Examiner's Report

AA1 EXAMINATION - JULY 2017

(AA12) QUANTITATIVE METHODS FOR BUSINESS

PART A

Question No. 01

General Matters:

- Candidates had not taken action 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 at all in place of the numbers given, in the case of question Nos. **1.1** to **1.10**.

- Some candidates had answered only a few questions instead of answering all the 15 parts. The chances of obtaining full marks were lost by leaving blank spaces.

- Some candidates had struck off the answers written for the first, second and third time and lost marks by not writing other answers instead.

- It was noted that generally due to lack of theoretical knowledge of candidates on ratios, simplification of equations, probability, compound interest and simple interest and correlation coefficient (r), etc., candidates had not been able to solve the problems and present correct answers.

- The attention of candidates had not been directed to the fact that 40% of the marks, which is a fair percentage of getting pass marks in this subject was allocated to this question and that during a short period of time, through simple calculations correct answers could have been written to questions of this section. Out of the three hours allowed to this question paper, candidates should see that they allocate about one hour to this section.

This OTQ section comprised of 10 multiple choice questions and 5 short questions with a 40 marks allocation. A few common weaknesses observed in answers to sub questions of this question are set out below:

1.1 Majority of the candidates had given the correct answer. There were candidates who gave answer (2) in marking the answer arrived for x = 3.

1.2 Majority of the candidates had given the correct answer. There were candidates who calculated simple interest instead of compound interest.

1.3 Majority of the candidates had given the correct answer. Although instructions were to use 2015 as the base year, certain candidates had used 2016 as the base year.

1.4 The percentage of candidates who obtained correct answers was at a very low level. Majority of candidates had stated all statements as correct. It was evident that there was no correct understanding about Index Numbers.

1.5 Those who gave correct answers were at a minimum level. Here, most candidates had stated all the statements as correct. Not having an understanding of independent and dependent events appeared to be the reason.

1.6 A considerable number of candidates had given the correct answer. There were candidates who inter-change plus (+) and minus (-) and the constant in using differential calculations.

1.7 Although only a small number of candidates had given the correct answers, this was an easy question. They had made mistakes in the answers by making calculations without understanding the question.

1.8 Majority of the candidates had given the correct answer. However, there were candidates who incorrectly interpolated even in the given formula. It was evident from the answers that there were candidates who did not know what were class width and class frequency.

1.9 A considerable number of candidates had given the correct answer. There were a few who did not identify the correct formula. Certain candidates had calculate the future value too.

1.10 A good number of candidates had provided the correct answer.

Short answers were expected for the 3 questions **1.11** to **1.13** and a considerable number had written answers successfully. There were candidates who did not know that probability cannot be more than 1. Those who gave wrong answers had done so by selecting answers without any understanding.

1.14 More candidates had given correct answers. It was seen that those who got wrong answers had selected answers without any understanding.

1.15 It was found that candidates lacked understanding of this question.

PART B

This section consisted of 4 compulsory questions.

Question No. 02

This question consisted of 2 parts. Total 10 marks had been allocated.

- Majority of the candidates had selected this question. But, only a few had obtained as high as 9 or 10 marks. The majority had obtained low marks.
- Although candidates had known something about Revenue function, cost function, Demand function and Price and profit functions, only a few had correctly understood the relationship between them. Instead of answering the question an attempt had been made by them to write some statement of what had been learned.

(a) Only a few had correctly identified the Revenue Function. Most of them had stated that Revenue Function was either the multiple of the Demand Function and the Cost Function, difference or total. Those who wrote Revenue Function R = (-2x +500)Q could not proceed to simplify the other parts. Further, there were others who simplified R = (- 2 x + 500) x , as R = - 2 x^2 + 500.

(b) Majority did not have an understanding about the break-even quantity. There were a good number of candidates who stated R = C. But, inability to simplify simple mathematical simplifications and find factors, only a few had arrived at correct answers.

(c) Most of them had correctly identified the profit function. But, due to error of getting R - Revenue Function interpolation of a wrong value were mostly seen. Also there were candidates who stated C - R among them.

(d) The basic knowledge regarding differential calculations was at a better level than previous examinations. Majority of the candidates was aware of correctly applying differential calculations to whatever given function. Majority could not arrive at the correct answer due to non-identification of the Revenue Function correctly. Error in not correctly identifying the Revenue Function was the reason for going wrong in all the other parts of the question. A large number of candidates got the profit maximizing quantity also as the break-even quantity of (b).

