1.   The following table shows the number of staff in each of six regional offices and the total running costs (including salaries) of these offices.

Number of staff	10	8	14	16	11	7
Running costs (RM thousand)	102	93	143	134	121	99

a)   Compute the product moment correlation coefficient and interpret your result.
b)   Find the least squares regression line of total running costs on number of staff. Interpret the meaning of the regression coefficient for this regression line.
c)   Predict the running costs of regional office employing 12 staff.
                Answer: 0.9094; $Y = 56.996 + 5.3667 X$; 120.7(RM'000)

2.   On a car assembly production line, measurements were taken of the speed of the line (cars per day) and the number of major defects observed in the output. The following table was obtained.

Speed of production line / X	450	475	440	470	485	460	433
Number of major defects / Y	27	30	26	27	28	25	26

Find the regression equation for the regression of the number of major defects on the speed of the production line. If the speed of the production line were raised to 500 cars per day, what number of major defects would you expect? Answer: $Y= 2.26 + 0.0539 X$

3.   The following data shows median regional incomes for men aged 21 years and over in full-time employment and average regional house purchase prices for a particular year for the twelve major regions of the United Kingdom.

Median income ($)	57	54	54	51	63	56	52	56	55	55	56	50
House purchase price ($000)	10	9	10	12	15	15	12	11	10	10	11	10

Calculate the product moment correlation coefficient.   Answer: 0.489

4.   A sample of eight employees is taken from the production department of a light engineering factory. The data which follows relate to the number of week experience in the wiring of components, and the number of components which rejected as unsatisfactory last week.

Employee	A	B	C	D	E	F	G	H
Weeks of experience X	4	5	7	9	10	11	12	14
Number of rejects Y	21	22	15	18	14	14	11	13

a)   Draw a scatter diagram of the data.
b)   Calculate a coefficient of correlation for these data and interpret its value.
c)   Find the least squares regression equation of number of rejects on weeks of experience. Predict the number of rejects you would expect from an employee with one week of experience.   Answer: $Y= 24.892 - 0.988 X$; $Y=23.9$
d)   Interpret the meaning of the regression coefficients in part (c).
e)   Calculate the spearman's rank correlation coefficient.

5.   The table below shows a traffic-flow index and the related side cost in respect of eight service stations of ABC Ltd.

	1	2	3	4	5	6	7	8
Traffic flow index	100	110	119	123	123	127	130	132
Site cost ($'000)	100	115	120	140	135	175	210	200

Calculate the Spearman's rank correlation coefficient.   Answer: 0.97

6.   The table below shows the actual sales of a company in each of eight regions of a country together with the forecast of sales by two different methods.

Region	A	B	C	D	E	F	G	H
Actual Sales	15	19	30	12	58	10	23	17
Forecast 1	13	25	23	26	48	15	28	10
Forecast 2	16	19	26	14	65	19	27	22

a)   Calculate the Spearman's rank correlation coefficient between
      i)   Actual sales and forecast 1,   ii)   Actual sales and forecast 2.
            Answer: 0.524   Answer: 0.839
b)   Which forecasting method would you recommend next year?

7.   Ten candidates for an administrative post were ranked by the two members of the interviewing panel in the following manner:

	Candidates (duly ranked)									
	A	B	C	D	E	F	G	H	I	J
Panel members I	4	2	7	1	5	6	9	3	10	8
Panel members II	3	2	5	1	4	9	6	7	8	10

Calculate Spearman's rank correlation coefficient and discuss whether it represents a measure of agreement between the two panel members.   Answer: 0.709