

LIVE: FINAL EXAM PREPARATION PAPER 1**30 OCTOBER 2014****Lesson Description**

In this lesson we:

- Work through selected examination questions adapted from 2014 Exemplar Paper covering:
 - Finance
 - Measurement
 - Data Handling & Probability

**Challenge Question**

Pantsula dance company has been invited to compete in a dance competition. They need to loan R25 000,00 from a local accredited financial services provider. The credit provider charges an upfront payment, known as an initiation fee, of R1 140,00. The loan amount is the sum of the initiation fee and the loan value. The credit provider charges a fixed annual interest rate of 24,60%.

The simple interest is calculated on the full value owed to the credit provider. Calculate the total interest to be charged on the total loan amount if it is paid over a period of four years.

Use the formula:

$$I = P \times r \times t$$

where I = interest amount, P = total amount credited r = interest rate and t = period of loan

**Exam Questions****Question 1**

(Adapted from DBE 2014 Exemplar P1, Question 5.1)

Kevin is a 45-year-old man who works for a tourism company. He earns a gross salary of R28 754,50 per month and a 13th cheque at the end of the company's financial year. The following are deducted from his salary on a monthly basis:

- 7,5% of his salary towards his pension
- R1 434,70 for his medical aid

1.1 Calculate Kevin's monthly contribution towards his pension. (3)

1.2 Calculate Kevin's annual medical-aid contribution. (2)

1.3 Kevin's taxable income for the year of assessment ending 28/02/2013 was R330 713,02.

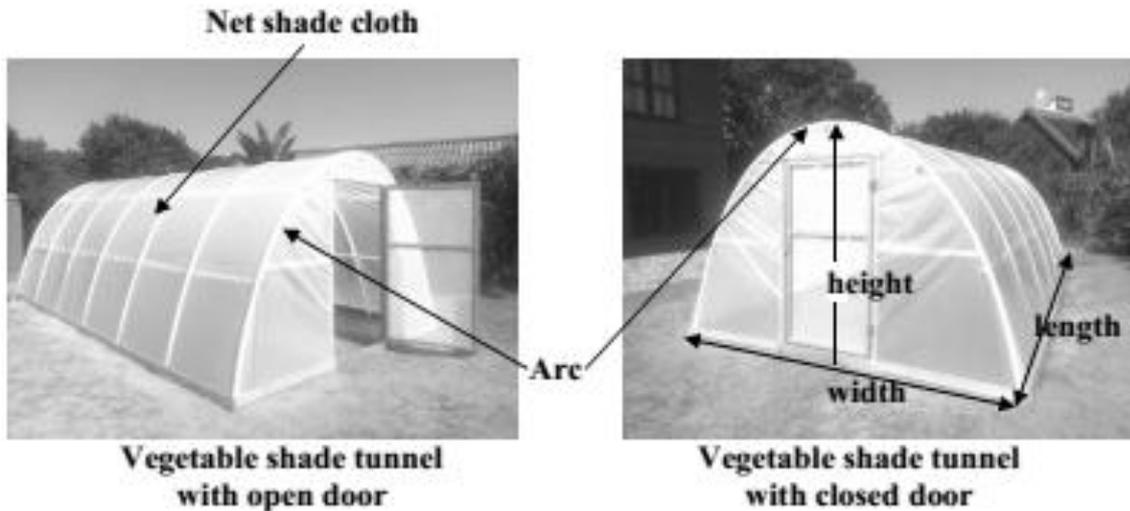
Describe how Kevin's taxable income was calculated. (5)



Question 2

(Adapted from DBE 2014 Exemplar P1, Question 2.2)

Marieka is building a vegetable shade tunnel in her yard to grow the vegetables she needs for her coffee shop. The vegetable shade tunnel is shown in the photographs below.



The dimensions of the vegetable shade tunnel are as follows:

Length = 6,5 m; width = 4,4 m; maximum height = 2,2 m

The vegetable shade tunnel is exactly half of a cylinder.

- 2.1 Calculate the length of the arc of the vegetable tunnel. Give your answer correct to TWO decimal places.

Use the formula:

$$P = \text{Length of arc} = \pi \times r, \text{ where } \pi = 3,142 \text{ and } r = \text{radius} \quad (3)$$

- 2.2 Determine the minimum amount of net shade cloth required to cover the whole tunnel by calculating the surface area of the vegetable tunnel.

