Examiner's Report

AA1 EXAMINATION - JANUARY 2019

(AA12) QUANTITATIVE METHODS FOR BUSINESS

PART A

Question No. 01

General Matters:

➢ Candidates had not taken steps to pay attention to read the questions and the instructions regarding answering carefully. It was proved by their writing the full answers instead of the relevant numbers, and in certain instances by writing Roman figures not given in the question in place of the numbers given, in the case of question Nos. **1.1** to **1.10**.

➢ Some candidates had provided answers to only a few parts instead of answering all the 15 parts of the question. The opportunity of obtaining full marks was lost by leaving blank spaces.

➢ Candidates in certain instances had cut off the first answer, the second answer and the third answer but had failed to provide other answers thereby foregoing marks as a result.

➢ Generally, due to lack of theoretical knowledge of candidates on simplification of equations, probability, compound interest, indices, standard deviation and normal distribution and their inability to arrive at the answers solving the problems correctly, incorrect answers seem to have been provided.

➢ The attention of candidates did not seem to have been received to the fact that 40% of the marks of the question paper had been allocated to this question. In order to pass the subject a large percentage of marks could have been obtained from this question and that the possibility of providing correct answers to a large number of parts during a short period of time, through short calculations was available to them. Candidates are therefore advised to devote around 01 hour to **Section A** out of the 03 hours allocated for the question paper, paying special attention to answer question No. 01.

These objective Test Questions consisted of 10 multiple choice questions and 5 short questions for a total of 40 marks. Although all formulae relevant to calculations had been provided with the question paper, some candidates had not selected the correct formulae. This was clear from the answers given by the candidates and through examining their workings. Some of the common weaknesses observed in the answers provided to sub-sections of this question are set out below:

1.1   Knowledge of solving simple equations was found to be at a minimum level.

1.2   Many candidates had not been able to understand the question properly. Majority of the candidates had calculated as simple interest. Also had arrived at a wrong answer by applying the incorrect formula, viz, $[S = x (1 + r)^n]$.

1.3   It had not been possible for the majority of candidates to apply calculus of the Revenue Function in order to arrive at the Marginal Revenue Function. Candidates did not seem to be familiar with the formula,

$$\frac{d(q^n)}{dq} = nq^{n-1}$$

1.4   Formula $\frac{PTR}{100}$ had not been correctly applied.

1.6   Although the formula for Correlation Coefficient, was given to arrive at the correlation co-efficient, the values given had not been correctly substituted. Therefore, as there was a large number of calculations, many simplification errors were observed in reading the final answer.

1.7   Although the formula had been given the simple aggregate price index had not been calculated correctly.

1.8   Not being aware that the total of probability is equal to 1, candidates had gone wrong in the answer.

1.9   In searching for conditional probability, incorrect answers had been selected due to lack of proper understanding.

1.10   It was seen in the calculations that attention had not been paid to minus (-) mark in writing down common difference.

1.11   It appeared that a majority of the candidates had no understanding about NPV. It was stated that "Project C" which had a negative value was more profitable. Although some had stated "Project A" was more profitable, reasons for selecting that had not been stated.

1.12   Although majority of the candidates had correctly written the equation taking A' share as X, they had solved it taking B's share as x - 10,000. Incorrect answers had been reached in solving taking plus and minus substitution incorrectly in expanding C's share.

1.13   Majority of the candidates had written as a positive relationship only. Minority of the candidates had written strong positive.

PART B

The following matters were observed in the evaluation of answers of this section which consisted of 04 compulsory questions.

Question No. 02

A financial mathematics question. Out of the total marks of 10 allotted, on the whole, a majority of candidates had scored over 5 marks. Simple interest in **part (a)** had been correctly worked out by the majority. Out of those who went wrong, some had applied the formula S = x $(1 + r)^n$ which is relevant to compound interest, instead of that applicable to simple interest. Certain others in simplifying 225,000 (1 + 2 x 0.14) had simplified it incorrectly as 225,000 (3 x 0.14). A few candidates has simplified as,

$$r = \frac{14}{100} \quad \text{instead of} \quad r = \frac{114}{100}$$

(b)(i) In solving the problem relating to compound interest, in this part candidates seemed to have faced some difficulties. Some candidates had worked out interest for the 2 years separately and added to arrive at the answer, instead of substituting figures into the formula and reach the answer at once. They had wasted more time unnecessarily. Certain limited number of candidates had taken Rs.500,000/- instead of Rs.200,000/-. Similarly limited number of candidates had taken the simple interest rate of 14% given in **part (a)**, instead of the compound interest rate of 8% for this post. It was observed that a large number of candidates had not read the question well.

