

**INDIAN STATISTICAL INSTITUTE**

**QUESTION PAPERS**

*for*

**The Computer's Certificate Examination**

**&**

**The Statistical Field Survey Examination**

**1952**

**INDIAN STATISTICAL INSTITUTE**  
**COMPUTER'S CERTIFICATE EXAMINATION, 1952.**

PART IA : SECTION I.

Full Marks—100

Time—3 hours

- N.B. (a) Answers to the different groups are to be given in separate books.  
 (b) Attempt two questions from each group.  
 (c) All questions carry equal marks.  
 (d) Use of calculating machines is not permitted.  
 (e) All computation work must be shown in the answer books.

**GROUP A.**

1. (i) Complete the entries in respect of the columns (3) to (5) of the following table, and find the totals for each of the columns. The calculations are needed correct up to one place of decimal only.

Col. (1)	Col. (2)	Col. (3)	Col. (4)	Col. (5)
$x$	$y$	$x^2$	$y^2$	$xy$
2.5	1.7			
3.0	1.9			
1.8	4.3			
1.9	2.6			
2.3	2.2			
3.0	2.0			
1.5	2.0			

Total :

- (ii) Find also  $(\Sigma x)^2$ ,  $(\Sigma y)^2$  and  $(\Sigma x)(\Sigma y)$ , where  $\Sigma x$  and  $\Sigma y$  denote the totals for col. (1) and col. (2) respectively.

2. The price index numbers of 10 commodities for January, 1951 and February, 1951 are given in the table below. It was required to show the percentage rise or fall in the index number for February compared to that in January. A computer has made the calculations as indicated in the table. Copy the table in final form correcting the errors, if any. The calculations are required correct up to one place of decimal.

Commodity	Price index numbers		Percentage	
	January '51	February '51	Increase	Decrease
Col. (1)	Col. (2)	Col. (3)	Col. (4)	Col. (5)
A	120	100	—	20
B	100	120	20	—
C	118	100	18	—
D	125	150	—	25
E	112	108	—	8
F	96	100	4	—
G	110	100	—	10
H	100	115	15	—
I	120	110	—	10
J	100	96	—	4
Combined	110	110	0	0

3. The following family budgets have been collected from 10 families. Exhibit the particulars in a suitable tabular form classifying them into expenditure groups of 'Rs. 1—Rs. 100', 'Rs. 101—250' and 'Rs. 251 & above'. From the information furnished on the size of the family, find also the per capita expenditure on food in respect of all the families. (Calculations are required correct up to one place of decimal).

(Monthly expenditure in Rs.)

Item	Size of family									
	2	4	6	7	8	6	3	7	8	5
Food	25	54	80	100	160	140	38	175	155	80
Clothing	2	4	8	12	15	22	3	28	15	12
Fuel & Light	4	5	7	9	9	12	6	16	8	8
Housing	2	3	4	5	9	22	3	26	8	5
Miscellaneous	6	15	33	57	80	105	10	120	64	45
Total :	39	81	132	183	273	301	60	365	250	150

Or

- (i) Add up all integers from 1 to 100.  
 (ii) Find the average of the following numbers :—  
 69, 71, 73, 75, 77, 79, 81

(The addition of the numbers, if required in this calculation, need not be shown).

(iii) Two equal sums of money are placed before you. If from one of the sums, you take out Re. 1. 2 as. 4 p., and place this amount in the other sum, what should be the difference now ?

(iv) How many times is 0.05 contained in 16.5 ?

(v) By how much is  $x$  greater than  $y$  ?

#### GROUP B.

1. Six observers A, B, C, D, E & F had noted down on a certain date the lengths of 10 paddy-shoots from each of four fields 1, 2, 3 & 4. The lengths were again measured on the same plants after a period of two weeks. The observers were then asked to supply the average growth, in inches, of paddy-shoot during the period, in each of the four fields. The results were received as follows :—

(Note : A1 stands for observer A and field 1, similarly A2, A3 etc.)

A1 : 2	A2 : 2.7	B1 : 1.9	B2 : 2.5
C1 : 5.1	C2 : 6.5	D1 : 1.9	D2 : 2.7
E1 : 2.1	E2 : 2.6	F1 : 2.1	F2 : 2.5
A3 : 2.5	A4 : 2.1	B3 : 2.3	B4 : 0.2
C3 : 6.0	C4 : 5.5	D3 : 2.3	D4 : 2.2
E3 : 2.4	E4 : 2.2	F3 : 2.3	F4 : 2.0

Copy out the data in a suitable form; scrutinize the data marking out any figures that you consider are wrong; explain how the wrong figures could have arisen; give your corrections.

2. For the purpose of a certain health investigation, it is required to obtain frequencies of students, between ages 8 and 15, who suffer from tonsils, classified according to sex and economic status (i.e., rich, poor or middle-class).

Prepare a form into which you can transfer relevant information from medical inspection records kept at different schools and colleges.

Prepare also the form in which the frequencies required under the above classifications can be finally presented.

3. In a nutrition enquiry, 5 states were selected from the whole country; from each of these states all important villages were selected; and from each such village 12 families chosen and information such as protein, vitamin, fat-etc., content of food, was collected on one card for each individual in the families chosen. Cards totalling 61272 in number were thus collected.

The states, villages in each state, families in each village and members in each family, having been given serial numbers, the cards were sorted and arranged in serial order, with individual No. 1 in family No. 1 in village No. 1 in state No. 1, as the first and with the last individual in family No. 12 in the last village in state No. 5 as the last in the order.

Explain the procedure you will adopt if, in all, you were to find out:—

- (1) the average number of individuals per family,
- (2) the total number of villages selected and
- (3) the difference in protein-content of food between the first and last individuals in each of the five states.

The amount of sorting and counting of cards done for this purpose should be the minimum required.

## COMPUTER'S CERTIFICATE EXAMINATION, 1952.

### PART IA : SECTION II.

Full Marks : 100

Time 3 hours

- N.B.* (a) Answers to the different groups are to be given in separate books.  
(b) All questions carry equal marks  
(c) Use of calculating machines is not permitted  
(d) All computation work must be shown in the answer books.

#### GROUP A.

1. (a) Solve the following:—

$$(546) 742x^2 + 247x = \frac{1}{(546)^2}$$

(b) With the help of appropriate tables, calculate  $\sum x^2$  and  $\sum x^3$  for odd integral values of  $x$  from  $-451$  to  $-441$  and  $51$  to  $61$ . —

(c) Find by Contracted Method the product of the following correct to three places of decimals:—

$$41.345267134 \times 11.7023456721$$

2. The following table shows the frequency distribution of heights of 300 Princeton freshmen:—

Height in inches	Frequency
61—62	1
62—63	1
63—64	1
64—65	2
65—66	4
66—67	20
67—68	30
68—69	35
69—70	47
70—71	51
71—72	42
72—73	27
73—74	20
74—75	9
75—76	7
76—77	2
77—78	1

Calculate the mean and standard deviation of the distribution.

#### GROUP B.

Attempt any two questions

1. The following tables show the values of  $u$  corresponding to the values of  $x$  varying from 22 to 30.

$x$	$u$	$x$	$u$
22	11748	27	+14188
23	12342	28	-14527
24	12881	29	-14821
25	13367	30	+15072
26	13802		

Calculate by the method of linear interpolation the values of  $u$  corresponding to the values of

$$x=22.64; 23.28; 23.92; 24.56; 25.20; 25.84.$$

$$x=27.12; 29.04.$$

2. From the formula

$$y=3.1x^2-11.7x-3.8$$

plot the values of  $y$  corresponding to the integral values of  $x$  varying between  $x=-2$  and  $x=6$ . Draw a smooth curve through these points on a graph paper.

Draw also the straight line

$$y=12.3-6.4x$$

and estimate the area lying between the curve and the straight line.

3. (a) Represent graphically the following data:—

Cost of production per unit of production  
(Rs.)