The following formula may be used:

$$\text{Surface area} = \pi \times r^2 + \ell \times P, \text{ where } \pi = 3,142$$

$$r = \text{radius} \quad P = \text{length of arc} \quad \ell = \text{length of vegetable tunnel} \quad (4)$$

- 2.3 Determine the perimeter of the garden enclosed by the vegetable tunnel.

Use the formula: Perimeter = $2 \times (\text{Length} + \text{Width})$ (2)

- 2.4 Marieka wants to spread compost with a uniform thickness of 0,05 m over the enclosed garden area. Calculate the volume of compost required.

Use the formula: Volume = Length \times Width \times Height (3)



Question 3

(Adapted from DBE 2014 Exemplar P1, Question 3.1)

Jan studied the different religious denominations to which people belong in South Africa. TABLE 2 below shows the information from the 2012 population profile of South Africa.

TABLE 2: Percentage of people in South Africa that belonged to religious denominations in 2012

	RELIGIOUS DENOMINATION	SYMBOL	PERCENTAGE MEMBERS
Christian	Zion Christian Church	Z	11,1
	Charismatic/Pentecostal churches	CP	8,2
	Methodist Church	MC	6,8
	Uniting/Dutch Reformed Church	UD	6,7
	Anglican Church	A	3,8
	Catholic Church	C	7,1
	Other Christian churches	OC	36
Non-Christian	Muslim	M	1,5
	Unspecified religion	U	1,4
	Other	O	2,3
	None	N	15,1

[Source: www.indexmundi.com]

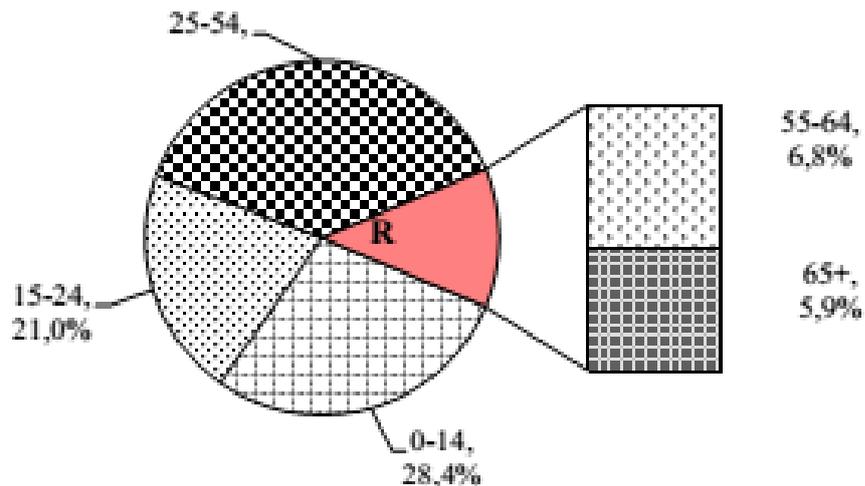
- 3.1 Which religious denomination has the highest percentage of people that belong to it? (2)
- 3.2 Determine the total percentage of people that belong to Christian denominations. (2)
- 3.3 Determine the range of the data above. (2)
- 3.4 Arrange the religious denominations in ascending order of their percentage members. Use the given symbols. (2)
- 3.5 Complete the bar graph (shown on page 5) representing the percentage of people belonging to the religious denominations in TABLE 2 above. (5)
- 3.6 In 2012, the population of South Africa was 48 810 427. Calculate how many people belonged to none of the religious denominations in 2012. (2)
- 3.7 If a person were chosen at random in South Africa, what is the probability that the person would be Catholic? (2)

Question 4

(Adapted from DBE 2014 Exemplar P1, Question 3.2)

Jan also studied the population distribution percentage according to age groups. The pie chart below shows the distribution percentage of the South African population according to age groups.

**POPULATION DISTRIBUTION PERCENTAGE
ACCORDING TO AGE GROUP IN 2012**



The pie chart and the accompanying bar of the pie chart above indicate the age group and the percentage of people in that age group in South Africa in 2012.

