

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF PAKISTAN

EXAMINERS' COMMENTS

SUBJECT	SESSION
Quantitative Methods	Foundation Examination - Autumn 2013

General:

The overall performance of the candidates in the paper was not satisfactory. Passing percentage was about 30%. Majority of the candidates lacked conceptual understanding of the subject. They were at ease in solving questions which involved straightforward application of formulas. However, when the question required in-depth thinking and analysis, the performance was quite poor.

Question-wise comments are as under:

Question 1 (a)

The question was given to test the basic understanding of the concept and application of Ratio and Proportion. It proved to be the worst attempted question in the whole paper. The answer involved 3 simple steps i.e.(i) calculating the per litre cost of A, B and C, (ii) forming two equations (simultaneous equations) one based on cost and the other based on quantities involved in producing the final product C. (iii) solving the equations to get the required quantities of A and B to find the ratio of A and B in C.

Most of the students left the question un-attempted. Most of those who attempted the question calculated the per litre cost of A & B correctly but were unable to form the correct relationships. Very few candidates solved the problem correctly.

Question 1 (b)

Performance on this part based on geometric progression was also quite poor. Many students did not even try to attempt this question. Amongst those who attempted the question, quite a few solved it by treating the given situation as an arithmetic progression for which no marks were awarded. Many of those who solved the problem by geometric progression took the time (period during which the production was increasing) 'n' as 24 instead of 25.

Question 2 (a)

This question was based on a situation whereby the students were required to calculate the additional amount that had to be deposited if the interest rate on an investment was reduced, so as to receive the same amount at the end of the investment period as was originally envisaged.

Performance on this question was good. Most of the candidates knew the correct procedure. Most others were able to determine the initial deposit amount and the amount accumulated after two years correctly but made errors in calculation of the amount required in the remaining 3 years.

Question 2 (b)

This question was based on the concept of Annuity. Performance on this part was around average. The most common error was that the students did not adjust the formula based on the fact that payment was made at the start of the month.

Question 2 (c)

This was a simple two step question, but many candidates got confused and could not attempt it correctly. Some candidates used the incorrect formula as they used $(I + rt)$ instead of $(I - rt)$ and some interchanged the values of P and A.

Question 3 (a)

The question was designed to test the knowledge on rules of differentiation including derivatives of 'e' and 'ln'. Performance was about average. Most candidates erred on the differentiation of $\ln x^3$. It has been observed that candidates who make mistake in initial steps and cannot bring the solution to its logical end, manipulate their working and in the end state the required expression and state that "hence it is proved". This approach is a waste of time and should be avoided. Leaving the question in between will give them the same marks without having to waste their precious time.

Question 3 (b)

Almost all the students attempted this question on the application of maxima and minima and a good number of them were able to show their understanding on the methods of determining the number of units to maximize the profit and were able to calculate maximum profit and the price at which the profit is maximized. Most common mistakes were as follows:

- Average cost was treated as Total cost.
- 2nd derivative test was not carried out.
- Many candidates correctly calculated the quantity that would maximize the profit but did not calculate total profit and the price.

Question 4 (a)

Candidates did quite well on solving the system of equation by Cramer's rule. However, few students tried to solve it by matrix inversion method for which no marks were awarded. The candidates must understand that when a particular method is specified in the question, then the use of other methods would simply be a waste of time. If they do not know the specified method it is far better to concentrate on other questions.

Question 4 (b)

This question required sketching of constraints and identifying the feasible region only. Although it was an easy question, the performance was just average because most candidates failed to identify the correct feasible region. Surprisingly, many students drew the constraints on separate graphs. A number of students were found confused in graphing the lines $x=5$ and $y=2$ which was a clear indication of their lack of conceptual understanding of the subject.

Question 5 (a)

The histogram and frequency polygon were to be drawn after determining the proportional heights as the class intervals were not equal. Majority of the students were unable to do this. The candidates also showed lack of care in labeling the diagram and lost valuable marks. A number of students were not even able to correctly mention the class boundaries.

Question 5 (b)

Almost all the students attempted this question and most of them showed their clear understanding of measures of dispersions like median, mean deviation from median and coefficient of mean deviation from median. However, a few got confused and applied incorrect formulas. Moreover, a large number of students could not correctly convert class intervals into class boundaries.

Question 6 (a)

This question required calculation of Spearman's coefficient of rank correlation. Most of the students did not take into account the factor for tied ranks. Majority of the candidates skipped the interpretation part of the question which shows that candidates know how to apply the formula but lack understanding of the practical application of the concept. A significant number of students calculated coefficient of correlation instead of rank correlation.

Question 6 (b)

The question tested the understanding of students regarding the relationship between regression coefficients and coefficient of correlation. Only about half the students were able to solve this easy question correctly. Many students skipped this part altogether.

Question 7 (a)

Majority of the candidates solved this problem on probability by using the binomial distribution although it was far easier to solve by listing all the possibilities and identifying the successful events. The candidates should practice and understand the various methods of solving problems. This would enable them to save time and improve their performance. This advice would be much more relevant in case of papers in later stages like Cost Accounting, Accounting and Business Finance Decision (BFD) etc.

The two common observations in this question were as follows:

- it was difficult for a significant number of students to distinguish between “and” and “or” i.e. ‘intersection’ and ‘union’.
- even when due to errors in the process, the probability calculated was greater than 1, candidates did not bother to correct it or at least mention that probability can not be greater than 1.

Question 7 (b)

It was an easy question based on Normal Distribution, but majority of the students were not able to apprehend the question correctly and therefore either could not apply the correct formula or did not use the correct figures.

Question 7 (c)

Majority of the candidates did well on this question which was based on Poisson Distribution. However, few students unnecessarily multiplied the average of 8 daily claims by 30 to convert to monthly claims. A few students took $P(x=4)$ in calculating probability of less than four insurance claims. In part (iii) many students followed the lengthy procedure of adding probabilities from $P(x=2)$ to $P(x=8)$ instead of using the $1 - P(x=0) - P(x=1)$ approach.

Question 8 (a)

This proved to be a difficult question. It was primarily based on Normal Distribution. The candidates were required to calculate the probability that the mean of sample selected at random would lie within a specified range whereas the range and the standard deviation were given in terms of percentage of population means. Consequently, the question proved difficult and only those students could solve it correctly who were conceptually strong.

Question 8 (b)

This was based on hypothesis testing and the students generally performed well. The most common mistake was the use of z-statistic instead of the t-statistic.

(THE END)