Year	Raw Material	Labour	Capital Charge	Overhead	Total
1938	14.3	10.1	2.1	3.1	29.6
39	16.9	10.8	2.4	3.6	33.7
40	17.4	12.2	2.4	5.8	37.8
41	19.8	13.6	3.6	5.5	42.5
42	24.8	15.8	3.4	6.0	50.0
43	33.8	16.8	3.8	6.0	60.0
44	44.1	18.6	3.5	6.2	72.4
45	45.0	19.4	3.8	6.4	74.6
46	46.7	18.5	3.0	6.8	75.0

(b) Assuming that the figures in the above table refer to the middle of each year i.e., 30th June, read from the graph the cost values under different heads for the period 1st January of each year.

### COMPUTER'S CERTIFICATE EXAMINATION, 1952.

#### PART IB : SECTION I.

- N.B. (a) Answers to the different groups are to be given in separate books.  
(b) All questions carry equal marks.  
(c) Use of calculating machines is permitted.  
(d) All computation work must be shown in the answer scripts.

#### GROUP A.

Attempt question 1 and any one from the rest

1. A certain political party wants to study the number of candidates set up, the number and percent elected, and the number and percent of votes secured by parties and states in the last general election (House of People and State Assembly).

Suggest a suitable tabular form (with proper headings and spacing) from which all the above information can be readily obtained. You may group the parties as Congress, Leftists, other parties and Independents.

2. The frequency distribution of percentage fat content of milk, as shown by 8037 milking records, is given below:—

Percentage fat content	Frequency	Percentage fat content	Frequency
3.75	3	5.55	993
3.95	41	5.75	790
4.15	127	5.95	532
4.35	303	6.15	281
4.55	524	6.35	177
4.75	852	6.55	80
4.95	1033	6.75	37
5.15	1106	6.95	16
5.35	1137	7.15	3
		7.35-7.55	3

(a) Calculate mean, standard deviation ( $\sigma$ ),  $\beta_1$  and  $\beta_2$  (suitable checks should be used in the calculation)

(b) Represent the distribution in a suitable diagram and locate on it the percentage of cases lying between mean  $\pm \sigma$ , mean  $\pm 2\sigma$  and mean  $\pm 3\sigma$ .

3. Marks obtained by 81 students in the previous and final examinations are given below. Find the correlation co-efficient between the results of the two examinations.

Previous	Final	Previous	Final	Previous	Final	Previous	Final
240	220	180	140	260	260	160	140
200	180	220	240	180	160	240	220
260	240	200	200	100	60	260	260
260	260	100	100	200	220	160	120
160	160	160	140	200	200	260	240
240	220	200	160	160	120	220	180
220	200	180	180	180	160	220	240
60	120	180	180	280	220	260	260
220	240	240	240	200	200	240	220
200	180	200	200	220	220	200	200
220	220	200	200	220	200	140	120
140	180	180	160	240	220	260	240
180	120	260	220	100	60	200	180
240	200	160	120	220	220	300	280
260	240	240	240	240	200	180	140
200	160	220	220	200	220	220	180
200	160	220	240	220	220	180	180
240	240	160	120	220	200	300	280
240	220	200	200	240	200	220	220
240	220	220	220	180	140	220	200
						200	180

GROUP B.

Attempt only one question

1. (a) An experiment was conducted to determine the relation between the moisture content and the heat of hydration of a mixture. The results of the experiment are given below. Assuming that the heat of hydration depends on the moisture content, calculate the second degree curve which will show the relation between the two

Heat of hydration in calories	P.C. of moisture
0.5	16.3
1.5	14.0
3.2	11.6
4.2	10.8
5.9	8.5
7.5	7.0
9.1	5.8
10.9	4.9
12.5	4.2
16.0	2.9
18.3	2.1

(b) An experiment was conducted to test the yields of six varieties of paddy in four randomised blocks as given in the sketch below. The respective yield of each variety (in acers) is noted against each in the sketch. Do the differences in the yield among the six varieties signify anything? Can you say that the variety A is a heavier yielder than the variety E?

Block 1			Block 2		
A. 33.0	F. 30.1	D. 21.4	E. 22.2	D. 20.2	A. 32.5
B. 35.8	C. 32.9	E. 21.4	B. 34.0	C. 27.0	F. 27.7
Block 3			Block 4		
B. 36.2	F. 27.0	D. 19.3	F. 31.5	C. 42.0	A. 43.7
C. 40.1	E. 27.0	A. 33.7	D. 24.8	B. 44.7	E. 20.6

2. Three varieties of a particular crop were tried at a research station to test the yield rate of each. The layout of the experiment is given below. Sketch No. 1 gives the respective yields in acers and sketch No. 2 gives the number of plants in each plot. Arrange the three varieties according to their yielding capacity after correcting for the differences in the plant numbers and then test if variety B is better than the variety C.



Sketch No. 1

A	126.1	B	121.1	B	125.1	C	118.1	A	120.1
C	119.1	A	123.1	C	121.1	B	123.1	B	119.1
B	120.1	C	122.1	A	124.1	A	121.1	C	119.1

Sketch No. 2

A	41	B	39	B	43	C	32	A	33
C	32	A	37	C	35	B	40	B	35
B	37	C	38	A	38	A	35	C	31

## COMPUTER'S CERTIFICATE EXAMINATION, 1932.

## PART IB : SECTION II.

- N.B.* (a) Answers to the different groups are to be given in separate books.  
 (b) All questions carry equal marks.  
 (c) Use of calculating machines is permitted.  
 (d) All computation work must be shown in answer scripts.

## GROUP A.

Attempt question 1 and any one from the rest

1. The following data is a frequency distribution of the scores obtained by 149 students in an examination.

Score	Frequency
310.5—339.5	3
299.5—310.5	5
279.5—299.5	8
259.5—279.5	12
239.5—259.5	19
219.5—239.5	26
199.5—219.5	22
179.5—199.5	18
159.0—179.5	14
139.5—159.5	6
119.5—139.5	13
99.5—119.5	3

- (a) If it is known that the scores are normally distributed with mean 215.5 and variance 2500, obtain the expected frequencies corresponding to the above observed frequencies and test for the goodness of fit.

(b) Draw the histogram corresponding to the above frequency distribution and superimpose on it the fitted normal curve.

2. The table given below displays the observed frequencies of marriage adjustment scores [classified as (i) very low, (ii) low & (iii) high] for a number of husbands according to the education received by them [classified as (i) post-graduate, (ii) college, (iii) high school].

Treating the data as a 'random sample' test whether marriage adjustment score is dependent on education of the husband.

Marrriage adjustment Score	Very low	Low	High
Education			
Post-graduate	4	9	33 ✓
College	20	31	55
High school	23	37	41 ✓

3. (a) Making use of Fisher-Yates tables, find the 5 per cent value of  $\chi^2$  with  $n_1$  equal to 20 and  $n_2$  equal to 45.

(b) Evaluate:—

$$\frac{(2.35)^{0.237} + (0.257)^{2.23}}{(2.35)^{0.237} - (0.257)^{2.23}}$$

#### GROUP B.

Attempt any two questions

1. Collect following items of information relating to incidence of fire in West Bengal excluding Calcutta and Howrah for all the months of the year 1940.

- Number of fires attended to,
- Value of properties involved,
- Value of properties damaged,
- Value of properties salvaged.

Calculate the proportion of values of properties salvaged to the total value of properties involved for each month.

2. Collect the following items of information regarding education and publication of books in India for ten consecutive years and calculate the average number of scholars attending an institution for each year.

- Number of educational institutions,
- Number of scholars attending them,
- Number of books published in Indian and other languages.
- Number of books published in Indian languages.

3. The following table shows the distribution of a number of articles turned in per day to the lost and found bureau of a large office building for a period of 423 days :—

No. of articles per day $X$	Observed Frequency $Y$
0	100
1	134
2	74
3	32
4	11
5	2
6	0
7	1

Represent the observed and expected frequencies on a square paper, the expected frequencies being given by  $Y = \frac{e^{-m} m^x}{x!}$  where  $m$  is the mean of the observed distribution.

