Grade 10 | Electronic Spreadsheet | Essay Paper

1) Consider the following spreadsheet segment giving some statistics related to certain education indicators for Sri Lanka. (2015)

	A	B	C	D
1	**Education Indicators: General Education 2008 - 2013**			
2	**Item**	**2008**	**2010**	**2013**
3	**Total Schools**	10,445	10,502	10,809
4	Govt. Schools	9,662	9,685	10,012
5	Private	92	98	103
6	Pirivenas	691	719	734
7	**Total Students**	4,101,509	4,119,525	4,231,259
8	Govt. Schools -	3,930,374	3,940,072	4,037,157
9	Private	115,070	117,362	127,986
10	Pirivenas	56,065	62,091	66,116
11	**Total Teachers**	224,410	224,541	239,245
12	Govt. Teachers -	213,212	212,457	226,983
13	Other (Private School & Prirvenas)	11,198	12,084	12,262
14	Student/ Teacher Ratio (Govt. Schools)			

Source:
1) Statistical Handbook 2010 of National Science Foundation
2) Education Information - Ministry of Education

a) What is the single spreadsheet function that can be used in cell B3 to display the total number of schools for 2008?
b) What will be the formula displayed in C3, if the formula in B3 is copied to C3?
c) "Student/Teacher Ratio (Govt. Schools)" is calculated by dividing the number of students in government schools by the total number of teachers in government schools. What is the formula to be written in cell B14 to display the student/teacher ratio (Govt. schools) in 2008?
d) Suggest the most suitable graph type to show the comparison between the numbers of government schools, private schools and pirivenas for the given three years.

2) State whether the following statements regarding spreadsheets are True or False:
(You are required to write only the statement number (a) - (f) and True/False.) (2015)
a) The autofill facility can be used to copy a formula to a range of adjacent cells.
b) Text entries in cells get right aligned automatically by default.
c) It is possible to get cell borders to appear on a spreadsheet printout.
d) It is possible to hide rows and columns in a spreadsheet.
e) By pressing Control + Home keys the cursor is moved to cell A1.
f) When Control + Pageup keys are pressed, the active cell jumps to the next worksheet.

3) The given spreadsheet segment shows the distribution of monthly tea prices for the year 2015 (source: www.indexmundi.com) (2016)

Use the above spreadsheet segment to answer the following questions.

1. A formula of the form =function1 (cell1:cell2) is written in cell B16 to calculate and display the average price of tea for the year 2015. Write down the relevant terms for function1, cell1 and cell2.

2. Price difference of average monthly price for the month of December is calculated as follows.

   Price Difference $_{December}$ = Price $_{December}$ - Price $_{November}$

   A formula of the form =function2 (cell3:cell4) is written in cell C15 to display the price difference for December, 2015.
   Write down the relevant terms for function2, cell3 and cell4.

	A	B	C
1	Average Monthly Price of 1 Kg of Tea		
2	Month	Price(Rs)	Price Difference
3	2014 December	318.79	
4	2015 January	354.79	
5	2015 February	393.33	
14	2015 November	502.04	
15	2015 December	492.71	
16	2015 Average Price		

3. What would be the formula displayed in cell C4 if the formula in C15 is copied to cell C4?
4. Name two appropriate chart types available in spreadsheet software to show the variation in the average monthly price of tea for the year 2015.
5. What cell range would you use for the horizontal axis to draw the charts in your answer to (iv) above?

4) The following spreadsheet segment shows CO_2 emission (kt) of some Asian countries in the years 1972 and 2014. (2017)

1. Write down the formula that should be written in cell D4 to find the difference or CO_2 emission between years 2014 and 1972 in Bangladesh.
   | Difference = Value of year 2014 - Value or year 1972 |

2. Write down the formula that should be written in cell E4 to calculate the percentage increase of CO_2 emission from 1972 to 2014 for Bangladesh.
   | Percentage Increase = (Difference/Value of year 1972) x 100]

	A	B	C	D	E
1	CO_2 Emission (kt) of some Asian countries				
2 3	Country Name	1972	2014	Difference	Percentage
4	Bangladesh	3509.319	73189.653		
5	Bhutan	3.667	1001.091		
6	China	931575.681	10291926.9		
7	India	217849.136	2238377.14		
8	Japan	853373.239	1214048.36		
9	Sri Lanka	3542.322	18393.672		
10	Maldives	3.667	1334.788		
11	Total CO_2 Emission (kt)				

(source: World Development Indicators)

3. Assume that the town formulae entered to cells D4 and E4 are the cell range. D5:EI0. Write down respectively the two formulae displayed in cell D9 and E9 that are related to Sri Lanka.
4. A formula in the form of =function1 (cell1:cell2) is written in cell B11 to calculate the total CO_2 emission in all countries in 1972. Write down the relevant terms for function1, cell1 and cell2.
5. Name the most suitable chart type in spreadsheet software to show the CO_2 emission of given countries in 1972 and 2014.

