 1 & \checkmark \checkmark \end{array} \quad (5)$$

2.2.2 Interest on capitals

$$A : \frac{60\,000}{1} \times \frac{15}{100} = 9\,000 \quad \checkmark \checkmark \checkmark$$

$$B : \frac{40\,000}{1} \times \frac{15}{100} \times \frac{9}{12} = \frac{4\,500}{13\,500} \quad \checkmark \checkmark \checkmark$$

Salaries

$$\begin{array}{rclcl} A & : & 6\,000 \times 12 & = & 72\,000 \quad \checkmark \checkmark \checkmark \\ B & : & 5\,000 \times 9 & = & 4\,500 \quad \checkmark \checkmark \checkmark \\ & & & & \underline{117\,000} \end{array}$$

$$\begin{aligned} \text{Total used} & \text{ R117 000} + 13\,500 \quad \checkmark \\ & = 130\,500 \quad \checkmark \end{aligned}$$

$$\begin{aligned} \text{Amount left} & : \text{R238 500} - 130\,500 \quad \checkmark \\ & = \text{R108 000} \quad \checkmark \checkmark \end{aligned}$$

$$\begin{aligned} \text{B's share} & : \text{R} \frac{1}{3} \times \frac{108\,000}{1} \quad \checkmark \checkmark \\ & = \text{R36 000} \quad \checkmark \checkmark \end{aligned}$$

(21)
(40)

QUESTION 3

3.1 Cost price is R3 256
 Marked price at 25% profit
 $3256 \times \frac{125}{100}$ ✓ ✓ ✓
 $= R4070$ ✓ ✓

Marked price before discount
 $R4070 \times \frac{100}{88} \times \frac{100}{92,5}$ ✓ ✓ ✓
 $= R5\ 000$ ✓ ✓

(10)

3.2 CP of R3 000 MP : $3\ 000 \times \frac{100}{125}$ ✓ ✓
 $= R2\ 400$ ✓
 $\therefore$ Loss : $R2\ 400 - 2\ 000$ ✓
 $= R400$ ✓
 Loss % on CP : $\frac{400}{2\ 400} \times 100$ ✓ ✓ ✓
 $= 16\frac{2}{3}\%$ ✓ ✓

(10)
[20]**QUESTION 4**

4.1 $A = (1 + \frac{r}{100})^n$
 $= 3000 (1 + \frac{10}{200})^{10}$ ✓ ✓ ✓
 $= 3000 (1 + 0,05)^{10}$ ✓
 $= 3000 (1,05)^{10}$ ✓
 $= 4886,68$ ✓ ✓ ✓

(9)

4.2 $RV = CP (1 - \frac{r}{100})^n$
 $= 30\ 000 (1 - \frac{20}{100})^5$ ✓ ✓ ✓
 $= 30\ 000 (0,8)^5$ ✓
 $= R9830,40$ ✓ ✓

(7)

4.3 Premium (P) = $\frac{30}{100} \times \frac{60\ 000}{100}$ ✓ ✓
 $= R180$ ✓

Premium payable to cover also premium: $\frac{v_p}{v-p}$

$$= \frac{(60\,000 \times 180)}{(60\,000 - 180)} \quad \checkmark \quad \checkmark$$

$$= \frac{108\,000\,000}{59820}$$

$$= R180,54 \quad \checkmark \quad \checkmark$$

(9)
[25]

QUESTION 5

5.1 Amount received from Sale of Stock: $90 \times 125 = 11250$ $\checkmark \checkmark \checkmark$

No of shares bought : $\frac{11250}{3,75} = 3\,000$ $\checkmark \checkmark \checkmark$

(6)

5.2 Nominal value of stock : $500 \times \frac{100}{10}$ $\checkmark \checkmark \checkmark$
 $= 5\,000$ $\checkmark$

(7)

Amount invested in stock: $50 \times 120 = R6\,000$ $\checkmark$

5.3.1 % income : $\frac{12,8}{80}$ $\checkmark \checkmark$
 $= 16\%$ $\checkmark$

(4)

5.3.2 % income : $\frac{15,3}{85} \times 100$ $\checkmark \checkmark \checkmark$
 $= 18\%$ $\checkmark$

(4)

5.3.3 Dividend : 16% of 85 $\checkmark$
 $= 13,6$ cents $\checkmark$
 % income $\frac{13,6}{80} \times 100$ $\checkmark$
 $= 17\%$ $\checkmark$

(4)

$\therefore$ 5.3.2 is most profitable $\checkmark$

[25]

QUESTION 6

6.1.1 Volume of tank : $\pi r^2 h$
 $= \frac{22}{7} \times 16 \times \frac{49}{18}$ $\checkmark \checkmark \checkmark$
 $= 308\text{m}^3$ $\checkmark \checkmark$

Volume of tank in litres : 308×1000 $\checkmark \checkmark$
 $= 308\,000$ litres $\checkmark \checkmark$

(9)

6.1.2 Circum : $2\pi r$
 $= \frac{22}{7} \times \frac{22}{7} \times \frac{4}{1}$ $\checkmark$
 $= \frac{176}{7}$ $\checkmark$
 Surface of a tank : $4 \times \frac{176}{7}$ $\checkmark$
 $= \frac{704}{7}$ $\checkmark$

Cost of painting : $R21 \times \frac{704}{7}$ $\checkmark$
 $= R2112$ $\checkmark$