4. The following table gives the gross earnings in millions of dollars of Bell Telephone Companies in U.S. :—

Year $X$	Earnings (Million dollars) $Y$
1921	521
1922	564
1923	623
1924	678
1925	761
1926	845
1927	917
1928	1003

Calculate the expected earning figure taking as the graduating formula

$$Y = ab^x$$

where  $a = 520$   
and  $b = 1.1$

Represent the observed and expected values on a graph paper.

### COMPUTER'S CERTIFICATE EXAMINATION, 1952

#### PART IC : SECTION I

Full Marks : 100

Time : 4 hours

- N.B. (a) Answers to the different groups are to be given in separate books.  
 (b) All questions carry equal marks.  
 (c) Use of calculating machines is permitted.  
 (d) All computation work must be shown in the answer-script.

GROUP A.

Attempt any two questions

1. Calculate

$$y = e^{-x} - x \sin \frac{\pi x}{2}$$

for values of  $x$  from 0 to 1 with gaps of .1 and find graphically the root of the equation

$$e^{-x} - x^2 \sin \frac{\pi x}{2} = 0$$

lying between 0 and 1.

2. For the curve

$$f(x) = \frac{1}{\Gamma(3)} e^{-x} x^2 \cdot 2!$$

*Pearsonian.*

Calculate the ordinates for  $x=0, 1, 2, 3, 4, 5, 6, 7, 8, 9$  and draw a smooth curve.

3. In a scheme A of an investment firm for every hundred rupees invested an annual sum of Rs. 5/- is deducted as service charges, while the remaining sum is reinvested at the end of the year with the same rate of interest being 6 per cent per annum. For every 1000/- invested find the amount due in five years. Again, in a scheme B, the firm allows an interest of  $5\frac{1}{2}$  per cent per annum, while no charge is made for services. Find the amount due for Rs. 1000/- invested in scheme B after 5 years.

4. Find the 1% points of the  $\chi^2$ -distribution (one sided) for degrees of freedom  $n=10, 15, 20, 24, 27, 30$ . If  $a_n$  be the 1% point of  $\chi^2$  with  $n$  d.f.,

$$\text{Calculate } C_n = \sqrt{2 a_n} - \sqrt{2n - 1}$$

for the given values of  $n$  and plot a graph with degrees of freedom as the abscissa and  $C_n$  as the ordinate. Show that these points approach the line  $y=c$ , where  $c$  is the 1% point of the normal distribution (one sided) with unit variance.

GROUP B.

Attempt any two questions

1. For the data of the following table fit a cubic  $Y=aX^3+bX^2+cX+d$ . Calculate the expected values and exhibit the observed and expected values on a graph paper.

No. of commercial failures in (X) U.S. (thousands) (Y)		No. of commercial failures in (X) U.S. (thousands) (Y)	
1910	12.6	1921	19.7
1911	13.4	1922	23.7
1912	15.5	1923	18.7
1913	16.0	1924	20.6
1914	18.3	1925	21.2
1915	22.2	1926	21.8
1916	17.0	1927	23.1
1917	13.9	1928	23.8
1918	10.0	1929	22.9
1919	6.5	1930	26.4
1920	8.9		

2. The following table gives the yield figures per acre (in suitable units) relating to a crop yield experiment involving 10 varieties (A. B. C. D. E. F. G. H. I. J), 3 manures (X, Y, Z) and two types of soil (I, II). Complete the appropriate analysis of variance table and make suitable comments.

SOIL TYPE I

Varieties Manures	A	B	C	D	E	F	G	H	I	J
X	48	45	46	42	44	49	45	47	48	49
Y	43	42	44	44	45	47	45	46	47	49
Z	46	46	42	40	43	47	48	48	46	48

SOIL TYPE II

Varieties Manures	A	B	C	D	E	F	G	H	I	J
X	48	45	46	45	44	48	48	44	48	42
Y	42	44	44	45	43	51	47	46	47	43
Z	46	42	46	43	50	48	44	46	44	43

3. The following data relate to yield of corn ( $x_1$ ), rainfall ( $x_2$ ) and temperature ( $x_3$ ) for a period of 20 years. Calculate the multiple correlations  $R_{1-23}$ , and the partial correlations  $r_{12.3}$  and test their significances.

$x_1$ Yield in bushels	$x_2$ Rainfall in inches	$x_3$ Temperature in degrees
30.5	12.1	73.3
32.3	12.0	74.6
34.9	9.3	73.6
30.1	7.7	76.2
36.0	11.0	73.2
26.8	6.9	77.6
30.5	9.5	78.9
33.3	10.5	69.9
29.7	9.3	75.3
35.0	9.4	72.8
29.9	8.7	76.2
35.2	9.5	78.0
38.3	11.6	72.9
35.2	12.1	76.0
35.5	8.0	75.0
36.7	10.7	74.8
28.8	13.9	72.6
39.0	11.3	75.3
31.7	11.6	74.1
32.6	10.4	71.0

COMPUTER'S CERTIFICATE EXAMINATION, 1952.

PART IC : SECTION II.

Full Marks : 100

Time : 4 hours

- N.B.* (a) Answers to the different groups are to be given in separate books.  
 (b) All questions carry equal marks.  
 (c) Use of calculating machines is permitted.  
 (d) All computation work must be shown in the answer-script.

GROUP A.

Attempt any *two* questions.

1. Compile from the statistical reports (to be supplied to you) informations on any five of the following, stating the *title* and *page* of the reference from which you have taken the figures:—

- (a) Total acreage under rice in West Bengal 1949-50 shown separately under winter, autumn and summer crops.  
 (b) The total quantity of paper of all grades manufactured in India during the 12 months, April 1948 to March 1949.  
 (c) Average number of persons employed daily in the production of coal from mines in India in 1949.  
 (d) Total value (in rupees) of India's exports to and imports from the Union of South Africa in 1948-49.  
 (e) Total quantity and value of "Essential Oils" imported to India from Switzerland in 1949-50.  
 (f) Total number of treatment institutions (hospitals, dispensaries etc.) in Indian Union—the number of beds available and the number of indoor patients treated in the year 1948-49.  
 (g) Value of notes in circulation in the month of September 1948-49.  
 (h) Total values of cheque clearances for the month of April and May 1950-51 from all clearing houses of India.

2. (a) Calculate the value of the function  $F(x)$ , at  $x=0.6533$ , given the following table:

$x$	$F(x)$
0.62	0.6194114
0.63	0.6270463
0.64	0.6345857
0.65	0.6420292
0.66	0.6493765
0.67	0.6566275
0.68	0.6637820

(b) The hour-angle of the Sun corresponding to certain altitudes ( $a$ ) and declination ( $\delta$ ) at a place in a certain latitude are given below. It is required to find the value of the hour-angle corresponding to  $\delta=12^\circ$  and  $a=16^\circ$ .

$\delta$	$a=10^\circ$			$a=14^\circ$			$a=18^\circ$			$a=22^\circ$		
	$20^\circ$	$6^A$	$11^m$	$26^j$	$5^A$	$50^m$	$17^A$	$5^A$	$20^m$	$27^A$	$5^A$	$8^m$
$15^\circ$	5	55	41	5	35	5	5	14	39	4	54	17
$10^\circ$	5	40	16	5	19	56	4	59	37	4	39	17
$5^\circ$	5	24	50	5	4	30	4	44	4	4	23	29
$0^\circ$	5	0	5	4	48	29	4	27	39	4	6	28

3. (a) The prices of a few items for the years 1945 and 1946 and also the percentages of the total expenditure in the middle-class families in Calcutta are given here. Calculate by a suitable method the cost of living index for 1946 with 1945 as base year.

