**Section: A**

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| **Q1:** | LaserMex Pte Ltd specialises in laser equipment manufacturing. Recently it acquired a competitor and became the sole manufacturer of the laser equipment. With the acquisition, LaserMex decides to implement S&OP for the organisation.  What are the **TWO (2)** objectives for LaserMex to implement S&OP? | **Mark (2)** |
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|  | Word Count: 23 | Max Words: 1000 |

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| **Q2:** | List **TWO (2)** issues that LaserMex could address by implementing S&OP. | **Mark (2)** |
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|  | Word Count: 8 | Max Words: 1000 |

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| **Q3:** | With the increased in the business after the acquisition, LaserMex plans to outsource some of the manufacturing to external party instead of expanding its own facility.  What is this external party known as and what is **ONE (1)** advantage for LaserMex to outsource? | **Mark (2)** |
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|  | Word Count: 26 | Max Words: 1000 |

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| **Q4:** | Outsourcing has its advantages but also carries some potential risks. List and explain **ONE (1)** potential risk. | **Mark (2)** |
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|  | Word Count: 29 | Max Words: 1000 |

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| **Q5:** | With the outsourcing going on, LaserMex sees the need for detailed scheduling of resources to meet the production requirements.  Is this a Short, Intermediate or Long term MPC activity? List **ONE (1)** action involved in this MPC activity. | **Mark (2)** |
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|  | Word Count: 19 | Max Words: 1000 |

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| **Q6:** | LaserMex would like to adopt a long term perspective for the MPC. List **ONE (1)** aspect that LaserMex should take into consideration. | **Mark (1)** |
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|  | Word Count: 22 | Max Words: 1000 |

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**Section: B**

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| **Q7:** | Let’s-Get-Active is an outdoor adventure school who runs outdoor adventure programs for corporates and schools. There is usually a surge in the sign-ups during school vacations, which explains 6-month seasonal sign-up pattern. Table 2a below shows the monthly registration for year 2018 and Let’s-Get-Active would like to forecast for January to June 2019.  Table 2a: Number of registrations for year 2018   |  |  |  |  | | --- | --- | --- | --- | | **Month** | **Number of registration** | **Month** | **Number of registration** | | **Jan** | 142 | **Jul** | 212 | | **Feb** | 167 | **Aug** | 123 | | **Mar** | 248 | **Sept** | 174 | | **Apr** | 176 | **Oct** | 94 | | **May** | 102 | **Nov** | 156 | | **Jun** | 250 | **Dec** | 292 |     Determine the seasonal index for June 2019 and express it in 3 decimal places. Hence or otherwise, determine the registration forecast for June 2019 and round up your answer to the next integer. Show your brief workings. | **Mark (5)** |
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|  | Word Count: 36 | Max Words: 1000 |

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| **Q8:** | Mathematically speaking, it is possible to determine the registration forecast for whole of 2019 (January to December). What is the assumption for it to be possible? | **Mark (2)** |
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|  | Word Count: 27 | Max Words: 1000 |

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| **Q9:** | RuggedOut Pte Ltd is another outdoor adventure school and Table 2b shows the forecast and actual demand of 2018 on a quarterly basis.  Table 2b. Forecasted and actual demand for 2018   |  |  |  | | --- | --- | --- | | **Quarter** | **Forecast demand 2018** | **Actual demand 2018** | | **Q1** | 540 | 484 | | **Q2** | 673 | 579 | | **Q3** | 428 | 536 | | **Q4** | 721 | 843 |     Determine the Mean Absolute Deviation (MAD). Show your workings. Based on the MAD calculated, would you recommend RuggedOut to adopt 1MAD or 1.5MAD as the Demand filter? Explain your recommendation. | **Mark (4)** |
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|  | Word Count: 26 | Max Words: 1000 |

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| **Q10:** | Calculate the **Tracking Signal**. (Show your brief workings and round your answer to 2 decimal places) Based on the calculated tracking signal, explain and conclude if RuddegOut is severely over forecast or severely under forecast. | **Mark (4)** |
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|  | Word Count: 69 | Max Words: 1000 |