(6)

6.2 Height of pole $(p)^2 = 225 - 81$ $\checkmark \checkmark$
 $= 144$ $\checkmark$
 $p = 12\text{m}$ $\checkmark \checkmark$

(5)

6.3 Volume of Sphere ; $V = \frac{4}{3}\pi r^3$
 $= \frac{4}{3} \times \frac{22}{7} \times 63^3$ $\sqrt{\sqrt{\sqrt{}}}$
 $= 1047816\text{cm}^3$ $\sqrt{\sqrt{}}$ (5)

6.4 Distance : $5400 \times \frac{220}{3600}$ $\sqrt{\sqrt{\sqrt{}}}$
 $= 330$ $\sqrt{}$

Circum : $\pi \times \text{Diameter}$
Diameter : $\frac{330}{\pi}$
 $= \frac{330}{\frac{22}{7}} \times \frac{7}{22}$ $\sqrt{\sqrt{}}$
 $= 105\text{m}$ $\sqrt{}$

Radius : $105 \div 2$ $\sqrt{\sqrt{}}$
 $= 52,5\text{m}$ $\sqrt{}$

(10)
[35]

QUESTION 7

7.1 Cost of USA computer : $R500 \times 9,79$ $\sqrt{\sqrt{}}$
 $= R4895$ $\sqrt{}$

Cost of Japan computer : $\frac{56\,000 \times 9,75}{124,24}$ $\sqrt{\sqrt{\sqrt{}}}$
 $= R4412,75$ $\sqrt{}$

$\therefore$ Import computers from Japan $\sqrt{}$

(8)

7.2 Cost of electricity : $\frac{R1317 \times 23,67}{100}$ $\sqrt{\sqrt{\sqrt{}}}$
 $= R311,73$ $\sqrt{}$

Cost of water (125 kl = 6 + 4 + 10 + 20 + 85)

First 6kl	Free	
4 x 2,15/kl	8,60	$\sqrt{}$
10 x 3,25/kl	32,50	$\sqrt{}$
20 x 4,48/kl	89,60	$\sqrt{}$
85 x 5,58/kl	474,30	$\sqrt{}$
	<u>605,00</u>	$\sqrt{}$

Total cost to consumer : $R311,73 + 605,00 = R916,73$ $\sqrt{\sqrt{\sqrt{}}}$ (12) [20]

QUESTION 8

8.1 Annual instalment = $\frac{\text{amt to be redeemed}}{A_{14} \text{ at } 6\%}$

$= \frac{83655}{9,295}$ $\sqrt{\sqrt{}}$

$= 9\,000$ $\sqrt{\sqrt{}}$

(6)

$$\begin{aligned}
 8.2 \quad \text{Principal} &= \frac{A}{S8 \text{ at } 4 \frac{1}{2} \%} \\
 &= \frac{46\,900}{9,38} \checkmark \checkmark \\
 &= 5\,000 \checkmark \checkmark \quad (6)
 \end{aligned}$$

$$\begin{aligned}
 8.3 \quad \text{Amt due at the end of 25 years} &= P(S_{25} - 1) \text{ at } 7\% \\
 &= 5\,000 (63,249 - 1) \checkmark \checkmark \checkmark \\
 &= 5\,000 (62,249) \checkmark \\
 &= R311\,245 \checkmark \checkmark \quad (6)
 \end{aligned}$$

$$\begin{aligned}
 8.4 \quad \text{Present value of R1 p.a for 8 years at } 3 \frac{1}{2} \% \\
 &= 6,874 \checkmark
 \end{aligned}$$

PV of R1 p.a of an annuity due if R1 p.a for 9 years

$$\begin{aligned}
 &= 6,874 + 1 \\
 &= 7,874 \checkmark
 \end{aligned}$$

$$\begin{aligned}
 R31\,496 \text{ obtains an annuity of } &\frac{31\,496}{7,874} \checkmark \checkmark \\
 &= 4\,000 \checkmark
 \end{aligned}$$

(7)
[25]

QUESTION 9

- 9.1 26% - EE&CA - Eastern Europe and Centra Asia ✓ (1)
 9.2 3% - A & NZ - Australia and New Zealand ✓ (1)
 9.3 Mean % : $(16 + 9 + 21 + 23 + 11 + 16 + 26 + 6 + 4 + 3) \div 10$

$$= \frac{135}{10} \checkmark$$

$$= 13,5\% \checkmark$$

Mean (No) : 13,5% of 5,9 m

$$= 0,7965 \text{ m}$$

$$= 796 \text{ 500 people } \checkmark$$

Arrangement: 3, 4, 6, 9, 11, 16, 16, 21, 23, 26

Median % : $(11 + 16) / 2 = 27/2 = 13,5 \checkmark \checkmark$

Median No : 13,5% of 5,9 m

$$= 6,7965 \text{ million}$$

$$= 796 \text{ 500 people } \checkmark$$

Mode % : 16% ✓

Mode No : 16% of 5,9 m

$$= 0,944 \text{ million}$$

$$= 944 \text{ 000 people } \checkmark$$

(8)
[10]

QUESTION 10**Drawing Graph**

(28)

10.1 R13 100

(3)

10.2 7,6 years

(3)

10.3 Book value after 10 years = R7 000

(3)

Total amount of depreciation = R40 000 – R7 000 = R23 000

(3)
~~128~~ [40]

