VCE® General Mathematics

Unit 3 and 4 Practice Written Examination 1

SOLUTIONS

Solution Pathway

Below are sample answers. Please consider the merit of alternative responses.

Question	Correct Answer	Explanation
1	B	$$\frac{\sum x}{n} = \frac{7014}{15} = 467.6$$
2	D	$470 = \dfrac{7014 + x}{16}$ $gives\ x = 506$
3	B	Range is 882, not an option. IQR is 488
4	C	1.13 and 1.94 is 81.5% of the data, thus 303 puppies
5	B	$Z = \dfrac{2.13 - 1.67}{0.27} = 1.7037$
6	E	2 above the mean, and 1 below is 81.5%
7	B	12 data points, between 6th and 7th is the median, 94.5
8	B	$y - 122 = 5.5(x - 19)\ gives\ y = 5.5x + 17.5$
9	A	122-116 = 6
10	A	Positive graph, both variables increasing
11	E	After squaring the y values and doing a regression E is the answer
12	C	r value is -0.9370
13	E	At month 6 each year there is a minimum, and the data is on the increase
14	C	Median of 116.5, 80.75, 62.15, 75.16, and 88.75 is 80.75
15	B	4-(1.31+0.57+1.08) = 1.04
16	B	$deseasonalised = \dfrac{216}{1.08} = 200$
17	D	After 7 steps D is the answer
18	A	$\dfrac{36000}{3} = 12000, \dfrac{7100}{12000} = 0.59166$

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19	A	$simple: 19000 + \left(\dfrac{19000 \times 6.3 \times 2}{100} \right) = 21394$ $complex: 19000 \left(1 + \dfrac{\frac{5.7}{12}}{100} \right)^{24} = 21288.5439$
20	A	$\left[\left(1 + \dfrac{5.7}{100(12)} \right)^{12} - 1 \right] 100 = 5.8513$
21	C	$(1.00525 - 1) \cdot 12 \cdot 100 = 6.3$
22	D	Setting interest as 6.3, payment as 5824.30, future value as 0 and initial as -873654 gives the amount owing before the last payment as 4597.48 Setting 4597.48 as the initial for 1 period gives a final payment of 4621.62
23	C	The setting from question 22, show 296 months, that is 24 years 8 months
24	A	1645 is the interest earnt of the initial value, thus perpetuity
25	D	Inverse of A is $\begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$, the same as the transpose of D
26	E	Subbing in 1,1 into any position gives E as the only option
27	C	Product being multiplication gives C
28	D	When adding the 2-steps gives A=1, B=5, C=0 and D=2, second is D
29	A	60% survive birth not 40%
30	B	$30 \times .1 = 3$
31	A	A has the highest total percentage
32	D	After 3 weeks S3 is, $s_3 = \begin{bmatrix} 1026 \\ 624 \end{bmatrix}$
33	D	Euler's formula is $v + f = e + 2$, $v = 6 - 3 + 2 = 5$
34	D	Graph has a Euler trail, Hamiltonian Path and Hamiltonian Cycle
35	A	Min spanning tree is 91

36	E	Min cut is cut 5, thus the max flow
37	B	Shortest path is 9+12+18
38	E	Solving results in David with Air Hockey, Seth with Downball, Jess with Cricket, Mark with E-Sports and Remi with basketball
39	A	I is preceded by F and B, which is 4+12=16
40	C	To get to 40, reducing C by 3, and k by 2 is 2100

Quick Marking Grid

Question						Question						Question						Question					
1	A	**B**	C	D	E	**17**	A	B	C	**D**	E	**25**	A	B	C	**D**	E	**33**	A	B	C	**D**	E
2	A	B	C	**D**	E	**18**	**A**	B	C	D	E	**26**	A	B	C	D	**E**	**34**	A	B	C	**D**	E
3	A	**B**	C	D	E	**19**	**A**	B	C	D	E	**27**	A	B	**C**	D	E	**35**	**A**	B	C	D	E
4	A	B	**C**	D	E	**20**	**A**	B	C	D	E	**28**	A	B	C	**D**	E	**36**	A	B	C	D	**E**
5	A	**B**	C	D	E	**21**	A	B	**C**	D	E	**29**	**A**	B	C	D	E	**37**	A	**B**	C	D	E
6	A	B	C	D	**E**	**22**	A	B	C	**D**	E	**30**	A	**B**	C	D	E	**38**	A	B	C	D	**E**
7	A	**B**	C	D	E	**23**	A	B	**C**	D	E	**31**	**A**	B	C	D	E	**39**	**A**	B	C	D	E
8	A	**B**	C	D	E	**24**	**A**	B	C	D	E	**32**	A	B	C	**D**	E	**40**	A	B	**C**	D	E
9	**A**	B	C	D	E																		
10	**A**	B	C	D	E																		
11	A	B	C	D	**E**																		
12	A	B	**C**	D	E																		
13	A	B	C	D	**E**																		
14	A	B	**C**	D	E																		
15	A	**B**	C	D	E																		
16	A	**B**	C	D	E																		