APRIL - 2001

[KD 534]

M.D. (Siddha) DEGREE EXAMINATION

(Old/New Regulations)

First Year

Branch VI — Nanjunoolum Maruthuva Neethinoolum

BIO–STATISTICS

(Also applicable for Second Year Branch VI candidates admitted during 1999–2000)

Time : Three hours Maximum : 100 marks

Answer ALL questions

1. Explain presentation of Quantitative and Qualitative data with suitable illustration. (15)

2. Define measures of central tendencies. Calculate the mean and median number of living children per woman from the following data : (15)

No. of living children	0	1	2	3	4	5	Total
No. of women	42	49	57	40	31	22	241

3. Define measures of variability. Compare variability of S.B.P. in children of age group. 05–10 years with that of adults age group 30–40 years. Their means and S.Ds. were 100 and 8 in children and 120 and 12 in adults respectively. (15)

4. What is mean by Random sample? Explain systematic and stratified random sampling with illustrations (15)

5. Explain parameters and Statistic. In a study on growth of children, one group of 100 children had a mean height of 60 cm and S.D. of 2.5 cm. While another group of 150 children had a mean height of 62 cm and SD of 3 cm. Is the difference between the two groups statistically significant? (15)

6 Write short notes on the following : (25)

(a) Normal distribution.

(b) ANOVA (Analysis of Variance)

(c) χ^2 test.

(d) Correlation.

(e) Different sources for collection of demographic data

NOVEMBER - 2001

[KE 534]

M.D. (Siddha) DEGREE EXAMINATION

(Old/New Regulations)

First Year

Branch VI — Nanjunoolum Maruthuva Neethinoolum

BIO–STATISTICS

Time : Three hours Maximum : 100 marks

Answer ALL questions

1. State which type of diagrams are used for presentation of (a) quantitative data (b) qualitative data. Illustrate giving familiar examples. (15)

2. Define measures of central tendencies or averages. Calculate Mean, Median and Mode for the following data : (15)

X :	0–10	10–20	20–30	30–40	40–50	50–60	Total
	5	10	25	30	20	10	100

3. Define standard deviation and co–efficient of variation. The blood volume in 10 normal persons and 8 persons involved in multiple fractures are given below :

Normal Persons = 4000, 3400, 4200, 4600, 3500, 2500, 4300, 3600, 4700, 5200.

Multiple fractures = 2500, 2800, 3000, 2600, 3800, 3200, 2900, 3200.

Do you agree with the claim that the blood volume is more variable in normal beings than in patients on the basis of this data? (15)

4. Discuss estimation of population parameters from a sample with special reference to mean.

A random sample of 900 children was found to have a mean fat fold thickness at triceps of 3.4 mm with an S.D. of 2.3 mm. Can it be reasonably regarded as a representative sample of population having a mean thickness of 3.2 mm? (15)

5. Discuss χ^2 test as a non–parametric test. Test whether the prevalence of carriers of filaria is associated with sex

Sex	No. of carriers	No. of non-carriers	Total studied
Male	78	418	496
Female	57	553	610
Total	135	965	1100

(d.f. = 1 $\chi^2_{5\%}$ = 3.841) (15)

NOVEMBER - 2001

6 Write short notes on the following

(a) Normal distribution

(b) Stratified Random sampling

(c) Hypothesis

(d) Students '*t*' test

(e) Vital statistics. (25)

MARCH - 2002

[KG 534]

M.D. (Siddha) DEGREE EXAMINATION.

(Old/New Regulations)

First Year

(Also applicable for Second Year — Branch VI Candidates admitted during 1999–2000)

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

BIO–STATISTICS

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Define percentiles as a measure of location and discuss their applications. (15)

Compute first, second and third quartiles and calculate Q.D. for the following data :

Height in c.m. :	145–150	150–155	155–160
No. of students :	26	35	60
Height in c.m. :	160–165	165–170	Total
No. of students :	51	28	200

2. Mid–arm circumference (c.m.) of 25 male children aged 4 months is given below :

14, 11, 11, 10, 12, 13, 10, 14, 11, 11, 10, 12, 12, 13, 13, 11, 14, 12, 12, 13, 12, 12, 13, 12, 12. (15)

3 Define Random sampling

Discuss multistage sampling and cluster sampling with illustrations. (15)

4. What is meant by Hypothesis? Explain Null and alternative Hypothesis.

In a clinical trial to assess the value of new tranquillier on psycho neurotic patients with each patient being given a week's time treatment with the drug, the drug was considered effective if it lowered anxiety score after treatment. Test the efficacy of drug on the following results :

Before Treatment : 22, 18, 17, 19, 22, 12, 14, 11, 19, 7

After Treatment :19, 11, 14, 17, 23, 11, 15, 19, 11, 8 (15)

5 What are the applications of χ^2 test?

In an ophthalmic OPD 170 persons above 40 years were examined. 40 had both trachoma and corneal degenaration while 34 had none. Total cases of corneal degeneration obtained were 101. Determine if there is any association between trachoma and corneal degeneration.

MARCH - 2002

	Trachoma	No Trahoma	Total
Corneal degeneration	40	61	101
No corneal degeneration	35	34	69
Total	75	95	170

(d.f. = 1. $\chi^2_{0.05}$ = 3.841) (15)

6 Write short notes on the following (25)

(a) Tabulation

(b) Standard Normal deviate

(c) Standard Error

(d) Population census

(e) Sample Registration System (SRS)

SEPTEMBER - 2002

[KH 534]

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO–STATISTICS

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Define averages and discuss with their merits and demerits. Define percentiles and discuss their applications. (15)

2. Define Measures of Dispersion. The following data show the number of children born to 350 women. Calculate the Mean and S.D. of number of children born per woman. (15)

Children between :	0	1	2	3	4	5	6	Total
Women :	171	82	50	25	13	7	2	350

3. Differentiate Random sampling with Non–Random sampling. Enumerate different methods of Random Sampling with examples. (15)

4 Discuss Parameters and Statistic

A group of 15 normal children in a study, had a mean serum iron level of 148 µg% and S.D. of 44.03. Another group of 15 children with infantile cirrhosis of liver had mean serum level of 151 µg% and S.D. of 49.04. Is the difference between the two serum means statistically significant? (15)

($t_{0.05}$ = 2.15 at 14 d.f.)

5 What is meant by ANOVA?

Test whether the prevalence of carriers of filaria is associated with sex. (15)

Sex	No. of carriers	No. of Non–carriers	Total
Male	78	412	490
Female	57	553	610
Total	135	965	1100

($\chi^2_{0.05}$ = 3.84 at 1 d.f.)