Question No. 03

(a) A substantial number of candidates had provided correct answers. There were candidates who had spent considerable time to calculate $\sum x$, $\sum x^2$, $\sum y$, $\sum y^2$, $\sum xy$. Some candidates had wasted time and made mistakes by not selecting correct or easy formulae. They had gone into long calculations for data without using simple formula.

There were candidates who did not correctly select n = 8.

Although value of $\bar{x}$ was correctly calculated by $\frac{\sum x}{n}$, there were candidates who

obtained it as $\sigma = \frac{\sum x^2}{n} - \bar{x}$ by forgetting the square root when arriving at the Standard

Deviation. For these reasons many candidates could not obtain full marks for this section.

(b) **(i)** Omission of the square-root symbol was commonly seen in writing down the formula for correlation coefficient (r). There were candidates who incorrectly wrote down the value of n and omitted n. There were many candidates who wrote $(\sum x)^2$, as well as $\sum x^2$ instead $(\sum y)^2$. Another weakness of many candidates was simplification using + symbol instead of multiple in the formula, as well as, although the square-root symbol was used first forgetting it after a few steps therefore. There were candidates who used formula for regression line *b* as the formula for r.

(ii) The number of candidates who stated that there was a strong positive relationship was less. There were many who wrote that there was a positive relationship. There were candidates who wrote that there was a perfect positive relationship.

Question No. 04

This was a question for which full marks could have been obtained by substituting the given values to the formula and simplifying those. Although majority of the candidates had selected the correct formula for "***b***", by changing the number of decimal places a different value had been arrived at, for "***a***" some candidates had overlooked to write the regression line equation as y = a + bx. There were candidates who did not substitute data correctly as well as did not simplify correctly.

Candidates have to further practice solving problems. Further, the answer scripts demonstrated and made it clear that this subject area has not been correctly understood.

Question No. 05

(a) Majority of the candidates had correctly identified the compound interest formula as $S = x(1+r)^n$. But, there were many candidates who substituted to the formula interchanging S and x.

Even candidates who correctly wrote $107,180 = 50,000\ (1+r)^6$, calculated in many instances as $107,180 - 50,000 = (1+r)^6$.

Even candidates who correctly obtained $\frac{107,180}{50,000} = 2014$, have stated later $(1+r)^6 = 1^6+r^6$.

Out of candidates who correctly took as $\sqrt[6]{2.1436}$ and selected 1+r, only a few candidates only could simplify it correctly.

Eg: $2.1436 = (1+r)^6$

$2.1436 - 1 = r^6$

Many had simplified as above. Many could not calculate "***r***" correctly. It appears that candidates should gain more understanding on factorization and undertake further practice.

(b) There was a majority of candidates who misunderstood the recommendation due to arriving at a final plus value because -50,000 was stated in place of + 50,000 in finding the N.P.V. There were candidates who used other discounting factors instead of 11%. However correct NPV had been obtained depending on the discounting factor used. Even though the calculation was correctly done, there were candidates who forgot the minus (-) value.

There were candidates who totaled all cash flows and stated as $\frac{590,000}{(1.11)^5}$.

Similarly there were candidates who obtained the correct recommendation through the incorrect NPV.

PART C

Question No. 06

(A) Solving a simultaneous equation was expected from this part. Majority of the candidates had obtained full marks for this section. However, there were minor errors, as a result of not using brackets.

(B) There were candidates who could not select the correct formula to calculate the Laspeyre's Quantity Index. There were also candidates who mixed up data in P_0q_1 and P_0q_0. Certain other candidates had found out $\sum p$ and $\sum q$ separately and multiplied. It was found that the understanding on the use of symbol $\sum$ was low. There were candidates who looked for Quantity Index for each item separately. Not indicating the calculated index as a percentage was also a major weakness. It appeared that there was not enough practice relating to the use of formulae.

(C) **(a)** In arriving at the expected value, certain candidates had expressed it as a percentage. It had been taken as the total of probabilities and expressed as 0.8 and 80%. Satisfactory answers were at the lowest level. It was very clear that candidates did not have a correct understanding about expected values.

(b) Only a very few candidates had calculated variances correctly. Errors had occurred in substituting the percentage of E(x) to V (x) = $\sum x^2$ P(x) - $\sum(x)^2$.

(D) A simple question associated with trend. There were candidates who added at 2 or 4 years, instead of at 3 years to compute the trend. However, only a very few candidates obtained full marks for this very easy question.

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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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