	% of the total expenditure	Prices in rupees	
		1945	1946
Rice	17.51	0.39	0.39
Wheat	5.73	0.33	0.38
Chira & Muri	0.66	1.00	1.00
Pulses	3.43	0.50	0.63
Fish	5.24	2.00	2.00
Meat	1.99	2.50	3.00
Eggs	0.30	2.25	2.50
Milk	3.45	0.75	0.75
Butter & Ghee	1.60	0.00	6.50
Oil	5.10	1.00	1.12
Potatoes	3.80	0.44	0.75
Other Vegetables	6.26	0.19	0.31
Sugar & Gur	2.57	0.50	0.50
Tea & Tiffin	4.83	8.50	8.63
Coal	4.29	1.50	1.38
Salt	0.62	0.19	0.19
Other Species	1.08	0.10	0.19

(b) Index numbers of prices of a certain commodity from the years 1929-1933 are given below :-

	1929	1930	1931	1932	1933
Jan.		96	70	81	70
Feb.		96	84	81	67
Mar.		88	79	75	67
Apr.		96	78	70	75
May		99	72	69	80
Jun.	119	88	66	67	80
Jul.	121	90	64	70	
Aug.	129	92	67	79	
Sep.	121	85	68	81	
Oct.	103	72	79	76	
Nov.	103	74	82	75	
Dec.	102	73	86	60	

Find out the trend of prices by fitting a suitable curve and show on a graph the observed values and the fitted curve.

GROUP B.

Attempt any three questions

1. Evaluate the determinant

$$\Delta = \begin{vmatrix} 60.5 & 83.4 & 24.3 \\ 28.2 & 24.0 & 31.2 \\ 12.3 & 15.8 & 17.0 \end{vmatrix}$$

Calculate the minor and cofactor of each element of  $\Delta$  and verify that if  $D$  be the value of the determinant formed by the cofactors of the elements of  $\Delta$ , then  $D = \Delta^2$ .

2. Fit an appropriate Pearsonian curve to the following distribution of marks of 100 students in a test.

Mid-value	15	20	25	30	35	40	45
Frequency	8	12	18	20	32	8	2

3. In a feeding experiment, four rations  $R_1, R_2, R_3, R_4$  besides the control  $R_5$  were tried on 20 animals which were put in four classes  $C_1, C_2, C_3, C_4$ , of five each according to litter and initial body weight. The following table gives the gains in body weight in grammes in a certain period.

$R_1C_1$	$R_2C_2$	$R_3C_1$	$R_3C_2$	$R_1C_4$	$R_2C_4$	$R_4C_1$	$R_4C_2$
7.0	15.5	8.5	16.5	14.5	10.5	9.5	15.0
$R_2C_1$	$R_1C_2$	$R_2C_3$	$R_4C_3$	$R_2C_4$	$R_4C_3$	$R_3C_2$	$R_2C_2$
14.0	16.0	9.5	10.5	13.5	10.5	8.5	15.5
$R_3C_2$	$R_1C_4$	$R_2C_3$	$R_2C_4$				
6.0	13.5	7.5	21.0				

Analyse the experimental yields and interpret the results. Has local control proved effective?

4. The following table gives the percentage success of bolls for flowers from five different strains A, B, C, D, E of cotton plants, shown in a Latin Square design.

A	C	B	D	E
45.9	46.3	44.1	47.0	34.4
B	A	C	E	D
42.5	42.8	40.3	35.0	43.9
D	E	A	B	C
50.4	35.0	42.8	39.4	45.8
E	B	D	C	A
38.4	44.1	47.3	45.1	40.1
C	D	E	A	B
47.8	47.3	36.0	37.7	40.7

Analyse the data and interpret the results.



## INDIAN STATISTICAL INSTITUTE

### STATISTICAL FIELD SURVEY EXAMINATION, 1952.

#### PART IA (THEORETICAL)

Full marks : 100

Time : 3 hours

- N.B. (a) Figures in the margin indicate full marks.  
(b) Neatness carries 4 marks.  
(c) Whenever you are asked to give answer for your Native State or State of Domicile, mention the name of the State.

Attempt Question No. 2 and any other two from Group A and any four from Group B.

#### GROUP A.

1. (a) Mention the names of the Districts and Sub-divisions of the State you live in, mentioning the name of the State as well.

(b) Name five most important railway junctions of the State with the names of the Sub-divisions in which they are situated.

(c) Give the total adult population of the State and its ratio to the total population of the State. (15)

2. (a) Write down the actual inter class fare from Howrah to Bankura, a distance of 144 miles and also the third class fare from Bandel to Ondal, a distance of 84 miles. Mention the difference, if any, in the fare between Passenger and Express trains for these distances.

(b) Rs. 43/- are to be sent by telegraph money order. Is it possible to send it by Express Telegram? If so, mention the basis of calculation of the postal charges.

(c) Filled up records weighing 15 tolas are to be sent to the officer from the workers' camp. Mention the postal charges when it is sent by (i) a registered parcel (ii) a registered book post. (15)

3. Mention the names of the localities with as much Geographical detail as you can of:—

(a) any important mining area in your Native State or State of Domicile.

(b) any important forest area in your Native State or State of Domicile.

(c) any three important Jute growing areas in your Native State or State of Domicile. (15)

4. (a) Name three major crops of your Native State or State of Domicile and the sowing and harvesting seasons thereof.

(b) Give the acreage of one cereal and one non-food crop in 1951-52 in your Native State or State of Domicile and state the percentage increase as compared to acreage of 1950-51. (15)

#### GROUP B.

1. (a) How many metres make one mile?  
(b) Express 5.125 acres in local units of area measurements of your native State or State of Domicile.  
(c) A bale of jute weighs 400 lbs. Express the weight in maunds and seers.

2. Find the value of any two of the following:—

$$(a) \frac{.67 \times .67 \times .67 - .001}{.67 \times .67 + .067 + .01} + \frac{.57}{1 + \frac{14}{43}}$$

$$(b) .5 \text{ of } \frac{\text{Rs. } 6. 10 \text{ as. } 8 \text{ ps.}}{\text{Rs. } 5. 5 \text{ as. } 4 \text{ ps.}}$$

$$(c) \frac{3}{16} \text{ of } 4.25 \text{ acres} + \frac{7}{16} \text{ of } 0.87 \text{ acres} + \frac{3}{4} \text{ of } 16.57 \text{ acres.} \quad (12)$$

3. A fence is running on all sides of a rectangular shaped cultivated land having an area of 1 acre. Its length is three times its breadth. Find the cost of the fence at the rate of 3 as. per yard. (12)

4. A rectangular plot of land has got a square tank surrounded by a paddy field. A side of the tank is 30 yards. Length and breadth of the plot is 60 yards and 40 yards respectively. Calculate the anna proportion of the paddy field to the total plot. (12)

5. ABCD is a square field whose sides are 20 ft. long. (a) Into how many square plots, having an area of 4 sq. ft. can you divide ABCD? (b) If you join AC and BD and those two lines cut at E, what would be the area of AEB and AEC. (12)

6. Investigators A, B, C have been sent to visit the same four families each and they have brought the following information relating to income and expenditure of the families in a year:—

Family	A		B		C	
	Income	Expenditure	Income	Expenditure	Income	Expenditure
1	215	400	295	340	315	425
2	310	510	450	415	500	520
3	105	201	125	155	115	255
4	165	255	185	165	215	175

(i) Find the average of income and average of expenditure recorded by the three investigators, for each family.

(ii) Find the average income and average expenditure per family making use of all the relevant data.

(iii) What is the excess or deficit of average income per family over the average expenditure per family—using data of all the three investigators. (12)

#### STATISTICAL FIELD SURVEY EXAMINATION, 1952.

##### PART I-B (THEORETICAL)

Full Marks : 100

Time : 3 hours

N.B. (a) Figures in the margin indicate full marks.

(b) Neatness carries 6 marks.

(c) Whenever you are asked to give answer for your Native State or State of Domicile, mention the name of the State.

Attempt any *three* questions from group A and any *two* from group B.

GROUP A.

1. (a) Name all the States of the Indian Union. (6)  
(b) Supply information regarding the following in respect of your Native State or State of Domicile. (Mention the name of this State).

(i) Names of all other States which touch and surround the State (3)  
(ii) Most important city, sea ports, if any, and the most important rivers. (3)

(c) Which States of India have sea coast? (3)  
(d) Name all sub-divisions in eastern or western border of your Native State or State of Domicile, mentioning the name of the State. (3)

2. (a) In what respect do the following differ from one another?—Luggage, Railway Parcel, and Railway Goods Tariffic. Name at least 3 articles which cannot be taken as luggage. (4)

(b) What are the important differences between "owner's risk" and "Railway risk" looking for senders of goods? (4)

(c) If you are required to despatch some Government office furniture from one railway station to another in your own State, in what circumstances would you book them by goods traffic or by parcel traffic? Give reasons.