- 4.1 Label the sector marked R on the pie chart. (2)
- 4.2 Calculate the percentage of people in South Africa aged 25 to 54 years of age in 2012. (2)
- 4.3 In which age group did the majority of the people in South Africa fall in 2012? (2)
- 4.4 In which age group is the median age of people in South Africa likely to fall? (2)

Question 5

(Adapted from DBE 2014 Exemplar P1, Question 5.1)

Kevin wants to invest half of his 13th cheque (R14 377,25) for his child's education.

Bank A offers him interest of 9,5% p.a. (per annum) and Bank B offers him a compound interest of 8,5% p.a. compounded monthly.

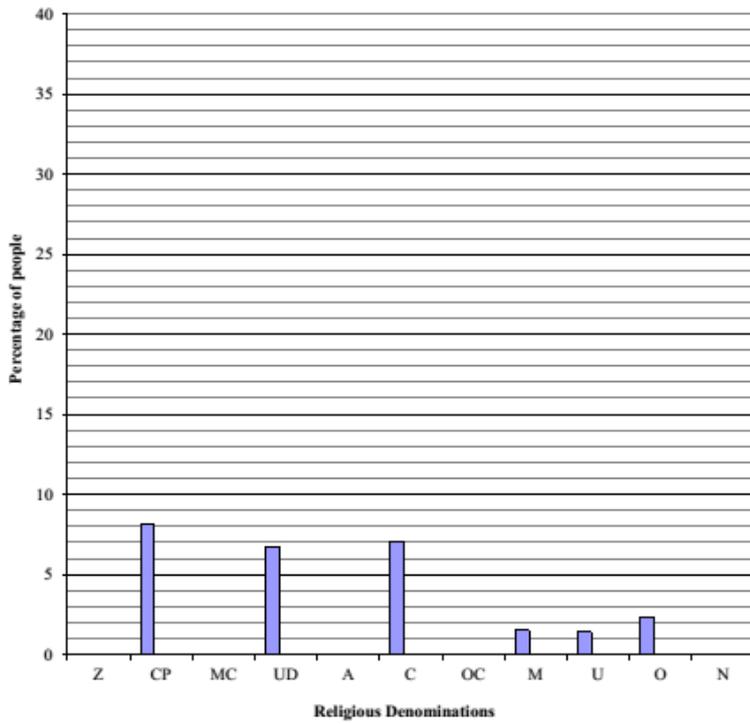
Graphs representing the investment returns from the two options are shown on the next page.

- 5.1 Estimate the value of the investment at Bank A at the end of 5 years. (2)
- 5.2 After how many years will the value of the investment at Bank B be more than that at Bank A? (3)