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**Section: C**

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| **Q11:** | Every year when the Mid-Autumn festival is around the corner, retailers will pull out all stops to come up with new and eye catchy packaging boxes to pack the moon cakes. This year, Eight Moon Hotel engages a design house to design the box. The design house presented its ideas with a physical prototype for each design.  Which manufacturing process (Jobshop, Batch Processing, Assembly line, Flow processing) does the design house adopt to make the prototype? | **Mark (1)** |
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| **Q12:** | One of the ideas is to make the packaging box into a reusable jewellery box. Eight Moon Hotel Management likes the idea and decides to go ahead with the production. It outsources to Tiong Huat, a paper product manufacturer.  Which is the most suitable manufacturing process (Jobshop, Batch Processing, Assembly line, Flow processing) that Tiong Huat will adopt? Support your answer with **ONE (1)** reason. | **Mark (2)** |
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|  | Word Count: 2 | Max Words: 1000 |

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| **Q13:** | Table 3 below shows the MPS of the highly popular “Snow skin Double yolk” moon cake from Eight Moon Hotel for the next 8 weeks.  Table 3: MPS of “Snow skin Double yolk” moon cake   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | **Week** | **Previous** | **Sales Forecast** | **Customer Order** | **Production requirement** | **Net Inv before MPS** | **MPS** | **Projected Inv** | | 1 | 800 | 675 | 710 | 710 | 90 | 0 | 90 | | 2 | 90 | 730 | 650 | 650 | -560 | 1,000 | 440 | | 3 | 440 | 620 | 690 | 690 | -250 | 1,000 | 750 | | 4 | 750 | 750 | 740 | 750 | 0 | 0 | 0 | | 5 | 0 | 980 | 920 | 980 | -980 | 1,000 | 20 | | 6 |  | 890 | 1050 | 1050 |  |  |  | | 7 |  | 800 | 950 | 950 |  |  |  | | 8 |  | 980 | 770 | 980 |  |  |  |   Based on Table 3, determine the MPS quantity for week 6. Explain how you arrive at the answer. | **Mark (2)** |
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|  | Word Count: 54 | Max Words: 1000 |

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| **Q14:** | Based on Table 3, determine all the possible ATPs from week 1 to week 4. Show your brief workings. | **Mark (4)** |
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|  | Word Count: 19 | Max Words: 1000 |

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| **Q15:** | What can you conclude when the calculated ATP is a negative number? Does it means the production plan will fail? Explain your answer. | **Mark (2)** |
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|  | Word Count: 30 | Max Words: 1000 |

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| **Q16:** | Based on Table 3, deduce the possible Demand time fence(s)/Frozen zone(s). | **Mark (2)** |
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|  | Word Count: 34 | Max Words: 1000 |

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| **Q17:** | All-Things-Leather designs and handcrafts high quality limited edition leather handbags. In order to meet the high quality requirements, it has a team of 5 skilled workers. Each worker is able to make an average of 4 handbags a day. They work 8 hours a day, 21 days a month, and are paid $24 per hour. Note that the holding cost per handbag is $35 and the backorder cost per handbag is $43.  Table 4 below is the forecast demand of the leather handbags for next 3 months.  Table 4: Leather handbags forecast demand   |  |  | | --- | --- | | **Month** | **Demand** | | 1 | 390 | | 2 | 430 | | 3 | 485 |   Assuming the number of workers remain the same for the 3 months, **determine** the number of handbags the 5 workers can produce per month. Hence, what is the net inventory for the **1st month**? Determine the holding/backorder cost if any. Show your workings clearly. | **Mark (4)** |
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|  | Word Count: 27 | Max Words: 1000 |

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| **Q18:** | Calculate the labour cost for the **3rd month**. In addition, determine the effective holding/back order cost incurred by the company in the **3rd month**. Show your workings clearly. | **Mark (4)** |
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|  | Word Count: 50 | Max Words: 1000 |

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| **Q19:** | What is the type of production plan All-Things-Leather adopts known as? Do you think this is the most cost effective production plan? Explain. | **Mark (3)** |
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|  | Word Count: 30 | Max Words: 1000 |

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