(d) Calculate the postal charges needed for sending the following express-telegram at 3 A.M. in the night after Saturday.

"Hari Charan Ganguli,

Village Rajpur,

P.O. Barabati,

T. O. Laksmipur (India).

Your brother investigator Haren Chandra Ganguli attacked with Cholera Coma at once.

Suresh."

Mention word or words which can be safely omitted to reduce cost.

3. (a) What are the three most important districts in your State, growing:  
(i) Aman (winter) paddy, (ii) Potato, (iii) Jute, (iv) Sugarcane, (v) Tobacco. (6)

(b) In respect of only one of the above crops, mention:—

(i) the average yield in mds. per acre and an approximate value of the lowest and the highest yield rate between which the yield rates usually vary.

(ii) Average seed requirements in seers per acre and an approximate range within which seed requirements per acre generally vary.

(iii) Periods of sowing and harvesting.

(c) Mention the total yield in your Native State or State of Domicile of any one of the crops noted in question 3 (a) during each of the three previous years and comment on the reasons for increase or decrease. (6)

4. (a) An investigator with a pay of Rs. 130/- plus d.a. Rs. 45/- per month was on leave on half pay for 8 days with permission to proff 2 holidays to this leave and on casual leave for 3 days in the month of February 1952; calculate the amount due to him for the month. (6)

(b) Two sides of a regular shaped rectangular plot are 300 yds. and 100 yds. respectively. If the plot is divided into 300 sq. plots, what would be the area of each square plot and the length of a side of each square plot? (6)

(c) A took a loan of Rs. 80/- from B on 1/1/50 at 12½% per annum. He paid Rs. 20/- on 1/7/50, Rs. 20/- on 1/1/51 and Rs. 20/- on 1/7/51. How much was due from him to B on 1/1/52? (6)

#### GROUP B.

1. The following statement gives an account of a season's work in a field block, showing the number of days for which staff worked etc.

Staff	Days of attendance to be paid	Crop cutting days	Number of plots harvested
Investigator 1	75	—	—
Investigator 1	70	13	26
2	65	20	35
3	75	12	27
4	68	15	24
Camp Clerk 1	75	—	—
Peon 1	75	—	—

Calculate the total expenditure incurred in the season for this field block under the following heads:—

(a) Pay of staff:

(i) Inspector: Basic pay of Rs. 75/- per month plus a d.a. at 40% of basic pay and Rs. 25/- as F. T. A.

(ii) Investigator: Basic pay of Rs. 50/- per month plus a d.a. at 50% of basic pay and Rs. 15/- as F. T. A.

(iii) Camp clerk: Basic pay of Rs. 50/- per month plus a d.a. at 50% of basic pay and no F. T. A.

(iv) Peon: A consolidated remuneration of Rs. 50/- per month.

(b) cost of ono labour to each investigator engaged on days of crop cutting only at Rs. 2/4/- per working day.

(c) Cash compensation to owners of plots at annas twelve per plot harvested.

(d) Despatch of field records to the head quarters by registered post on two separate occasions in consignments weighing 5½ tolas and 20 tolas respectively. (20)

6. Scrutinise the following portion of a schedule received from an investigator and point out the mistakes if any. (Answer should be written on the answer book and not on the schedule).

Enquiry into the family budget, 1949-50.

Name of the investigator: Subhas Roy, Unit No. 14. Date of enquiry: 4/12/50

*Block I: Address and particulars of the sample.*

Ward No.: 27. House No. 37, Street—Pratapditya Road.

Sample No.: E/20. Head of Family: Late Panchanon Ghosh.

Religion—Hindu, Community: Caste Hindu.

Family occupation—Zaminder.

*Block II: Composition of the family.*

Sr. No.	Relation to head.	Sex	Age	Civil Condition	Standard of education	Occupation	Yearly income	
							from occupation	Total
1	Head	M	Dead	—	—	—	—	—
2	Son	M	35	Married	B. A.	Service	2400/-	2400/-
3	Son	M	28	Unmarried	Matric	do.	1500/-	1500/-
4	Wife of Serial No. 2.	F	25	Married	VI	—	—	—
5	Wife of Serial No. 3.	F	21	do.	X	—	—	—
6	Son of Serial No. 3.	M	12	Unmarried	IV	—	—	—

(20)

7. In a rural enquiry, Sri Nidhiram Batabyal (aged 47) of village Ichapura, P. S. Sarajdigha of District Dacca, who possesses a total of 6.20 acres of land (of which 4.37 acres was cultivated under paddy and 1.20 acres under jute, in the year ending 31st May 1952, furnished the following informations.

He had in this year a family consisting of two brother aged 26 and 18, his wife with two boys aged 14 and 6 and with three girls aged 17, 10 and 8, the youngest girl having died during the year. Besides, he had to support a widowed sister of 23 with a son of 5. On further questioning, he revealed that he had married when he was of age 24 and that his wife had her first child born when she was 15. Of his two brothers, the older one was married during the year to a girl of 17 and was the only member who made some contribution for the maintenance of the family.

Questioned as to whether he had to purchase paddy or rice in that year for his household consumption, he said he purchased a total of 45 mds. of rice to meet his needs. He had however no livestock. He was reluctant to give any idea of his annual income; but he admitted that his sole income was from cultivation of his own land.

Fill up the following schedule (Form IB), on the basis of above informations received and criticise if some of the informations given by him seem to be unlikely.

(20)

FROM I-B.

District..... Name of Head.....  
 P. S..... Mouza (village).....  
 Size of Family..... Gross annual income from  
 Total No. of earners..... Agriculture (Rs.).....  
 Net annual income from  
 Agriculture (Rs.).....

Serial No. of Household members	Relation to Head	Sex	Civil Status	Economic Status	Age in the year ending 31/5/52
---------------------------------	------------------	-----	--------------	-----------------	--------------------------------

(1)	(2)	(3)	(4)	(5)	(6)
-----	-----	-----	-----	-----	-----

(a) Living Members

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12

(b) Members who died during the year ending 31st May, 1952.

1  
2  
3

Lands (in arore) possessed in the year ending 31/5/42:—

- (i) Total.....
- (ii) Growing paddy.....
- (iii) Growing Jute.....

STATISTICAL FIELD SURVEY EXAMINATION, 1952.

PART I-C (THEORETICAL)

Full Marks : 100

Time : 3 hours

- N.B. (a) Figures in the margin indicate full marks.  
(b) Neatness carries 4 marks.  
(c) Whenever you are asked to give answer for your Native State or State of Domicile, mention the name of the State.

Attempt any four questions.

1. (a) Name the five largest oceans of the world and describe their boundaries.  
(b) Name the largest (i) mountain range; (ii) river; (iii) island. Describe their locations.  
(c) What are the total population of your State and that of India, according to the latest published census reports, under the following heads? (i) males and (ii) females; (i) urban and (ii) rural.  
(d) Describe the boundaries of Thailand, France and Afghanistan and name the largest port in each, if any.  
(e) What are the three important communities in your Native State or State of Domicile? (Name the State). What are the proportions of their population to the total of the State according to the latest published data you know of?  
(f) Name 4 countries or 4 continents and state via which ports and/or railways you can reach them if you go by train and/or ship.
2. (a) What is the total area of your State?  
(b) How much of it is available for cultivation?  
(c) Name two main non-food crops grown in your Native State or State of Domicile (Mention the name of the State).  
(d) Give the yield rate (in m-ls. scores or pounds per acre) of the two main non-food crops grown in your Native State or State of Domicile.  
(e) Name the district in your Native State or State of Domicile with the lowest annual rainfall.  
(f) What are the methods of irrigation, if any, in the district of your State with the lowest annual rainfall.  
(g) Name the important crop of your State which require to be irrigated largest number of times and state the number of times it is irrigated in a year of normal rainfall.  
(h) What is the approximate acreage of cultivable waste in your State? Mention source of information and the year to which the figures relate. (16)  
(i) Mention the principal causes for cultivable waste lands being left uncultivated, in your State. (4)  
(j) Name the manure or manures used for Aman paddy (winter paddy) crop what are the stages of cultivation when these manures are used; what proportion of total quantity is used at each stage? (4)

3. (a) What is share-cropping? What are its usual terms and conditions in your district? What are the principal crops which are grown on share-cropping basis? (8)

(b) Are there districts in your State where immigrant labourers are employed for agriculture? If so, state the names of districts and the area from which the immigrant labourers ordinarily come. (8)

(c) What was the number of milk cows in your State, according to the latest cattle census figures if any, known to you? (Give the figure to the nearest thousand). Assuming that each cow gives, on an average, one soer of milk per day and that each person of your State requires half a soer per day, what would be the surplus or deficit of milk in your State? (Show the calculations). (8)

4. (a) State the average daily rates of wages for the following operations, as were prevalent in your district in the last season.