SEPTEMBER - 2002

6 Write short notes on the following $(5 \times 5 = 25)$

(a) Histogram

(b) Normal curve

(c) Standard error

(d) Regression

(e) Vital Events.

APRIL - 2003

[KI 534] Sub. Code : 2160

M.D. (SIDDHA) DEGREE EXAMINATION.

First Year

(New/Revised Regulations)

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO–STATISTICS

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Give your comments on the following statements.

(a) Qualitative Vs Quantitative data.

(b) Bar and Pie diagrams serve the same purpose.

(c) Histogram and Bar diagrams are not the same. (15)

2. Prepare a frequency table using class intervals such as 20–24, 25–29,..... and calculate mean, median and mode of the data given below : (15)

27, 28, 40, 32, 30, 36, 37, 29, 29, 42, 36, 25, 29, 30, 29.

32, 27, 35, 36, 29, 33, 26, 30, 20, 35, 32, 27, 41, 49, 34.

3. Comment on the merits and demerits of Range, Quartile Deviation, Mean Deviation and Standard Deviation. Calculate the mean and S.D. with the help of assumed mean for the following data : (15)

240, 260, 290, 245, 255, 288, 272, 263, 277, 250.

4. Define Standard Error of Mean. Determine if height differs with sex. (15)

Sex	Number (n)	Mean height in c.m.	S.D.
Boys	169	168	14
Girls	54	153	8

5. Discuss χ^2 test as a non–parametric test. In an obstetrical study, 790 expectant mothers of 30 years of age were observed. Of these 480 were primi gravida with 30 of them having toxaemia. While 12 of the remaining had toxaemia. Is there any association between toxaemia and gravida number? ($\chi^2_{0.05}$ = 3.84 at d.f. = 1). (15)

APRIL - 2003

6. **Write short notes on the following :** **(25)**

   (a) **Random sampling.**

   (b) **Student's 't' test.**

   (c) **Hypothesis.**

   (d) **Correlation.**

   (e) **Sources of Demographic data.**

OCTOBER - 2003

[KJ 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Give your comments on the following standards : (15)

(a) Bar and Pie-diagrams serve the same purpose.

(b) Histogram and bar diagrams are not the same.

(c) Quantitative Vs Qualitative data.

2. What is meant by central tendencies? Calculate the mean, median and mode for the following data and comment on the averages. (15)

10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
4	12	40	41	27

60 – 70	70 – 80	80 – 90	Total
13	9	4	150

3. Define "Root Mean Square Deviation". Compute standard deviation and coefficient of variation from the following data : (15)

44 – 46	46 – 48	48 – 50	50 – 52	52 – 54	Total
3	24	27	21	5	80

4. Define Std. Error (S.E.). The no. of accidents per day was studied for 144 days in a town *A* and 100 days in town *B* and following information was obtained. (15)

Town	Mean Number of Accidents	Std. Deviation
A	4.5	1.2
B	5.4	1.5

Is the difference between mean accidents of the two towns statistically significant?

5. Write an essay on sampling. (15)

OCTOBER - 2003

6. **Write short notes on the following :** **(25)**

   (a) χ^2 test.

   (b) Percentiles.

   (c) Correlation.

   (d) Hypothesis.

   (e) Tabulation.

APRIL - 2004

[KK 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Time : Three hours **Maximum : 100 marks**

Sec. A & B : Two hours and forty minutes **Sec. A & B : 80 marks**

M.C.Q. : Twenty minutes **M.C.Q. : 20 marks**

Answer ALL questions.

SECTION A — (2 × 15 = 30 marks)

Long Essay :

1. Write an essay about the sampling technique with suitable examples.

2. For estimating the mean blood sugar of the population in the age group of 50 - 60 years, 100 normal persons' blood sugar at random were collected and tabulated as follows :

Blood sugar level	80–90	90–100	100–110	110–120
No. of persons	5	13	24	36

Blood sugar level	120–130	130–140	140–150	Total
No. of persons	12	7	3	100

Calculate the normal range at 95%

Estimate the population mean blood sugar at 95% confidence interval.

SECTION B — (10 × 5 = 50 marks)

Short notes :

Write briefly on the following :

3. Quantitative data.

4. Measures of dispersion of variability.

5. Parameters and statistic.

6. Chi-Square (ψ^2) test.

7. In a population of 1000, Cholera inoculation was given to 600 persons. Among the inoculated 40 persons were suffering from cholera and 50 persons among the non-inoculated were also suffering from Cholera.

Test whether the Cholera inoculation controlled the cholera or not. ($\psi^2_{0.05}$ 1 $d.f$ = 3.841).

8. Protein diet was given to 10 children for 6 months. Before and after 6 months the weights of the children were recorded as follows :

Before :	29	21	17	21	22	17	19	18	21	15
After :	32	23	26	32	26	18	22	21	22	18

Examine whether the gain in weight is statistically significant or not.

($t_{0.05}$ at $9 d.f = 2.26$).

9. Calculate the co-efficient of correlation (r)

X:	10	6	9	10	12	13	11	9
Y:	9	4	6	9	11	13	8	4

10. Define locations.

11. Population census.

12. Survey of causes of death (Rural).

AUGUST - 2004

[KL 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO–STATISTICS

Time : Three hours **Maximum : 100 marks**

Sec. A & B : Two hours and forty minutes **Sec. A & B : 80 marks**

M.C.Q. : Twenty minutes **M.C.Q. : 20 marks**

Answer ALL questions.

SECTION A — (2 × 15 = 30 marks)

Long Essay :

1. **Name and define the statistical measures of central tendency and variability or dispersion.**

The weights and heights of 100 students are given in the table. Compare the consistency of the weight and height.

Height in c.m.	No. of students	Weight in kg.	No. of students
140–145	2	40–45	4
145–150	13	45–50	14
150–155	22	50–55	24
155–160	30	55–60	32
160–165	19	60–65	13
165–170	11	65–70	8
170–175	3	70–75	5
Total	100	Total	100

2. Define standard error of proportion. From a universe 40 females using oral contraceptives and 60 females using other contraceptives were randomly selected and the number of hypertensive cases from both the groups were recorded as 8 and 15 females respectively. Test the hypothesis that the proportion of patients with hypertension is the same for the two groups. Test the hypothesis by applying Chi–square (χ^2) test also. ($\chi^2_{0.05}$ at 1 degrees of freedom is 3.841)

SECTION B — (10 × 5 = 50 marks)

Short notes :

Write briefly on the following :

3. Frequency distribution

4. Locations

5. Restricted Random Sampling

6. Normal curve

7. Hypothesis

8. The sample size is 100, its mean is 165 cm and its standard deviation is 12.5 cm. Is the sample is drawn from the population which is having the mean of 167 cm?

