Solutions to Practical questions on sampling

Question 1

1. Monetary unit sampling (MUS)

Monetary unit sampling (MUS) is a statistical sampling method in which each rand (monetary value) in an accounting population stands an equal chance of being selected for a sample.√ The probability of an item being included in the sample is thus directly linked to the monetary value of that item.√ The definition of a sample unit is therefore changed from a physical unit (invoice, stock item) to an individual rand (R1,00).√ (3)

2. Calculation of the number of sample items

Use table A to process the confidence level to a reliability factor: 90% = 2,3 (R) √

Calculate the J-factor:

J = P/R = R69 000/2.3 = R30 000 √

Calculate the sample size:

Sample size = Total value of population / J-factor = R7 350 000 / 30 000 √

= 245 items √

3. Selection of the first three invoices for the sample

Invoice No	Invoice amount R	Accumulated amount R	Selected	Invoice selected
101	11 100	11 100		
102	9 500	20 600	12 700	102 √
103	21 000	41 600		
104	14 600	56 200	42 700	104 √
105	17 200	73 400	72 700	105 √

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Question 2

a) Sampling technique

Estimation sampling for variables vs. monetary unit sampling√
Choose monetary unit sampling as you do not want to determine the standard deviation√

b) Sampling process

- Determine the total value of the debtor‟s population.√
- Decide on a confidence level after the system of internal control has been evaluated.√
- Decide on a level of monetary precision.√
- Process the confidence level to a reliability factor using a table.√
- Calculate the J-factor (monetary precision divided by the reliability factor).√
- Calculate the sample size (population value divided by the J-factor).√
- Draw the sample.√
- Carry out an audit of the sample.√
- Reach a conclusion.√
- Consider if other additional steps must be taken.√

(c) Reasons for stratification

- It is used to get a group of sampling units which have more or less the same attributes.√
- It is used when the population has large variability or is not homogeneous.√
- Stratification allows the internal auditor to give special attention to certain categories in the population, such as high-value items.√
- This procedure reduces the variation of all the items in the stratum.√
- Stratification should result in a smaller sample size.√

Question 3

Calculation of adjusted monetary precision

Error value	J-factor	Item value	Estimated value of error
Errors of overstatement			
(1) 1 600	1 000	1 700	1 600
(2) 200	1 000	500	400* √
1 800 √			

***** Estimated value of error = J-factor/Item value x Error value = 1000/500 x 200 = 400

Error value	J-factor	Item value	Estimated value of error
Errors of understatement			
(1) 840	1 000	1 100	840
(2) 195	1 000	150	1 300 * √
1 035 √			

***** Estimated value of error = J-factor/Item value x Error value = 1000/150 x 195 = 1 300

1 800 – 1 035 = 765 √

Estimated value	Precision adjustment factor	Adjusted estimated value
Overstatement		
1 600	----	1 600
(1) 400	1.75 ½	700
		2 300 √
Understatement		
(2) 840	----	840
(1) 1 300	0.05 ½	65
		905 √
		1 395 √