(i) ploughing; (ii) ploughing with own plough and cattle; (iii) harvesting of jute; (iv) washing of jute-fibre; (v) threshing Aman paddy (winter paddy). (5)

(b) What are the sources from which you can obtain the following?—

(i) Cadastral survey maps; (ii) list of plots with their total areas, comprised in a village; (iii) list of families in a village. (5)

(c) Prepare a list of probable items of non-food expenditure which you can expect to find from an ordinary agricultural family. Mark with a cross those items which would not be in the list if the family had not been an agricultural family. (7)

(d) Give a list of the types of non-agricultural work in which rural labourers can get employment in your State. Mention against each item, the months in which such work can generally be had. (7)

5. An investigator is camping in a village for work for about three months.

(a) The Union Board is demanding tax from him.

(b) A Govt. Tahsildar has slapped him.

(c) A cultivator in whose field he carried out crop cutting work enters his camp and forcibly takes away the crop cutting instruments.

State the authority or authorities (if more than one) whom the investigator can approach for redress and mention what type of redress each such authority can give. (24)

6. (a) Prepare an estimate of field cost of a family handicraft production enquiry by sample survey, the investigator being confined to 100 sample villages in two districts of your State and during a period of 15 days. 15% of families engaged in handicraft production are to be taken in each village. Any assumption that you make regarding hours of work, rate of work etc., in preparing an estimate of cost, should be mentioned.

(b) What steps would you take to ensure that (i) sample units taken represent all handicrafts; (ii) the work is being done in minimum time. (24)



STATISTICAL FIELD SURVEY EXAMINATION, 1952.

PART II-A (THEORETICAL)

Full Marks : 100

Time : 3 hours

N.B. (a) Figures in the margin indicate full marks.

(b) Neatness carries 5 marks.

Attempt Question 1 and any three of the rest.

1. (a) An enquiry to ascertain the inter-relation between the family size, income and expenditure on food consumed is to be conducted in Ballygunj—Ekdalia Place area on a total listed population of 2500 families of which there are some Bongloes, some Beharis and some South Indian families. It is decided to take a sample of 600 families for survey. Suggest a suitable method of stratification and a method of allocating the number of families out of 600 to be chosen to different strata on the basis of any assumed distribution of 2500 families into the three categories.

(b) Prepare a plan of field work and an estimate of cost of prevalent rates of pay etc. for the work contemplated in (a). Any assumptions that you make in estimating cost should be stated. (35)

2. A survey is to be conducted for determining the cost of cultivation of jute and it has been decided to collect data from a sample of informants by the method of interview. Draw up a schedule for the purpose with suitable spacings and headings. (Square papers will be supplied). (20)

3. Discuss the merits and demerits of a random sample survey as compared to complete enumeration.

Give an example where complete enumeration is essential. State your reasons for considering complete enumeration to be essential in this case.

Give an example where complete enumeration is impractical. State your reasons for considering complete enumeration impractical in this case. (20)

4. (a) Write down the methods you would adopt for collecting accurate data regarding the following :—

(i) age of individual members of an uneducated rural family.

(ii) acreage of a particular crop in plots from an area, of which the cadastral survey maps are 25 years old and configuration of plots have changed in many cases.

(iii) blackmarket price of adult size mill-made cotton saris in a part of a town.

(b) What checks, if any, can you apply to ascertain the degree of accuracy of the field work, if you were to inspect the field work in each of the above cases? (20)

5. The figures in columns 2 and 3 of the table below show the index numbers of prices of certain commodities in the harvest year 1926 and 1931 with the same base. The ratio of index numbers of 1931 to those of 1926 expressed as a percentage are given in column 4. Find the average ratio of prices of all commodities taken together in 1931 to those in 1926,

(i) from the arithmetic mean of the percentage in column (4).

(ii) from the ratio of arithmetic means of figures in columns (2) and (3).

Commodity	Index Number of prices in		Column 3 Column 2 $\times$ 100
	1926	1931	
(1)	(2)	(3)	(4)
Wheat	157	79	50.3
Fat Cattle	131	118	90.1
Milk	163	139	85.3
Eggs	140	110	73.8
Fruit	165	132	80.0
Vegetable	135	158	117.0

6. What are the sources of errors that may occur while collecting data in a crop area estimation survey. Name five such sources and indicate what should be the duty of an investigator to avoid such errors. (20)

### STATISTICAL FIELD SURVEY EXAMINATION, 1952.

#### PART II-B (THEORETICAL)

Full marks : 100

Time : 3 hours

N.B. (a) All questions carry equal marks.

(b) Nontness carries 5 marks.

Attempt any five questions.

1. Discuss to what extent the reports of settlement operations of the districts in a State are useful in preparing a scheme for a multipurpose survey of that State

2. Write a note on the system now generally followed for estimating the average yield per acre of rice crop in India and state in what respect or respects it is an improvement over the previous system? Can you suggest any improvement over the present system?

3. Write short notes on:—

- (i) Harvest price
- (ii) Raiyatwari tenure
- (iii) Ovino population
- (iv) Fodder crops.

4. Your office has been provided with a typewriter. One of your clerks has used the same for forging a letter and the police have taken away the same typewriter and kept it under their custody pending the completion of their enquiry. It was the only one available in the office. Your office superintendent has hired a typewriter for the period when the police kept the office typewriter under their custody and has incurred an expenditure.

Explain the procedure how you will (a) deal with the clerk and (b) regularise the expenditure.

5. (a) An inspector complains that he goes out of pocket on his tours within his sphere of duty as the F. T. A. allowed is insufficient to cover his expenses. He submits a statement of expenditure for a particular month to show that he had to incur an expenditure of Rs. 60/- as against Rs. 30/- allowed as F. T. A. He therefore requests

for an increase in his F. T. A. from Rs. 30/- to Rs. 50/- or to be allowed to draw T. A. under the ordinary rules.

Explain how the case should be examined and what are the facts and figures that you would take into account in coming to a decision in the matter.

(b) An investigator reports to you that there was very great rush in the train he was travelling and he stood on the foot-board during his journey. The maps, schedules implements etc., that he was carrying with him slipped off his hands and were thus lost.

What action would you take in this matter ?

Would you proceed differently if they were stolen from his temporary shelter in a village ?

6. State at least one publication from which you can get information regarding the following :—

(i) Quantity and value of costia soda imported into the port of Calcutta in 1947-48 or in any of the earlier or subsequent years.

(ii) Index number of wholesale prices of food articles during any one of the months in 1952.

(iii) Outturn and average price per pound of tea released to the market by different tea companies during 1950 or in any one of the earlier or subsequent years.

(iv) Number of Bulls, Bullocks and cows in the district of Hooghly in Bengal in 1939-40 or in any one of the earlier or subsequent years.

(v) Quantity and value of piece goods imported into the port of Calcutta in 1947-48 or in any one of the earlier or subsequent years.

(vi) The area irrigated by Government canals and area under rice crop irrigated in all the Madras states in 1942-43 or in any one of the earlier or subsequent years.

7. What are the various registers and books of accounts that you will ask your subordinate officers to maintain so that the administration in connection with a field survey may be carried on efficiently ? Assume that this office has to control a staff of about 30 in 3 sub-divisions of a district for which it is also to draw and disburse pay etc.