9. ANOVA

AUGUST - 2004

10. Correlation

11. Sample Registration System

12. The population of a primary health centre was 32,000 in 1991 census and 34,000 in 2001 census. During the year 2002, 800 live births and 36 infant deaths were occurred. Calculate birth rate and infant mortality rate of the P.H.C. for the year 2002.

FEBRUARY - 2005

[KM 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Time : Three hours **Maximum : 100 marks**

Sec. A & B : Two hours and forty minutes **Sec. A & B : 80 marks**

M.C.Q. : Twenty minutes **M.C.Q. : 20 marks**

Answer ALL questions.

SECTION A — (2 × 15 = 30 marks)

Long Essay :

1. Define central tendencies and comment on the relationship between them. Compute the Mean, Median, Mode, Quartile deviation and Standard Deviation for the following data :

Systolic B.P. in mm/Hg (X)	No. of persons (f)
80 – 90	12
90 – 100	16
100 – 110	20
110 – 120	25
120 – 130	12
130 – 140	9
140 – 150	6
Total	100

2. Define χ^2 test.

200 persons above the age of 40 years were examined at an ophthalmic OPD for Corneal degeneration. Corneal degeneration was observed in 48 out of 110 persons in the age group 41–50 years. In 30 out of 52 persons of 51–60 years and 23 out of 38 in over 60 years. Determine whether the age plays any role in Corneal degeneration. ($\chi^2_{0.05} = 5.99$ at two d.f.)

SECTION B — (10 × 5 = 50 marks)

Short notes : Write briefly on the following :

3. Frequency distribution.

4. Graphic presentation.

5. Locations.

6. Determine if height differs with sex.

Sex	Number	Mean height in c.m.	S.D.
Boys	169	168	14
Girls	54	153	8

7. Stratified random sampling.

8. Hypothesis.

9. Define 't' test, give different situations in which the unpaired and paired 't' tests are applied.

10. ANOVA (Analysis of Variance).

11. Is there any relationship between height and weight of the following 10 students?

Serial no. of students	1	2	3	4	5
Height in c.m.	155	148	158	160	165
Weight in kg.	60	58	62	65	68
Serial no. of students	6	7	8	9	10
Height in c.m.	150	162	168	170	175
Weight in kg.	59	66	70	72	74

12. The 1991 census population of a city was 38000 and 2001 census population of the same city was 41,000. During the year 2003, the number of live births were 810, deaths were 325 and infant deaths were 25. Calculate the birth rate, death rate and infant mortality rate for the year 2003 of the city.

AUGUST - 2005

[KN 534] Sub. Code : 2160

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO–STATISTICS

Time : Three hours Maximum : 100 marks

Theory : Two hours and forty minutes Theory : 80 marks

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer ALL questions.

I. Long Essay : (2 × 15 = 30)

1. Define χ^2 test. Social class and microfilaria positivity is furnished below.

Social Class	Microfilaria Positivity		
	Number of positive	Number of Negative	Total
I	4	76	80
II	20	180	200
III	60	440	500
IV	144	576	720
Total	228	1272	1500

Find the association between social class and Microfilarial positivity and comment on the result.

$(\chi^2_{0.05} = 5.99$ at 2 d.f$)$.

2. Write an essay about sampling technique with suitable examples.

II. Short Notes. Write briefly on the following. (10 × 5 = 50)

1. Tabulation.
2. Ogives of cumulative frequency curve.
3. Measures of Dispersion OR variability.
4. Calculate the normal range at 95% for the blood glucose level of the 1000 persons.

Blood glucose level	70–80	80–90	90–100	100–110
No. of persons	22	120	343	367
Blood glucose level	110–120	120–130	130–140	Total
No. of persons	77	43	28	1000

AUGUST - 2005

5. **Sampling distribution.**

6. **Std. Error of difference between two means.**

7. **Polymorph count was 350 out of 500 WBCs. At 95% confidence level within what limits the population proportion will lie?**

8. **Correlation.**

9. **Population census.**

10. **The 1991 census population of the town was 10,000 and 2001 census was 12,000 population. During the year 2003 the following vital events were recorded. Live births 200. Deaths 95. Infant deaths 8. Calculate crude birth rate, crude death rate and Infant mortality rate.**

FEBRUARY - 2006

[KO 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Time : Three hours **Maximum : 100 marks**

Theory : Two hours and forty minutes **Theory : 80 marks**

M.C.Q. : Twenty minutes **M.C.Q. : 20 marks**

Answer ALL questions.

I. Long Essay : **(2 × 15 = 30)**

1. Define measures of dispersion of variability with its merits and demerits.

Compute the Mean, Median, Mode, Quartile deviation and Standard deviation for the following data :

Weight of children in kg.	No. of children
60–61	10
61–62	20
62–63	45
63–64	50
64–65	60
65–66	40
66–67	15
Total	240

2. Define Hypothesis. Explain Type I and Type II errors.

In a nutritional study, 100 children were given a usual diet and vitamins A and D tablets. After 6 months, their mean weight was 30 kg with S.D. of 2 kg. While the average weight of the second comparable group of 100 children who were taking the usual diet was only 29 kg with S.D. of 1.8 kg. Can we say that vitamins A and D were responsible for this difference?

II. Short Notes : **(10 × 5 = 50)**

1. Locations.

2. Collection of statistical data.

3. Normal curve.

4. Simple random sampling.

5. Student's 't' test.

6. Determine if there is any association between whooping cough and tonsillectomy. When in a random sample of 100 children of a school 25 had history of tonsillectomy and 60 of whooping cough and 10 had both while 25 had none.

($\chi^2_{0.05}$ = 3.87 at 1 degree of freedom).

7. Standard error of means.

8. Correlation.

9. Collection of Demographic data.

10. The population of a village in 1991 census and 2001 census were 10,000 and 12,000 respectively. During the year 2004 the following vital events were taken place. Births 252, Deaths 102 and infant deaths 10. Calculate the Birth rate, Death rate and Infant mortality rate.

AUGUST - 2006

[KP 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI – Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO STATISTICS

Time : Three hours **Maximum : 100 marks**

Theory : Two hours and forty minutes **Theory : 80 marks**

M.C.Q. : Twenty minutes **M.C.Q. : 20 marks**

Answer ALL questions.

I. Long Essay :

1. (a) Distinguish between primary and Secondary data. What are the various methods by which primary data are collected?

(b) Define 'frequency polygon' and 'frequency curve'. Explain the relation that exists between them.