5) Consider the spreadsheet segment given below containing prices of two models of laptop computers and their accessories. (2018)

➢ The delivery cost is Rs.350 and this cost is shown in cell B10. "Total" and "Total including Delivery Cost" are to be calculated for the two models.

1. Write down the formula that should be entered in cell B6 to calculate the 'Total' for Model A in the form of =function (cell1:cell2).
2. If this formula is copied to cell C6, what value will be displayed in C6?
3. Write down two formulae that can be written in cell B7 to calculate the "Total including Delivery Cost" using only cell addresses, functions and arithmetic operators.

	A	B	C
1 2	Description	Price (Rs.)	
		Model A	Model B
3	Laptop computer	64000	71000
4	Bag	1500	1750
5	Mouse device	450	500
6	Total	65950	
7	Total Including delivery Cost	66300	73600
8			
9			
10	Delivery Charge (City limits)	350	
11			

4. If the formula in cell B7 was copied to cell C7, and value shown in C7 was 73600, what for formula is in cell C7?

6) Consider the following spreadsheet segment which consists of marks obtained by 40 students in a class for their three subjects at a school term test. Students' marks for Subject 1, Subject 2 and Subject 3 are shown in columns C, D and E respectively. This spreadsheet is used to compute the Z-score for each subject of each student and the final Z-score for each student.   (2019)

	A	B	C	D	E	F	G	H	I
1	Index	Student	Marks			Z-Score			Final
2	No.	Name	Subject 1	Subject 2	Subject 3	Subject 1	Subject 2	Subject 3	Z-score
3	1	Kamal	27	34	43	-1.1081	-1.0146	-0.4915	-0.8714
4	2	Raju	45	50	62	0.0382	0.0879	0.8284	0.3182
5	3	Rauf	34	40	60	-0.6623	-0.6012	0.6895	-0.1913
6	4	Krishna	66	70	70	1.3756	1.4660	1.3842	1.4086
....									
41	39	Roshan	84	73	85	2.3565	1.6417	2.1601	2.0528
42	40	Khan	40	60	50	-0.2936	0.7580	-0.0767	0.1292
43	Average marks of the subject		44.8750	44.8500	51.2000				
44	SD value of the subject		16.6027	14.7101	15.6471		Highest Z-score		2.0528
45									
46									

1. Write down the formula that should be entered in cell C43 to calculate the average mark for Subject 1 in the form of =function1 (cell1:cell2)

2. If this formula is copied to cells D43 and E43, write down the formula that will appear in cell D43.

3. The Z-score for a subject of a student can be calculated by using the following formula:
   Z-score = (student's marks for the subject - average marks for the subject) / SD value of the subject
   The SD values required for each subject are given in cells C44, D44 and E44 respectively.
   (a) Write down the formula that should be entered to cell F3 to calculate Kamal's Z-score for Subject 1. Note that this formula is to be copied to calculate the Z-scores for Subject 1 of all other students too.

   (b) If this formula is copied to cell range F4 to F42, write down the formula that will appear in cell F42 which shows Khan's Z-score for Subject 1.

4. The final Z-score of a student is the average of the three Z-scores for the subjects. Write down the formula to calculate the final Z-score value of Kamal in cell I3 using only the functions COUNT and SUM.

5. Assuming that student Z-score values for the three subjects and the final Z-score for all students have been calculated, write down a formula that should be entered in cell I44 to find the highest final Z-score value in the form of =function2(cell3:cell4).