---

## STATISTICAL FIELD SURVEY EXAMINATION, 1952.

### PART I-A (PRACTICAL)

Full Marks : 100

Figures in the margin indicate full marks.

1. Give the meaning of the five symbols pointed out to you in the C. S. map and/or P. S. map and/or District map. (10)

2. (a) On a C. S. map, locate 5 plots shown to you on the ground. (15)

(b) Estimate the area proportions of the crops and other uses of the five plots whose survey numbers are given to you, after identifying the plots with the help of maps, and enter them in form I.A.(1). (25)

Speed (10)

3. Fill up the questionnaire in form I-A (2) by actual enquiry in the rural household whose address is supplied to you. (30)

Speed (10)





STATISTICAL FIELD SURVEY EXAMINATION, 1952.

PART I-B (PRACTICAL)

Full marks : 100

Figures in the margin indicate full marks.

1. (a) Give the annawari estimates of proportions of area under paddy, jute and "others" for plot numbers 1 to 12 or 12 to 23 in the map supplied to you. (18)

(b) Give the annawari estimates of proportions of area under paddy, jute and others for Blocks B and E out of blocks A, B, C, D, E, F into which the total area has been split up. (12)

2. Give an eye estimation of the lengths and breadths in feet and area of 5 plots of land shown to you on the ground. (15)

3. Make direct enquiries from one agricultural household indicated to you and fill up the schedule supplied (Form I-B). Data relating to cost of cultivation should be obtained for at least (a) two of the following crops: Aus, Jute, Aman, Potato, Sugarcane and wheat and (b) 6 plots in all. (40)

4. Viva Voce—Resourcefulness

Capacity to mix with people etc. (15)

FORM I-B

Block I District.....	Name of head of household.....
P. B.....	Size of household.....
Mauza (Village).....	Monthly expenditure.....
J. L. No.....	Land possessed (acres).....
Household No.....	Land cultivated (acres).....

Block II

Crop	Sl. No. of plots	Area in acres	No. of times each operation was repeated				Total Labour days		Total Bullock days		Expense in Rs. on		Total Production in Maunds
			Ploughing	Sowing	Weeding	Harvesting	Home	Hired	Home	Hired	Seed	Manure	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.	1.												
	2.												
	3.												
	4.												
	5.												
2.	1.												
	2.												
	3.												
	4.												
	5.												

Signature of the Investigator..... Date.....

Time of receiving the schedule..... Total time taken.....

Time of returning the schedule.....

Note:—Time should be filled by the candidate in the presence of the examiners.

STATISTICAL FIELD SURVEY EXAMINATION, 1952

PART I C (PRACTICAL)

Full Marks—100

Figures in the margin indicate full marks.

1. Carry out a survey in the market to which you are taken to and supply the required information in form "A". (30)
2. In the same market supply the required information in form "B" for any one peripatetic or squatter's shop. (40)
3. Indoor Practical (Questionnaire in a separate type written pages). (30)

FORM "A"

Block I

- |                               |   |
|-------------------------------|---|
| 1. District.....              | 2. P.S.....   |
| 3. Municipality or Union..... | 4. Mouza (Village).....                                 |
| 5. J. L. No.....              | 6. Name of Hat or market.....                           |
| 7. Week days of sitting.....  | 8. Hours of sitting..... A.M./P.M.<br>to..... A.M./P.M. |

Block II : 9. Sellers in the market at peak time..

Serial No.	Permanent shops		Peripatetic Shops		Squatter's shops	
	Commodity sold	No. of shops	Commodity sold	No. of shops	Commodity sold	No. of shops
(1)	(2)	(3)	(4)	(5)	(6)	(7)

Block III : 10. Estimated number of purchasers attending the market at peak period of the day.....

Block IV : 11. Three commodities sold in largest quantities on the day of survey.

Serial No.	Name of commodity	Quantity in mds.
1.		
2.		
3.		

Explain in short how you have obtained figures in Blocks III and IV.

Signature of the examinee..... Roll No..... Date.....

Form "B"

(To be filled up for one peripatetic shop of the market)

1. District..... 2. Thana..... 3. Municipality/Union.....  
 4. Mauza (Village)..... 5. J.L. No..... 6. Name of Hat or market.....  
 7. Week days of sitting..... 8. Hours of sitting..... A.M./P.M. to..... A.M./P.M.  
 9. Name of shop keeper.....  
 10. Address (Village)..... 11. Distance\* from market..... miles  
 12. Year from which he is carrying trade.....  
 13. Year from which he is carrying the present trade.....  
 14. Names of hats or markets attending by the trader and the week days of attending:

Serial No.	Name of hat or market	Week days of attending
(i)		
(ii)		
(iii)		
(iv)		
(v)		

15. Goods sold and sources thereof.

Serial No.	Names of goods sold (in order of importance)	Source of supply		Approximate sales during the last 1 month.	
		Market & Location	Type of supplier*	Quantity (.)	Value (Rs.)
(2)	(2)	(3)	(4)	(5)	(6)
1					
2					
3					
4					
5					
6					
7					
8					

\*wholesales, mills, factories, grocers (.) Mention units in which quantities are given.

16. Other occupations of the shop-keeper.....  
 Annual income from other occupations (Rs.).....  
 Annual income from this trade (Rs.).....  
 Members of the family ..... Male..... Female..... Total.....  
     Adult (more than 15 years).....  
     Children.....

17. Mention briefly the difficulties encountered in collecting the data in this form.



STATISTICAL FIELD SURVEY EXAMINATION, 1952

PART II-A (PRACTICAL)

Full marks—100

1. Collect information from one of the three families listed below and fill up the form IIA. In selection of the family, preference should be seriatim. (50)

If you had to fill up your schedule with information collected from the second or the third family, state your reasons for not being able to fill it up with information from No. (1) or No. (1) and No. (2) as the case may be. (15)

Describe in detail the difficulties you had to encounter in filling up the form and your methods of solving them. Mention the defects in the form, if any. (25)

LIST OF FAMILIES

District..... P.S..... Villago.....

Nearest Railway Station.....

Names of the heads of the families :

(1).....

(2).....

(3).....

2. Viva Voce on above (10)

FORM IIA

I. Details of Sample :

District..... P.S..... Union .....

Mauza (Village)..... J.L. No..... Head of the family.....

II. Details of family members who generally live in the above address

Sl. no	Relation to head	Age last birth day	Sex M-1 F-2	Marital condition*	Educa- tion**	Earner (1) or Depen- dant (2)	Occupation in last 3 months			c Unemployed in last 3 month		
							Prin- cipal	No. of Wks.	Sec- ondary	No. of Wks.	Rea- son***	No. of Wks.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)

\* Married-1; Unmarried-2; Widowed-3; Divorced-4; Separated-5; remarried-6; More than one wife living:-

\*\* Uneducated-1; Below Matric-2; Matric-3; Undergraduate-4; Graduate-5.

\*\*\* Disabled-1; Sick-2; Unwilling-3; Want of employment-4

Note :—Give replies in code numbers whenever they are indicated in the column of foot note.

III. Land owned and possessed (in acres).		IV. Cattle & Poultry possessed (No.).	
Description	Acres (2 decl.)	Description	Number
(a) Cultivated land		(a) Buffalows	
(i) Total owned		(b) Cows	
(ii) Total Let Out		(c) Bullocks	
(iii) Total Let in		(d) Calves	
(iv) Total in possession		(e) Sheep	
(b) Land not available for cultivation and are in possession :-		(f) Goats	
(i) Homestead		(g) .....	
(ii) Water areas		(h) .....	
(iii) Others		(i) Other Cattle	
(iv) Total		(j) Total Cattle	
(c) Cultivable waste possessed		(k) Ducks	
(d) Uncultivable waste possessed		(l) Fowls	
(e) Others		(m) other Poultry	
		(n) Total Poultry	
Total acres in possession			

V. Approximate income and expenditure during 12 months preceding the month of enquiry.

Serial No. of member in Block II	Income (Rs.)			Expenditure			
	From Occupation			Items	Unit of Qty.	Quantity	Value (Rs.)
	Principal	Secondary	Total				
				1. Rice/Wheat/			
				Products			
				2. Pulses			
				3. Fish, Meat			
				4. Food—Oils			
(1) Total				5. Vegetables			
(2) Remittances from non-residents				6. Sweets & Tiffin			
(3) Sale of assets				7. Other Food			
(4) Loans taken				8. Fuel			
(5)				9. Total Food			
(6)				10. Clothes & Bedding			
(7)				11. Furnitures, utensils			
(8)				12. Ceremonies (Social & religious)			
Total				13. Purchases of assets			
				14. Repayment of loans/interest			
				15. Rents, rates, taxes			
				16. Litigation			
				17.			
				18.			
				19. Total Others			
				20. Grand Total:			

REMARKS, if any. (Any inconsistencies in Block V should be specially mentioned giving reason for such inconsistencies, in the opinion of the examinee):—

Signature of the examinee..... Date.....  
 Time of starting..... Total time taken.....  
 Time of returning.....