(10 + 10 = 20)

2. Define locations and discuss their applications. Compute first, second and third quartiles and Semi – Inter quartile range for the following data

Height in (c.m)	Number of students	Height in (c.m)	Number of students
145.0–147.5	2	157.5–160.0	40
147.5–150.0	4	160.0–162.5	40
150.0–152.5	8	162.5–165.0	28
152.5–155.0	18	165.0–167.5	24
155.0–157.5	30	167.5–170.0	6

(15)

3. Define χ^2 test. Does the data provided below indicate any association between literacy and still births?

Educational status of mother

Births	Illiterate	Primary Schools	Middle Schools	High Schools	University	Total
Live births	12	125	97	92	18	344
Still births	2	21	5	6	1	35
Total	14	146	102	98	19	379

(χ^2_{005} = 5.99 at 2 degrees of freedom). **(15)**

AUGUST - 2006

II. Short notes : **(6 × 5 = 30)**

1. What is meant by a 'measure of dispersion'? State the different methods of measuring it.

2. Normal distribution.

3. Discuss estimation of population parameters from a sample with special reference to mean.

4. A random sample of 900 children was found to have a mean fat fold thickness at triceps of 3.4 m.m with a standard deviation of 2.3 m.m. Can it be reasonably regulated as a representative sample of population having a mean thickness of 3.2 m.m.?

5. What is meant by Random sample?

6. Hypothesis.

March-2008

[KS 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Q.P. Code : 322160

Time : Three hours **Maximum : 100 marks**

Answer ALL questions.

I. Long Essay : **(2 × 20 = 40)**

1. (a) Define Mean, Median, Standard deviation and Coefficient of Variation.

(b) Calculate Coefficient of Variation from the following data showing the protein intake of 400 families. **(8 + 12)**

Protein intake/day :	15–25	25–35	35–45	45–55
No. of families :	30	40	100	110
Protein intake/day :	55–65	65–75	75–85	
No. of families :	80	30	10	

2. The following table gives the level of education and the marriage adjustment score based on a survey of married women :

Levels		Marriage Adjustment Score			
		Very low	Low	High	Very high
Education	College	24	97	62	58
	High school	22	28	30	41
	Middle school	32	10	11	20

Test whether there is relationship between the level of education and adjustment in marriage. Given 57, χ^2 for 6 df = 12.592.

II. Short notes : (10 × 6 = 60)

1. Draw less than cumulative frequency curve for the following data :

Class :	4–8	8–12	12–16	16–20	20–24	24–28
Frequency :	6	10	18	30	15	12

2. Find the probability of throwing more than or equal to 10 with two dice.

3. Describe systematic random sampling method.

4. Define sampling distribution and standard error with examples.

5. A new drug was given to 150 cases and it curved 85% of them. Can we consider that 't' is better than the usual drug which curves 75% given 1% Z value is 2.58.

6. The population of a town during 2006 beginning was 10,000. The number of births during 2006 are 1,500, number of deaths are 500 and the number of infant deaths are 100. Calculate crude birth rate, crude death rate and infant mortality rate.

7. What do you mean by Tabulation? Write down the parts of aTable.

8. Performance of two teams A and B are given below :

	A	B
Mean score :	8	14
Standard deviation :	12	8

Which team is better team? Which team is more consistent?

9. Calculate the coefficient of correlation from the following :

X :	10	6	9	12	13	11
Y :	9	4	6	11	13	8

10. In an experiment on immunization cattle from tuberculosis, the following results were obtained

	Affected	Not affected
Inoculated	12	28
Not inoculcated	13	7

Examine the effect of vaccine in controlling the incidence of the disease. Given 5%, χ^2 value for 1 d.f = 3.8.

[KT 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Q.P. Code : 322160

Time : Three hours Maximum : 100 marks

Answer ALL questions.

I. Long Essay : (2 × 20 = 40)

1. Draw histogram and hence find mode and draw both ogive curves and hence find median and quartile deviation from the following data on blood glucose level of 100 persons. (20)

Blood glucose level :	70-80	80-90	90-100	100-110
Number of persons :	20	120	350	370
Blood glucose level :	110-120	120-130	130-140	
Number of persons :	70	40	30	

2. Write an essay about sampling techniques with suitable examples. (20)

II. Write short notes on the following : (10 × 6 = 60)

1. Central tendencies.

2. Normal curve.

3. Standard Error.

4. Correlation.

5. Measures of Sensitivity.

6. Locations.

7. Simple random sampling.

8. Hypothesis.

9. What is meant by a measure of dispersion? State the different methods of measuring it.

10. Discuss estimation of population parameters from a sample with special reference to mean.

[KU 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Q.P. Code : 322160

Time : Three hours Maximum : 100 marks

Answer ALL questions.

I. Long Essay : (2 × 20 = 40)

1. The following are the findings of temperature and Pulse rate. (20)

Temperature:	98	99	100	101	102	103	104	105	100
Pulse rate:	72	80	92	111	116	128	132	130	90

Find out the correlation co-efficient between temperature and Pulse rate. Comment based on correlation co-efficient.

2. The systolic blood pressure of 10 patients with a specified illness is compared with the values observed in 12 comparable normal persons. Test whether the systolic blood pressure of patients and normal persons differ significantly at 5% level of significance (t - value for 20 degrees of freedom is 2.086 at 5%) (20)

Patients :	123	132	160	125	128	135	153
Normal Persons :	110	125	124	104	130	115	136
Patients :	147	118	139				
Normal Persons :	106	138	122	120	110		

II. Write Short notes on the following : (10 × 6 = 60)

1. Measures of Central Tendency.

2. Co-efficient of Variation.

3. Chi-square Test.

4. Analysis of Variance.

5. Data Classification.

6. Crude Birth Rate and Crude Death Rate

7. Normal Distribution.

8. Merits and Demerits of Simple Random Sampling and Systematic Random Sampling.

9. Various tests of significance.

10. Measures of Morbidity Indicators.

September - 2009

[KV 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Q.P. Code : 322160

Time : Three hours Maximum : 100 marks

Answer ALL questions.

I. Long Essay : (2 × 20 = 40)

1. The pulse and respiratory rates recorded per minute for same group of 62 in patients of a certain public hospital are as given below :

(a)

Pulse rate :	70–74	75–79	80–84
Number of patients :	8	5	24
Pulse rate :	85–89	90–94	95–99
Number of patients :	4	14	7

(b)

Repiratory rate :	14–16	17–19	20–22
Number of patients :	10	19	17
Repiratory rate :	23–25	26–28	29–31
Number of patients :	9	4	3

Determine mean and standard deviation and find out which of the two rate is more consistent?

2. Fasting blood sugar in mg% of patients receiving 3 different treatment (Say A, B and C) are tabulated below :

Treatment A	Treatment B	Treatment C
100	110	80
90	120	80
80	130	90
110	120	70
120	110	70
	130	80
		90

Find out whether there is significant difference between these treatments.

