

## Marker's Feedback

**Total Marks Available: 99****Cohort Average (92 students): 63.39%****Cohort St. Deviation: 21.12%****Question 8:**

- Students performed well in this question.
- In part (b), a handful of students used 432 from part (a) as  $T_1$  instead of 450.
- Students need to remember to check for rounding requests in questions, some did not round to the nearest metre in part (c)
- Students need to remember that sequences are discrete values and to never connect the plotted points with a line.

**Question 9:**

- In part (a), some students did not draw the graph as a planar.
- Part (b) was done quite well.
- Students either got 2 marks or 0 marks in part (c) as some students did not correctly comprehend what the question was asking for.

**Question 10:**

- This question was done well overall.
- In part (c), it was clear that some students chose a random answer and provided justification that was not credible.

**Question 11:**

- In part (a), students used two different methods to calculate the effective interest rates (e-activities or formula). Most were successful regardless of the method chosen, but the students who made the mistakes simply substituted the incorrect value into the e-activity or the formula (e.g. quarterly as  $n = 12$ ). Students are to be commended on their recognition that the answer is the lowest rate as usually, when a question involves effective interest rate, the question involves an investment, not a loan.
- Some students struggled to identify that  $N = 3$  in part (b), but most were able to receive a follow through by subtracting the value calculated by the PV.
- Part (c) was subpar. Many students struggled to interpret that the interest is added onto the PV, giving the value of the FV.

**Question 12:**

- Parts (a)-(c) was done well overall. Only a handful of students mistook the coefficient of determination ( $r^2$ ) as the correlation coefficient ( $r$ ).

- In part (d), although most students got this, there are still some who provided vague interpretations. Remind students to always add the values and units for both variables.
- Parts (e)-(g) was done well overall.

### Question 13:

- Parts (a) and (b) were done well.
- Some students lost one mark in part (c) when they didn't consider that it is a percentage increase for each term in the sequence and hence, the monthly rate needs to be added to one.
- Many students answered 31 months in part (d) as they are used to questions where  $T_n$  is the closing balance of the loan in month  $n$ . If they considered it as the closing balance, most would then answer "6 months" in part (f), in which they will be awarded a follow through.
- In part (e), some students did not consider that the monthly interest charged in the last month (which coincidentally sums to the monthly repayment:  $231.37 + 1.71 = 233.08$ ) and hence the calculation of their interest fell short.

### Question 14:

- This question was done reasonably well, with the most common mistakes from students who did not read the question carefully and give the answer in the format required.
- In part (a) a few students mixed up correlation with coefficient of determination, and the other minor omission was to not refer to the variables by name (the hint of context in the question).
- Part (b) was a deliberate discriminating question. Even though the prediction was extrapolated, it was only the next point outside of the data set. In combination with the very strong correlation coefficient, the prediction is valid. Some students identified this, however, they then said the prediction was both somewhat valid and invalid. Students cannot 'hedge their bets' and must learn to commit to an answer.
- Part (c) was done well.
- Part (d) was done well by the majority of students with only a few students mixing up the order to calculate a residual.
- Part (e) was done well by those who correctly plotted the residuals. Some students incorrectly plotted the residuals and their explanations did not follow through correctly.

### Question 15:

- Part (a) was done well, with only a small number of students not expression the units correctly.
- Part (b) was problematic. Most students were able to find a path and calculate a length, however, not many students were able to correctly calculate the shorted path.
- Part (c) was a discriminating question. The majority of students did not know how to tackle this question which showed they were unable to work out what to do. Many students simply calculated a Hamiltonian cycle and were awarded no marks. For the astute student, the work was done in the stem of the question, and they only needed to calculate a shortest path from F to A.
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### Question 16:

- Part (a) was done well by the majority of students. Some small errors such as not putting arrows on task directions and adding extra nodes and dummy paths needs to be improved.

- Parts (b) and (c) were done well. There was limited follow through available for this question if students incorrectly answered part (a) because they simplified the question and did not show the use of the dummy path.

### Question 17:

- This question had a mixed success rate. Students either knew how to do all parts, or were confused with what to do in each part.
- Part (a) was done well. Students that use the percentage average to work backwards to calculate A need to know that rounding is required.
- Part (b) was done well generally. Some students did not correctly show how to calculate the seasonal index, offering up summation of fractions.
- Part (c) was mixed. The seasonal index was given in the stem of the question, but could also be manually calculated. Some students did not know how to remove the season from the data and incorrectly multiplied.
- Part (d) was started correctly by the majority of students, however, most then forgot to include the seasonal index by multiplying their prediction from the trend line.

General note for finance questions – Effective Interest.

Many students were confused with using effective interest in the finance questions. It can only be used when comparing compound interest (or loans) between payment periods. Many incorrectly assumed that the effective interest applied after payments were made (or taken out). As soon as a payment has been made, the loan changes.

### Question 18:

- Part (a) was done well.
- Part (b) was done well, however, some students incorrectly mentioned both increasing and steady state simultaneously.
- Part (c) was done well. Only a few students had issues trying to use a general formula with the  $(n-1)$  causing an error. Those that showed working were able to get a follow through mark.
- Part (d) was not done as well. Many students could get started, however they were unable to give the monthly interest rate. An incorrect answer of 35.88% without working is a final answer and received no marks.

### Question 19:

- Some students are still getting the direction of money confused when using the finance app. What the bank gives you, and what you pay the bank back need to be in opposite directions. When checking for ft, this was often the error where marks were lost.
- Part (a) was done well.
- Part (b) was problematic for many. Some students could correctly use the Amortisation feature on their Classpad. Students were confused with what interest means and were unable to correctly pull the information out correctly.
- Part (c) was done well.
- Part (d) was another discriminating question. The most common error was not having a different payment period to compound period.