3

7) The following spreadsheet segment shows some statistics of test cricket players with most Centuries scored. (2020)

	A	B	C	D	E	F	G	H	I	J	K
1	Most Centuries (100s) Scored by Cricket Players										
2	Player	Span	Matches	Innings	Not Outs	Runs	Highest score	Average	Centuries (100s)	Fifties (50s)	Ducks (zeros)
3	SR Tendulkar	1989-2013	200	329	33	15921	248*		51	68	14
4	JH Kallis	1995-2013	166	280	40	13289	224		45	58	16
5	RT Ponting	1995-2012	168	287	29	13378	257		41	62	17
6	KC Sangakkara	2000-2015	134	233	17	12400	319		38	52	11
7	R Dravid	1996-2012	164	286	32	13288	270		36	63	8
8	Younis Khan	2000-2017	118	213	19	10099	313		34	33	19
9	SM Gavaskar	1971-1987	125	214	16	10122	236*		34	45	12
10	BC Lara	1990-2006	131	232	6	11953	400*		34	48	17
11	DPMD Jayawardene	1997-2014	149	252	15	11814	374		34	50	15
12	AN Cook	2006-2018	161	291	16	12472	294		33	57	9
13	SR Waugh	1985-2004	168	260	46	10927	200		32	50	22
14	ML Hayden	1994-2009	103	184	14	8625	380		30	29	14
15	S Chanderpaul	1994-2015	164	280	49	11867	203*		30	66	15
16	DG Bradman	1928-1948	52	80	10	6996	334		29	13	7
17	MJ Clarke	2004-2015	115	198	22	8643	329*		28	27	9
18	HM Amla	2004-2019	124	215	16	9282	311*		28	41	13
19	SPD Smith	2010-2021	77	139	17	7540	239		27	31	5
20	V Kohli	2011-2021	87	147	10	7318	254*		27	23	10
21	GC Smith	2002-2014	117	205	13	9265	277		27	38	11
22	AR Border	1978-1994	156	265	44	11174	205		27	63	11
23	Source: https://stats.espncricinfo.com/ci/content/records/227046.html										
24							Highest Average				

1. The column H is used to show the Batting Average of each player. The average of a player is calculated by using the formula =(Runs) / (Innings - Not Outs)
   Write down the formula that should be entered into cell H3 to obtain SR Tendulkar's average.

2. Assume that the formula entered to cell H3 is copied to the cell range H4:H22. Write down the formula displayed in the cell H22.

3. Write down the steps to display these averages in column H with two decimal places.

4. Write down the formula in the form of =function (cell1:cell2) that should be entered in cell H24 to find the highest average.

5. Write down the most suitable chart type available spreadsheet software from the given List of Charts for the following.
   (a) To show the number of Centuries, Fifties and Ducks obtained by SR Tendulkar.
       List of Charts for part (a): {Pie, Line, Scatter, Area}
   (b) To show the comparisons of the Centuries, Fifties and Ducks obtained by all players in the same chart.
       List of Charts for part (b): {Area, Pie, Bar, Scatter}

8) The following spreadsheet segment shows some statistics of road accidents reported for 2018. (2021)

	A	B	C	D	E
1	Accident Data for Year 2018				
2		Type of Accident			
3	Vehicle Type	Fatal	Minor	Critical	Damages
4	Motor Cycles	1,227	4,524	3,382	1,358
5	Lorry	344	1,022	843	1,668
6	Dual Purpose Vehicle	318	1,396	977	1,668
7	Private Buses	237	653	498	1,046
8	Three - Wheelers	365	2,496	1,354	1,728
9	SLTB Buses	62	232	189	269
10	Motor Cars	210	1,486	952	3,036
11	Cycle	42	108	71	62
12					
13	Total -Accidents	2,805	11,917	8,266	10,835
14	Lowest value-Critical			71	
15	Highest value-Accidents	4,524			
16					

a) Write down the correct formula in the form of =function(cell1:cell2) that should be entered in cell B13 to find the total number of vehicles involved in fatal accidents.

b) Assume that the formula entered into the cell B13 is copied to cell range C13:E13. Write down the formula displayed in the cell D13.

c) Write down the formula in the form of =function(cell3:cell4) that should be entered in cell D14 to get the lowest value recorded for critical accidents.

d) Write down the appropriate cell range in the form of (cell5:cell6) for the formula written in cell B15 to identify the highest number of any accident.

e) Write down the most suitable chart type available in spreadsheet software from the given list of charts for the following:
   1) To show comparisons of the types of accidents involving each vehicle type in the same graph.

   List of charts for part (1): {Area. Bar, Pie, Scatter)

   2) To show the number of fatal accidents for each vehicle type.

   List of charts for part (2): {Area, Line, Pie, Scatter}