II. Write short notes on the following : (10 × 6 = 60)

1. Methods of sampling.

2. Probability.

3. Correlation.

4. Collection of Demographic data.

5. Vital statistics.

6. Paired-t-test.

7. Simple random sampling.

8. A newer drug has duration of action in the body with a mean of 10 hours and standard deviation of 2 hours. How frequently one can expect a duration of action of 4 hours or less? (Area in relation to Z value –3 is 0.0013)

9. Charts and diagrams.

10. Infant mortality rate and maternal mortality rate.

March 2010

[KW 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Q.P. Code : 322160

Time : Three hours Maximum : 100 marks

Answer ALL questions.

I. Long Essay : (2 × 20 = 40)

1. The following data show the number of children born to 350 women.

No. of Children	No. of Women
0	171
1	82
2	50
3	25
4	13
5	7
6	2

(a) Calculate the mean number of children born per women.

(b) Determine Median, Range and Standard Deviation.

(c) Draw a suitable diagram for the above data's.

2. Diastolic blood pressure of 16 cardiologists and 17 dermatologists was given. Calculate is there any significant difference in between the two groups.

D.B.P. of cardiologists : 80 88 90 94 96 100 102 100 102

D.B.P. of dermatologists : 90 82 88 92 96 94 98 100 80

D.B.P. of cardiologists : 100 104 106 78 92 102 110

D.B.P. of dermatologists : 88 92 100 94 96 102 80 78

II. Write short notes on the following : $(10 \times 6 = 60)$

1. Standard Error.

2. One Tailed and Two Tailed Test.

3. Parametric and Non-Parametric Test.

4. Positional Averages.

5. Point and Interval Estimation.

6. Advantages of Sampling Techniques.

7. Crude and Standardized Death Rates.

8. Define 't' test, give different situations in which the unpaired and paired 't' tests are applied.

9. Power and Effect Size.

10. Correlation and Regression Analysis.

September 2010

[KX 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Q. P. Code : 322160

Time : Three hours Maximum : 100 marks

Answer ALL questions.

I. Long Essay : (2 × 20 = 40)

1. In a study of the effect of a dietary component on plasma lipid composition, the following data were obtained on a sample of 10 experimental animals.

Measure of dietary component (X) :	18	21	28	35	47	33	40	41	23	30
Measure of plasma lipid level (Y) :	38	40	47	54	66	52	59	60	47	40

Obtain the correlation coefficient and regression equations for these data and estimate Y when $X = 45$.

2. (a) Define coefficient of variation. Discuss the significance of its representing results of the study.

(b) Define a sample. Describe the different types of sampling techniques with appropriate examples.

II. Short notes : (10 × 6 = 60)

1. Explain Internal and External validity.

2. What is meant by hypothesis? Explain null and alternative hypothesis.

3. Explain the sources and methods of collecting data.

4. Explain the reliability of the tool.

5. Explain the elements of a table with an example.

6. Normal distribution.

7. Chi-square test and its uses.

8. Sources of health statistics.

9. Sector diagram.

10. Quantitative data.

MAY 2011

[KY 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

(New/Revised Regulations)
First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Q.P. Code : 322160

Time : Three hours **Maximum : 100 marks**

Answer ALL questions.

I. Long Essay : **(2 x 20 = 40)**

1. Define the various measures of central tendency and various measures of dispersion. Calculate the coefficient of variation for the following 10 serum protein levels.

   6.1, 6.7, 8, 6.6, 7.1, 7.1, 7.2, 7, 7.4, 6.8

2. (a) The following table gives the number of aircraft accidents that occurred during the week. Find whether the accidents are uniformly distributed over the week.

Day	:	SUN	MON	TUE	WED	THU	FRI	SAT
No. of accidents	:	14	16	8	12	11	9	14

   (Given 5% x^2 value for 6 df = 12.59).

   (b) A three digit number is chosen at random. What is the probability that the sum of two digits is (i) 20 and (ii) 25?

   (c) Calculate the correlation coefficient and write down the regression equations for the following **$n = 10, \sum x = \sum y = 0 \sum x^2 = \sum y^2 = 60 \sum xy = 57.$**

(7 + 6 + 7)

II. Short notes : **(10 x 6 = 60)**

1. Tabulation.
2. Normal distribution.
3. Stratified random sampling.
4. Type I and type II errors.
5. t test and its applications.
6. Large sample tests.
7. Presentation of research work.
8. Sample registration system.
9. Family planning programme.
10. Life table and its uses.

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[LA 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION.

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Q.P. Code : 322160

Time : Three hours **(180 minutes)** Maximum : 100 marks

Answer ALL questions **in the same order.**

			Pages (Max.)	Time (Max.)	Marks (Max.)
I.	**Elaborate on :**				
1.	(a)	Define normal distribution. Write down the important properties of normal distribution. (10)	**11**	**35 min.**	**20**
	(b)	Calculate the correlation coefficient from the following data : (10)			

Age (years) :	35	45	55	65	75
Systolic blood pressure :	120	140	150	160	170

2.	(a)	Protein diet was given to 10 children for 6 months. Before and after 6 months the weights of the children were recorded as follows : (12)								**11**	**35 min.**	**20**
	Before :	29	21	17	21	22	17	19	18	21	15	
	After :	32	23	26	32	26	18	22	21	22	18	

Examine whether the gain in weight is statistically significant or not.

(Given 5% t value for 9 df = 2.26).

(b) In a large city 25% of a random sample of 900 school children had defective eye sight. In another city 15% of a random sample of 1600 school children had the same eye defect. Is this difference significant? (8)

(Given 1% Z value is 2.58).

II.	**Write notes on :**			
1.	Formation of frequency distribution.	**4**	**10 min.**	**6**
2.	Define mean and median.	**4**	**10 min.**	**6**

3.	Coefficient of variation and its uses.	**4**	**10 min.**	**6**
4.	Simple random sampling.	**4**	**10 min.**	**6**
5.	Parameter and statistics.	**4**	**10 min.**	**6**
6.	Steps followed in test of significance.	**4**	**10 min.**	**6**
7.	Sampling distribution and standard error.	**4**	**10 min.**	**6**
8.	Analysis of variance.	**4**	**10 min.**	**6**
9.	Registration of vital statistics.	**4**	**10 min.**	**6**
10.	Mortality and morbidity rates.	**4**	**10 min.**	**6**

[LB 534] **Sub. Code : 2160**

M.D. (SIDDHA) DEGREE EXAMINATION - OCTOBER 2012

First Year

Branch VI — Nanju Noolum Maruthuva Neethi Noolum

Paper V — BIO-STATISTICS

Q.P. Code : 322160

Time : 180 minutes Maximum : 100 marks

Answer ALL questions in the same order.

