GENERAL MATHEMATICS 2024

Unit 3
Key Topic Test 4 – Data Analysis Investigating and Modelling Time Series data

Recommended writing time*: 45 minutes
Total number of marks available: 25 marks

SOLUTIONS

SECTION A – Multiple Choice (1 mark per question)

Question 1
Answer: D

There is a trend evident over multiple years with some irregularity

Question 2
Answer: C

$1.6, 2.0, \mathbf{2.0}, 2.2, 1.8$

Question 3
Answer: B

$$\frac{\frac{1.2+1.4+1.6+2.0}{2}+\frac{1.4+1.6+2.0+2.0}{2}}{2} = 1.65$$

Question 4
Answer: C

Quarter 1 is 53% over the seasonal average

Question 5
Answer: A

$14220 \times 0.87 = 12\,371$

SECTION B – Short Answer

Question 1

a. $\frac{820+910+720+690+650+600+610+615+701+755+840+900}{12} = 734.25$

1 mark

b. June $= \frac{600}{734.25} = 0.817\ldots$

July $= \frac{610}{734.25} = 0.830\ldots$

Month	Jan	Feb	Mar	Apr	May	**Jun**	**Jul**	Aug	Sep	Oct	Nov	Dec
S.I.	1.12	1.24	0.98	0.94	0.89	**0.82**	**0.83**	0.84	0.95	1.03	1.14	1.23

2 marks

c. $\frac{701}{0.95} = 738$

1 mark

d. $Deseasonalised\ Members = 733 + 0.133 \times month\ number$

2 marks

e. $Deseasonalised\ Members = 733 + 0.133 \times 15 = 734.995$

Members for March $= 734.995 \times 0.98 = 720$ members

2 marks

f. The month of August is **16** % **below** the seasonal average

1 mark

Total 9 marks

Question 2

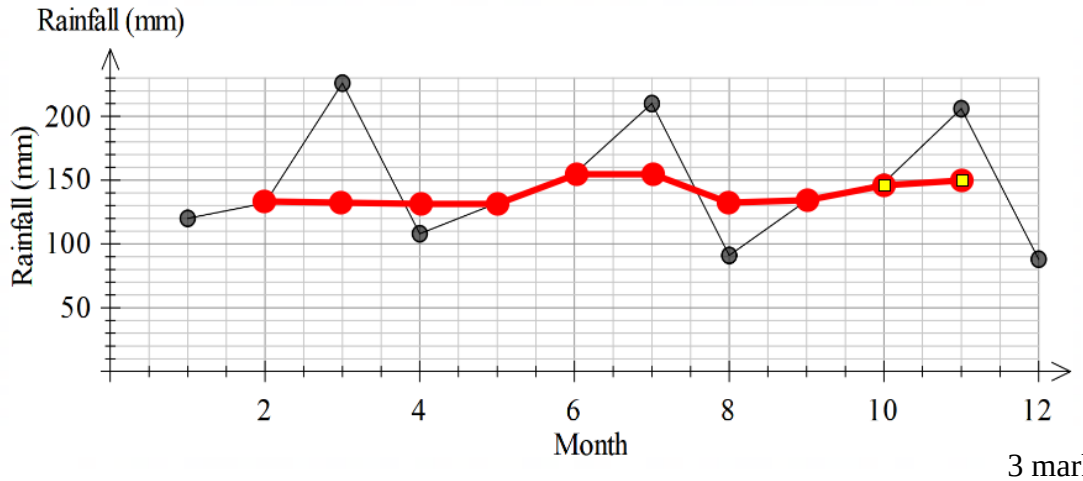
a. March $= \frac{132+226+108}{3} = 155$

1 mark

b. Sept $= \frac{\frac{210+91+134+148}{4}+\frac{91+134+148+206}{4}}{2} = 145.3$

2 marks

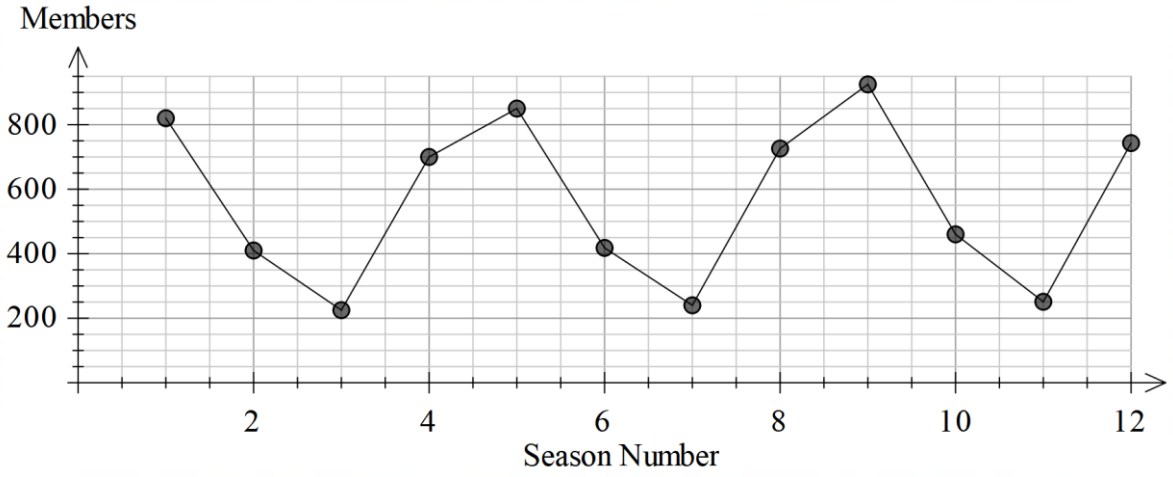
c.



3 marks
Total 6 marks

Question 3

a.



2 marks

b.

	Summer	**Autumn**	**Winter**	**Spring**	Seasonal Average
2022	1.329	0.665	0.573	1.434	489
2023	1.332	0.649	0.561	1.458	474.5
Seasonal Index	1.331	0.657	0.567	1.446	

3 marks
Total 5 marks

END OF KEY TOPIC TEST SOLUTIONS