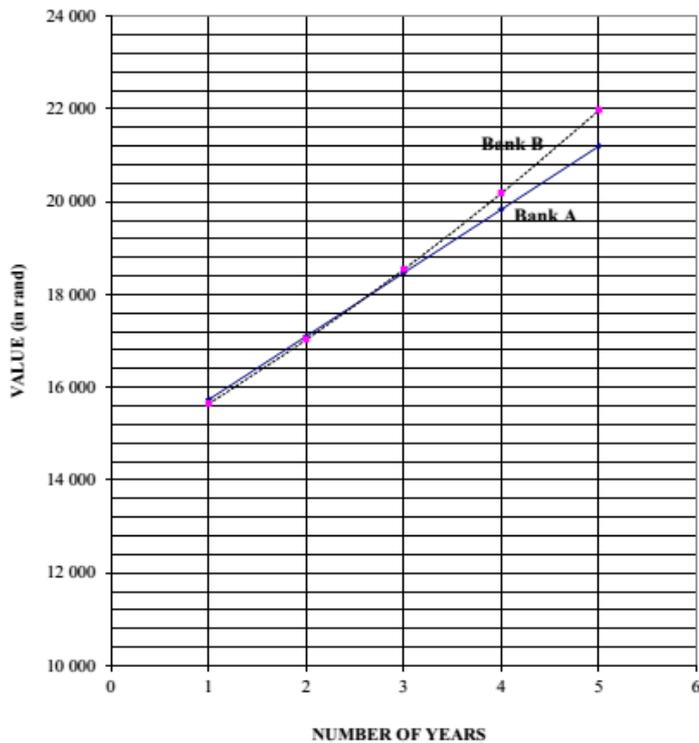
Question 3

PERCENTAGE OF PEOPLE BELONGING TO RELIGIOUS DENOMINATIONS



Question 5

INVESTMENT OPTIONS





Answers

Challenge Questions

$$\text{Amount} = \text{R}25\,000,00 + \text{R}1\,140,00 = \text{R}26\,140,00$$

$$I = \text{R}26\,140,00 \times 0,246 \times 4 = \text{R}25\,721,76$$

Question 1

1.1 Pension = 7,5% of R28 754,50

$$= \text{R}2\,156,5875 \approx \text{R}2\,156,59$$

1.2 Annual medical aid = 12 × R1 434,70

$$= \text{R}17\,216,40$$

1.3 Calculate annual salary $\text{R}28\,754,50 \times 12 = \text{R}34\,5054$

Add 13th cheque to the annual salary $\text{R}34\,5054 + \text{R}28\,754,50 = \text{R}373\,808,50$

Subtract annual medical aid contribution and $\text{R}373\,808,50 - \text{R}17\,216,40 = \text{R}356\,592,10$

Subtract pension contribution $\text{R}356\,592,10 - \text{R}25\,879,08$

Balance gives taxable income $= \text{R}330\,713,02$

Question 2

2.1 $P = 3,142 \times 2,2 \text{ m} = 6,9124 \text{ m} \approx 6,91 \text{ m}$

2.2 Surface Area = $3,142 \times (2,2 \text{ m})^2 + 6,91 \text{ m} \times 6,5 \text{ m}$

$$= 15,20728 \text{ m}^2 + 44,915 \text{ m}^2$$

$$= 60,12 \text{ m}^2$$

2.3 Perimeter = $2 \times (6,5 \text{ m} + 4,4 \text{ m})$

$$= 21,8 \text{ m}$$

2.4 Volume = $6,5 \text{ m} \times 4,4 \text{ m} \times 0,05 \text{ m}$

$$= 1,43 \text{ m}^3$$

Question 3

3.1 Other Christian churches

3.2 Total = $11,1 + 8,2 + 6,8 + 6,7 + 3,8 + 7,1 + 36 = 79,7$

3.3 Range = $36 - 1,4 = 34,6$

3.4 U; M; O; A; UD; MC; C; CP; Z; N; OC

3.5 See next page

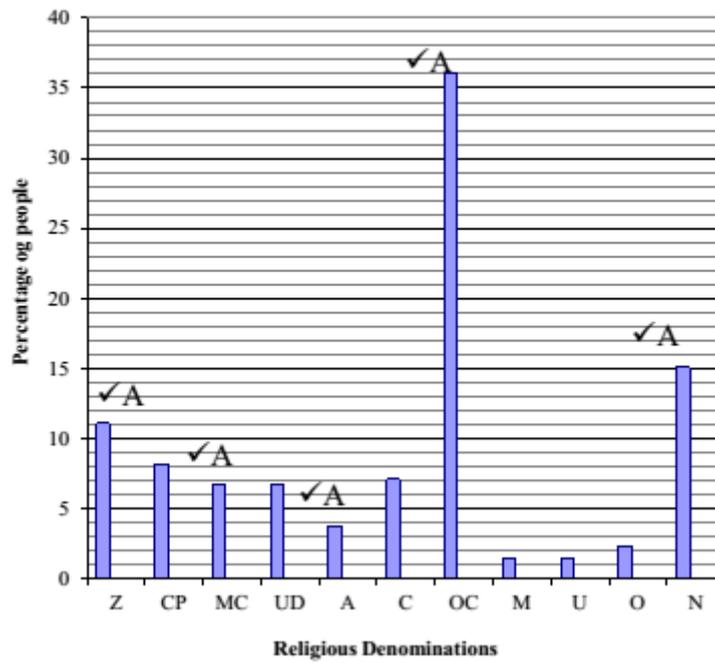
3.6 N = 15,1% of 48 810 427 = $7\,370\,374,477 \approx 7\,370\,374$

3.7 P(Catholic) = 7,1% = 0,071



3.5

PERCENTAGE OF PEOPLE BELONGING TO RELIGIOUS DENOMINATIONS



Question 4

- 4.1 55 years and older
- 4.2 Percentage = $100 - 21 - 28,4 - 5,9 - 6,8 = 37,9\%$
- 4.3 25 – 54 years
- 4.4 Median = 50%
Median falls in the 25–54 years age group

Question 5

- 5.1 R21 200
- 5.2 After 2years (Can accept after 3 years)