		Pages (Max.)	Time (Max.)	Marks (Max.)
I.	**Elaborate on :**			
1.	Two different types of drugs A and B were tried for increasing the weight. 5 persons were given drug A and 7 persons were given Drug B. The increase in weight in kgs is given below. Drug A : 8 12 13 9 3 Drug B : 10 8 12 12 6 8 11 Do the drugs differ significantly with regard to their mean increase in weights? (Given 5% t value for 10 degrees of Freedom = 2.21)	**11**	**35 min.**	**20**
2.	(a) Define Mean, median and standard deviation. (b) Erythrocyte sedimentation rates (ESR) of 7 subjects are 7, 5, 3, 4, 6, 4, and 5. Calculate mean and Quartile deviation.	**11**	**35 min.**	**20**
II.	**Write notes on :**			
1.	Formation of frequency distribution.	**4**	**10 min.**	**6**
2.	Various sampling methods.	**4**	**10 min.**	**6**
3.	Sampling distribution and standard error.	**4**	**10 min.**	**6**
4.	In a large city 25% of a random sample of 900 school children had defective eye sight. In another city 15% of a random sample of 1600 children had same eye defect. Is this difference significant? (Given 5% Z value is 1.96).	**4**	**10 min.**	**6**

5.	Define Correlation and calculate correlation coefficient from the following data : X : 10 6 9 12 13 10 Y : 9 4 6 11 13 07	**4**	**10 min.**	**6**
6.	Explain various research methods.	**4**	**10 min.**	**6**
7.	Population Census.	**4**	**10 min.**	**6**
8.	Reproduction rates and standardized death rates.	**4**	**10 min.**	**6**
9.	How will you test the independence of two attributes?	**4**	**10 min.**	**6**
10.	Distinguish between Life Table and Abridged Life Table with example.	**4**	**10 min.**	**6**

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[LC 534] **SUB CODE: 2160**

M.D. (SIDDHA) DEGREE EXAMINATION – APRIL 2013

FIRST YEAR

BRANCH IV- Nanju Noolum Maruthuva Neethi Noolum

PAPER V – BIO-STATISTICS

Q.P.Code : 322160

Time : 3 hours **Maximum: 100 marks**

I. Long essay: **(2x20=40)**

1. Fasting blood sugars in mg% of patients receiving 3 different treatments (say A, B & C) are listed below.

A- 100,	90,	80,	110,	120,	140,	130,	110,	115
B- 110,	120,	130,	120,	110,	130,	100,	90,	100
C- 80,	80,	90,	70,	70,	80,	90,	90,	

a. Write about suitable test of significance for the above data.

b. Comment whether thre is significance difference between these treatment by employing appropriate significance test (Table value of F (2, 23) = 5.66)

2. The following are the heights in cms of a random sample of 30 boys at age two years

84.4	87.0	80.6	83.4	85.0	85.4	89.2	78.5	80.0	89.8
82.5	85.0	89.0	84.1	81.3	85.4	80.7	85.5	81.9	86.3
81.2	83.4	88.0	81.9	87.8	80.6	81.9	83.8	85.0	88.0

a. Find the mean and standeat deviation of the heighs of this sample of boys.

b. Determine 95% and 99% confidence interval.

II. Short notes: **(10x6=60)**

1. Describe the use of co-efficient of variation with an example.
2. Describe tabulation procedures.
3. Describe various diagrams used in descriptive statistics
4. Explain testing of hypothesis.
5. Define Probability and give an example
6. What is sampling variation?
7. Write about research protocol.
8. What are IMR and MMR indicators in public health and its formula?
9. Explain the life table construction.
10. Explain the uses of biostatistics in Health Research.

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[LD 534] **SUB CODE: 2160**

M.D. (SIDDHA) DEGREE EXAMINATION – OCTOBER 2013

FIRST YEAR

BRANCH IV- Nanju Noolum Maruthuva Neethi Noolum

PAPER V – BIO-STATISTICS

Q.P.Code : 322160

Time : 3 hours **Maximum: 100 marks**

I. Long essay: **(2x20=40)**

1. Haemoglobin level of students (in gm%) are as given below.

   9 10 11 9 10 10 15 14 13 12 11
   10 9 10 11 12 14 14 15 13 13 12
   14 11 12.

   a. Draw a histogram. Find mean and standard deviation to understand the variation.

   b. Apply a suitable significance test whether the sample belongs to population mean Haemoglobin level of 12. The 't' value for 24 d. f=2.06at p=0.05.

2. The age (X) and systolic blood pressure (Y) of 11 persons are given below

   Age (X): 48 55 53 47 59 57 42 38 60 50 58
   BP (Y) : 151 160 153 146 165 160 140 135 170 155 153

   a. Determine the correlation coefficient between X and Y

   b. Fit a linear regression equation of Y on X and estimate the systolic blood pressure of a person of 40 years age.

II. Short notes: **(10x6=60)**

1. Explain various types of data and one example for each of them.
2. The average incubation period of rabies in three risk groups is 30,40 and 50 days. There are 50,60 and 70 patients respectively in each risk group. Calculate overall average incubation period for rabies.
3. Explain different graphs used in describing the data.
4. Explain Merits and Demerits of sampling
5. Write additive and multiplicative laws of probability
6. Define characteristics of normal distribution
7. Explain the different steps in Test of significance.
8. Describe birth and death rates used in vital statistics.
9. Describe about prevalence and incidence rates.
10. Explain experiment research in drug testing.

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[LE 534] **APRIL 2014** **Sub.Code :2160**

M.D. (SIDDHA) DEGREE EXAMINATION

FIRST YEAR

Branch VI – Nanju Noolum Maruthuva Neethi Noolum

PAPER – V : BIO-STATISTICS

Q.P. Code : 322160

Time: Three hours **Maximum : 100 Marks**

Answer All questions in the same order

I. Elaborate on: **(2 X 20 = 40)**

1. Blood cholesterol level mg% of randomly selected 10 patients in three treatment groups are as follows

   Treatment - A: 140 155 205 210 165 180 190 130 140 170

   Treatment –B: 170 180 190 170 180 165 170 185 190 175

   Treatment –C: 210 190 220 205 190 195 185 190 195 200

   Apply suitable significance test and draw inference about the treatments.