(b)(ii) Although some candidates had multiplied the 2 years in formula, $S = x \left(1 + \dfrac{r}{4}\right)^{n \times 4}$

by 2 quarters and taken as 8. Most candidates had not divided the interest rate of 8% by 4. That is, they had taken only as 200,000 $(1 + 0.08)^{2 \times 4}$. Although many candidates had arrived at the total amount payable at the end of 2 years, they had not deducted the principle of Rs.200,000/- and worked out the interest only and had not shown the correct answer. Certain others had worked out the interest separately for each quarter. Therefore, they had utilized a longer period than using the formula.

Question No. 03

This question includes identifying the profit function and calculation of break-even quantity in association with the Total Revenue Function and Total Cost Function and Maximization / Minimization of profit using calculus. Lack of knowledge of candidates on calculas was observed. Some candidates had performed Maximization / Minimization algebraically. They had treated $P_{(x)}$ as a quadratic function and they got the square of the quadratic function and when there is a square only one zero value is arrived and therefore, it is considered as,

$$x = \frac{-b}{2a} \quad \text{and the maximum number of units is calculated.}$$

In order to arrive at the maximum value using calculus, value of $\dfrac{d[P(x)]}{dx} = 0$ has to be calculated.

It was observed that candidates had no knowledge about these basic principles.

Question No. 04

This question tests knowledge on measurements under statistics. 10 marks have been allocated. As a whole candidates had not answered satisfactorily.

Calculation of mean was required in **part (a)**. The answers to that part were satisfactory in comparison to the other parts.

Majority of the candidates did not know that variation should be found to arrive at standard deviation and the square-root of that is standard deviation. Although the relevant formulae had been provided candidates had not calculated correctly. Though coding system could be used to calculate the mean and the standard deviation, that had not been done. Coefficient of variation had also not been correctly calculated.

Question No. 05

This question tests knowledge relating to corelation and the least square regression line under the subject Statistics. Majority of the candidates had not correctly identified coefficient (a) and (b). A considerable number of candidates without understanding the problem had taken the given x and y as points and constructed a graph.

Candidates had misunderstood the values of $\sum y^2$ being with $\sum x$, $\sum y$, $\sum xy$, $\sum x^2$ given in the table. Further, what was required in the question was identification of the least square regression line given by y = a + bx. However, majority of the candidates had not understood that the values of "a" and "b" had to be found separately.

Specially, it was very clear that candidates displayed weaknesses in substituting values to formulae and simplifying them correctly. The main reason for this appears to be that they had not answer similar questions before the examination and non-practice of past question papers.

PART C

Question No. 06

This consisted of 3 parts. **Part (A)** was on Time Series and **Part (B)** & **(C)** were on probability.

A total of 20 marks was allocated with 9 marks to Time Series and 11 marks for probability. On the overall, as in every previous examinations majority of the candidates had not answered fairly satisfactorily to **part (A)** Time Series. By correctly understanding the pattern it would have been possible to correctly finding out the values **(a)** to **(e)**. However, candidates had not been interested in such an exercise.

In answering the question on probability in **Section (B)** a large number of candidates had not been able to draw a Tree Diagram. Specially while naming the branches in the Tree Diagram the given probability had been mixed up. Also a large number of candidates did not know that as you go along a branch the given probability has to be multiplied. Before drawing a Tree Diagram, candidates should attempt to read and clearly understand on problem and try to identify the opportunities very clearly.

Also the probability in **Part (C)** a large number of candidates had no correctly calculated.

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General matters for which attention should be drawn to improve performance level of candidates:

(1) Studying well the full contents of the new syllabus completely paying more attention to newly introduced subject matters.

(2) Workings should be clearly shown along with answers wherever applicable.

(3) Care should be exercised in copying formulae and in substitution. Using of the most convenient formula when several formulae could be applied to answer certain questions.

(4) Handwriting should be legible and the numbers of questions should be correctly written.

(5) Following correctly the instructions given in the question paper.

(6) Perusal of past question papers and suggested answers would help sharpening of knowledge and experience.

(7) Proper management of time is important.

(8) Re-checking of question numbers etc. before handing over answer scripts is a must.

(9) Appearing for the examination with a firm determination of passing the examination with due preparation.

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