Note :—Time should be filled in the presence of the examiners.

STATISTICAL FIELD SURVEY EXAMINATION, 1962.

PART IIB (PRACTICAL)

Time : 4 hours

Full Marks : 100

Figures in the margin indicate full marks.

1. Write a short report giving as many comments as you find possible on the data given in any two of the following :

- (a) Table I (48)  
(b) Table II and III (48)  
(c) Table IV and V (48)  
Neatness (4)

TABLE I.

	Population in 1931 in millions	Mean density per sq. mile	No. of females per 1000 males
Bengal	50.1	646	924
India	352.8	195	940
Madras	46.7	328	1025
U.P.	48.4	450	902
Bihar & Orissa	37.6	434	1005
Bombay	21.9	177	901
Ajmer	0.5	207	892
Assam	8.6	157	900

TABLE II

Distribution of migrants by present occupation and occupation followed in Pakistan.

Sl. no.	Occupation followed in Pakistan	Occupation at present followed in West Bengal										Total
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
(1)	(2)	No. Occupation	Agri. culture	Cottage Industry	Casto Profes- sion	Learned Profes- sion	Trado	Labour (Skilled)	Labour (Un- skilled)	Service	Others	Total
1	No. occupation	1,471,085	11,061	10,886	1,789	5,467	15,670	482	5,626	40,146	6,180	1,574,372
2	Agriculture	18,806	148,149	4,062	2,229	1,353	9,687	171	22,640	8,489	2,781	210,207
3	Cottage Industry	5,303	2,034	37,620	191	166	2,850	51	2,397	2,516	782	54,809
4	Casto Profession	2,606	2,230	565	20,975	121	1,523	24	2,032	584	264	30,864
5	Learned Profession	8,204	1,036	216	90	15,894	1,623	70	164	3,146	665	31,114
6	Trado	25,321	6,597	5,080	953	1,283	62,177	121	3,738	14,937	3,140	123,403
7	Labour (Skilled)	220	72	—	—	—	25	748	23	119	25	1,232
8	Labour (Unskilled)	1,156	586	142	69	—	121	—	6,061	446	170	8,751
9	Service	15,228	1,971	689	285	1,215	6,856	123	1,112	45,123	2,159	74,761
10	Others	8,969	726	331	142	811	2,601	44	215	3,842	6,884	24,565
	Total	1,556,898	175,482	60,440	26,729	26,310	103,133	1,814	44,008	125,398	23,030	2,143,238

TABLE III

Distribution of migrants by present occupation and occupation preferred

Sl. no.	Present Occupation	Occupation Preferred											
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		No Preference	Agri-culture	Cottage Industry	Costo Profesion	Learned Profesion	Trade	Labour (Skilled)	Labour (Unskilled)	Service	Others	Total	
1	No Occupation	1,428,198	15,033	7,078	1,411	7,204	43,330	240	1,153	50,412	2,779	1,556,898	
2	Agriculture	23,975	141,429	1,449	1,002	356	6,048	24	47	996	.46	176,402	
3	Cottage Industry	15,227	6,505	26,540	193	221	11,501	—	—	2,043	120	60,440	
4	Costo Profession	4,732	4,965	170	13,565	164	2,802	—	—	331	—	26,729	
5	Learned Profession	8,532	1,495	74	26	10,236	2,695	26	—	5,125	101	26,310	
6	Trade	16,138	7,027	1,134	521	406	73,036	—	71	4,668	132	103,133	
7	Labour (Skilled)	389	95	26	—	—	263	725	—	316	—	1,814	
8	Labour (Unskilled)	5,610	26,131	1,615	1,109	144	5,600	46	2,319	1,303	51	44,008	
9	Service	43,200	4,336	1,267	264	735	22,405	49	75	52,824	243	125,398	
10	Others	7,041	3,068	839	236	527	5,635	—	51	2,684	2,945	23,036	
	Total	1,550,042	210,174	38,192	18,507	20,063	173,405	1,110	3,716	120,702	6,417	2,143,223	

TABLE IV  
Distribution of migrant families by income-groups after migration.

Serial no.	District	Income group (Rupees per month)							Total
		1-50	51-100	101-250	251-500	501-1,000	Above 1,000	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
1	Burdwan	9,702	9,337	4,827	523	137	—	24,816	
2	Birbhum	1,090	750	769	47	—	—	2,655	
3	Bankura	825	928	464	61	26	—	2,294	
4	Midnapore	1,270	2,605	1,804	245	44	—	6,058	
5	Howrah	4,118	5,782	5,503	1,200	109	55	16,827	
6	Hooghly	3,150	4,119	3,998	741	97	—	12,115	
7	24-Paraganas	25,574	37,210	30,854	6,901	830	95	1,00,564	
8	Calcutta	12,076	23,946	28,471	9,129	2,017	439	76,078	
9	Nadia	35,078	32,152	15,037	1,459	287	—	84,313	
10	Murshidabad	3,732	6,502	3,684	482	24	—	14,424	
11	West Dinajpur	11,927	10,237	4,508	586	47	—	27,305	
12	Maldah	8,157	5,346	1,162	169	21	21	14,870	
13	Jalpaiguri	7,458	7,458	4,605	865	187	23	20,596	
14	Darjeeling	817	1,293	1,014	227	22	22	3,425	
15	Coochbehar	11,180	8,302	2,558	355	47	24	22,556	
Total		1,37,144	1,56,120	1,09,438	21,990	21,895	679	4,29,273	
Percentage:		31.9	36.4	25.5	5.1	0.9	0.2	100.0	

TABLE V.

Distribution of migrant families by income-groups while in Pakistan before migration

Serial no.	District	Income-group (Rupees per month)								Total
		1-50	51-100	101-250	251-500	501-1000	Above 1000	(8)	(9)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
1	Burdwan	2,183	8,526	10,150	2,944	761	52	24,616		
2	Birbhum	852	328	1,016	394	32	33	2,655		
3	Bankura	—	687	687	687	233	—	2,294		
4	Midnapore	1,945	748	2,318	898	73	76	6,058		
6	Howrah	1,143	1,984	7,988	3,708	1,143	851	16,827		
6	Hooghly	969	2,230	5,425	2,618	679	194	12,115		
7	24-Parganas	4,264	29,157	45,860	16,165	4,017	1,029	100,584		
8	Calcutta	8,997	14,518	32,231	14,236	4,358	1,738	76,078		
9	Nadia	7,902	31,913	35,485	6,953	1,824	836	84,913		
10	Murshidabad	714	4,755	6,934	1,586	237	198	14,454		
11	West-Dinajpur	4,180	9,249	10,940	2,341	489	133	27,305		
12	Malda	1,929	7,004	4,283	643	117	—	14,876		
13	Jalpaiguri	2,680	6,966	7,887	2,527	421	115	20,596		
14	Darjeeling	202	654	1,460	756	353	—	3,425		
15	Cooch-Bohar	4,272	10,207	6,024	1,618	315	90	225,36		
	Total	42,232	129,836	178,697	58,047	15,052	5,408	429,272		
	Percentage	9.8	30.3	41.0	13.5	3.5	1.3	100.0		