2. Calculate correlation co-efficient between Haemoglobin and Packed Cell Volume for the given below values

Hb	6.2	12.2	6.4	7.3	13.0	8.4	13.0	9.9
	10.4	9.7	11.3	12.6	13.0	9.1	8.3	9.5
	11.6	8.6	6.1	8.5	6.6	7.2	10.3	12.3
	11.9	10.0						
PCV	18.0	37.0	21.0	23.0	36.0	28.0	38.0	33.0
	34.0	30.0	35.0	37.5	37.0	26.0	30.0	26.0
	27.0	19.0	26.0	34.0	23.0	24.0	32.0	37.0
	33.0	37.0						

II. Short Notes: **(10 X 6 = 60)**

1. Define statistics and its use in health research.
2. Different methods of data collection with examples.
3. Charts in data presentation.
4. Correlation and its use.
5. Paired ‘t’ test.
6. Normal distribution.
7. Prevalence and Incidence.
8. Probability.
9. Co-efficient of variation with example.
10. Protocol for clinical research.

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[LF 2160] **OCTOBER 2014** **Sub. Code: 2160**

FIRST PROFESSIONAL B.S.M.S. DEGREE EXAMINATION

BRANCH VI – NANJU MOOLAUM MARUTHUVA NEETHI NOOLUM
PAPER V – BIO-STATISTICS

Q.P. Code : 322160

Time : Three hours **Maximum : 100 marks**

I. Elaborate on : **(2 x 20 = 40)**

1. a) Apply suitable test of significance and draw conclusion whether blood group independent of sex

	Blood group			
	O	A	B	AB
Male :	65	20	80	10
Female :	50	25	75	10

(X^2 = 7.81 for 3 d.f. at 5% level of significance)

b) The ESR of patients before and after treatment for 15 patients are given below. Apply paired 't' test and determine the effectiveness of treatment

Before : 8 12 16 10 6 15 18 24 28 42 20 14 16 18 14

After : 6 8 8 10 6 4 8 10 12 14 8 10 12 10 12

(t = 2.98 for 14 d.f. at 1% level of significance)

2. a) List five rates for each category – Birth and Death and its formula for calculation for understanding the public health phenomena.

b) Explain the Research Protocol concepts.

II. Write notes on: **(10 x 6 = 60)**

1. Types of data collection
2. Uses of Mean and Standard Deviation
3. Correlation and its use
4. Testing of Hypothesis procedure
5. Addition and Multiplication Rule of Probability
6. Uses of Statistics in Research
7. Different methods of sampling units drawn in SRS
8. Rates, Ratio, Percentage
9. Reference citing styles
10. Sample size calculation pre-requisites

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[LG 2160] **APRIL 2015** **Sub. Code: 2160**

M.D. (SIDDHA) DEGREE EXAMINATION

FIRST YEAR

BRANCH VI – NANJU NOOLUM MARUTHUVA NEETHI NOOLUM

PAPER V – BIO-STATISTICS

Q.P. Code : 322160

Time: Three Hours **Maximum : 100 Marks**

Answer ALL questions in the same order

I. Elaborate on: **(2 x 20 = 40)**

1. Mean, Median, Mode, Standard deviation and Co-efficient of variation – formula, merits and demerits.

2. Write a Protocol for studying the exploratory therapeutic effect of a drug for Hypertension.

II. Write notes on: **(10 x 6 = 60)**

1. Types of data with examples.
2. Box plot diagram.
3. Lottery methods and Random number method for Sampling.
4. Ch-square test.
5. Sampling and Non-Sampling errors.
6. Different study designs.
7. Direct and Indirect standardised rates.
8. Prevalence and Incidence rates.
9. Pre-Clinical Research.
10. Paired ‘t’ test.

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[LH 2160] **OCTOBER 2015** **Sub. Code: 2160**

M.D. (SIDDHA) DEGREE EXAMINATION

FIRST YEAR

BRANCH VI – NANJU NOOLUM MARUTHUVA NEETHI NOOLUM

PAPER V – BIO-STATISTICS

Q.P. Code : 322160

Time : Three Hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Blood sugar level of patients at fasting, reported at a Hospital are 70, 90, 110, 140, 85, 88, 90, 77, 102, 130, 90, 120, 71, 91, 111, 141, 86, 89, 91, 78, 103, 92, 121, 93, 112, 180, 123, 144, 123, 112, 116, 145, 154, 134, 189, 195, 201, 220, 120, 145, 167, 123, 189, 187, 165, 149, 223, 228, 176, 145, 189, 176, 123, 156, 176, 186, 145, 164, 185, 167, 154, 132, 111, 187, 190, 180, 90, 110, 140, 85, 88, 90, 77, 102, 130, 90, 120, 71, 91, 111, 141, 86, 89, 91, 78, 103, 92, 121, 93, 112, 180, 123, 144, 123, 112, 116, 145, 154, 134, 189, 195, 201, 220, 120, 142, 167, 123, 189, 187, 165, 149, 178, 134, 165, 187, 156, 198, 145, 176.

   a. Develop a table of presentation for the above data.
   b. Calculate Mean, Median, Mode and draw frequency curve for the table.

2. SGOT level of patients before and after treatments are given below.

Before	79	268	58	54	85	79	52	52	64	113	80	30	134
	123	169	176	35	19	235	44						
After	35	40	38	15	29	31	24	19	30	29	39	23	36
	22	25	41	21	19	40	31						

   a. Determine mean and standard deviation and comment on the results.
   b. Determine the statistical significance of treatment for the above data by applying the hypothesis test procedure. The ‘t’ value for 19 d. f=2.09 at p=0.05.

II. Write notes on: **(10 x 6 = 60)**

1. The number of patients taking treatment in a Hospital is as follows
   Male Adult – 180, Male Child – 30, Female adult – 90, Female Child – 60
   Draw a suitable diagram.
2. Write the procedure and uses of chi-square test.
3. Describe confidence interval for an estimate.
4. Explain the sampling and Non Sampling errors.
5. What is correlation? Explain different ranges of correlation.
6. Write about the ANOVA procedure used in test of significance.
7. Write a few public health measurements to understand the dynamics of the disease.
8. What is research? Explain different methods in Health Research.
9. Define different characteristics of normal distributions.
10. Write about census procedure in India.

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[LI 2160] APRIL 2016 **Sub. Code: 2160**

M.D. (SIDDHA) DEGREE EXAMINATION
FIRST YEAR
BRANCH VI – NANJU NOOLUM MARUTHUVA NEETHI NOOLUM
PAPER V – BIO-STATISTICS

Q.P. Code : 322160

Time : Three Hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. BMI of 3 arms of randomly allotted treatment groups is as follows

Group I :	18	24	30	28	23	25	26	21	19	32
	19	29	32	34	29	27	25	20	20	22
Group II:	21	22	19	24	25	26	22	24	23	21
	22	20	22	21	20	24	28	23	21	20
Group III:	21	31	33	30	34	31	29	27	25	24
	20	22	18	19	20	25	24	23	26	27

a) Explain the procedure for ANOVA.

b) Apply ANOVA test for the above data and draw inference about its homogeneity (F (2,57) = 5.02 for 0.05 level of significance).

2. a) Elaborate on correlation and regression methods.
   b) Elaborate on use of chi-square test in clinical Research.

II. Write notes on: **(10 x 6 = 60)**

1. Application of Biostatistics.
2. Tabulation procedure.
3. Probability and its use in significance.
4. Coefficient of variation.
5. Sampling methods.
6. Different phases of clinical studies.
7. Vital Statistics and its indicators.
8. Life Table.
9. Role of IEC in clinical research.
10. Type – I and Type – II errors in testing of Hypothesis.

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[LJ 2160] OCTOBER 2016 **Sub.Code :2160**

M.D. (SIDDHA) DEGREE EXAMINATION

FIRST YEAR

BRANCH VI – NANJU NOOLUM MARUTHUVA NEETHI NOOLUM

PAPER V – BIO-STATISTICS

Q.P. Code : 322160

Time: Three Hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Distribution of Body constitution and Gender of patients attending OPD.

Gender	Body Constitution		
	Vali	Azhal	Iyam
Male	250	300	450
Female	375	360	265

   a) Apply suitable statistical test and determine whether Body constitution is associated with gender? ($X^2 = 4.99$).
   b) Elaborate on Tabulation and Graphs procedures used for presentation of data.

2. Develop a Good Clinical Protocol for testing the efficacy of Siddha Medicine for Psoriasis against a modern medicine through Randomised Control Trial (RCT) design.

II. Write notes on: **(10 x 6 = 60)**

1. Types of data with examples.
2. Summary measures of Data.
3. Uses of sampling methods.
4. Testing of Hypothesis.
5. Role of IEC.
6. MMR, IMR and its interpretation.
7. Toxicity studies.
8. ANOVA.
9. Rank Correlation.
10. Normal Distribution.

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[LK 2160] MAY 2017 **Sub.Code :2160**

M.D. (SIDDHA) DEGREE EXAMINATION

FIRST YEAR

BRANCH VI – NANJU NOOLUM MARUTHUVA NEETHI NOOLUM

PAPER V – BIO-STATISTICS

Q.P. Code : 322160

Time: Three Hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Random Blood sugar level and Total Cholesterol of 30 patients are as follows:

Sugar(Y)	160	85	158	170	95	100	120	78
	190	90	220	100	166	110	175	180
	170	164	168	154	155	148	163	120
	160	145	158	180	165	166		
T.Chol.(X)	210	140	160	225	160	155	170	140
	230	150	250	150	160	150	180	220
	210	200	205	200	210	200	220	160
	240	155	170	210	200	210		

   a) Examine the relationship between two variables by suitable statistical tool.
   b) Fit a linear regression equation of Y on X and estimate value of Sugar level for a patient with Total Cholesterol is 190.

2. Hemoglobin value of Anemic male patients of three groups receiving 3 different treatments (say A, B & C) are listed below.
   A – 12, 15, 14, 12, 12, 14, 11, 10, 12, 14, 13, 15, 10, 12, 13, 14, 15, 16, 13, 14, 12
   B – 11, 10, 13, 12, 11, 13, 11, 09, 12, 11, 10, 09, 08, 10, 11, 10, 11, 12, 10, 11, 10
   C – 08, 08, 09, 07, 08, 08, 09, 90, 10, 10, 11, 10, 09, 11, 12, 10, 11, 10, 10, 09, 08
   Comment on whether there is significant difference amongst these treatment by employing appropriate significance test (Table value of $F(2,60) = 4.98$).

II. Write notes on: **(10 x 6 = 60)**

1. Types of Graphs used in health data.
2. Standard deviation and Co-efficient of variation.
3. Different types of Sampling procedures.
4. Type-I and Type-II error in Test of Significance.
5. Use of Paired – ‘t’ test.
6. Confidence Intervals.
7. Hospital statistics.
8. Preclinical Research.
9. Reference citing.
10. Prevalence and Incidence measurements.

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[LL 2160] OCTOBER 2017 **Sub. Code: 2160**

M.D. (SIDDHA) DEGREE EXAMINATION

FIRST YEAR

BRANCH VI – NANJU NOOLUM MARUTHUVA NEETHI NOOLUM

PAPER V – BIO-STATISTICS

Q.P. Code : 322160

Time: Three Hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Blood Urea level of 20 patients each tested for efficacy of two drugs is as follows

Drug-1	36	40	42	38	37	55	44	46
	28	16	34	56	42	43	32	28
	26	28	26	36				
Drug-2	28	58	39	56	59	38	37	36
	48	43	48	52	56	41	44	28
	50	41	39	38				

   a) Determine Mean and Standard deviation for two treatments.

   b) Apply suitable statistical significance test and say whether two treatment effects are equal (t=2.02 for 38 d.f.)

2. a) Different Phases of Clinical Studies for testing new Siddha Medicine.

   b) Publication of an Article format and its contents.

II. Write notes on: **(10 x 6 = 60)**

1. Importance of Data collection and documentation.
2. Mean and Median.
3. Application of Probability.
4. Sampling and Non Sampling Errors.
5. Correlation.
6. Birth Rate, Death Rate, Growth Rate.
7. Type-I and Type-II errors.
8. Research and types of research.
9. Chi-Square test.
10. Role of IEC in research.

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[LM 2160] MAY 2018 **Sub. Code: 2160**

M.D. (SIDDHA) DEGREE EXAMINATION

FIRST YEAR

BRANCH VI – NANJU NOOLUM MARUTHUVA NEETHI NOOLUM

PAPER V – BIO-STATISTICS

Q.P. Code : 322160

Time: Three Hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. HbA1c level and Tea consumption status of population in a town

	HbA1c			
Tea consumption (Number of cups)	<6%	6-7%	7-8%	8-9%
< 4	800	100	50	10
< 6	300	75	30	10
≥ 6	200	150	50	20

Apply chi-square test and determine the significance of association between HbA1c and Tea consumption by specifying the procedures for test of significance.

2. Height in cm of 30 students is as follows

Height	155	158	160	170	160	175	180	156
	165	152	154	164	166	170	175	172
	170	164	168	154	155	148	163	166
	160	145	158	180	165	166		

a) Calculate mean and standard deviation.
b) Calculate 95% and 99% confidence interval.
c) Calculate median and mode.
d) Determine whether it is symmetrical.

II. Write notes on: **(10 x 6 = 60)**

1. Types of data with examples.
2. Box plot diagram.
3. Lottery methods and Random number method for Sampling.
4. Merits and Demerits of Mean, Median and Mode.
5. ANOVA.
6. Confidence Interval.
7. Vital Statistics.
8. Hospital Statistics.
9. Role of IEC in clinical research.
10. Importance of Sample size.

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