

CHAPTER 1 : VITAL STATISTICS

ONE MARK,TWO MARKS QUESTIONS

1.What is vital statistics?

Ans: Vital statistics is the science applied to the analysis and interpretation of numerical Facts regarding vital events occurring in a human population.

2.Explain the methods of obtaining vital statistics.

Ans: Different methods of obtaining vital statistics are

- a) registration method-here vital events such as births, deaths etc are continuously recorded. The government etc authorities like gram panchayats, municipalities etc record the data of vital events. This method is successful when registration becomes compulsory.
- b) census enumeration method-in most of the countries census enumeration is conducted once in ten years. Here data is collected regarding religion, educational status etc. information is obtained only for census year.

3.State the formula to measure the population at time t.

Ans: $P_t = P_0 + (B-D) + (I-E)$.

4.State the uses of vital statistics.

Ans: a)They are useful in medical research.
b)They are essential in demographic research.

5.Define fertility and fecundity.

Ans: Fertility refers to the births occurring to women of child bearing age(15-49 years).
Fecundity refers to the capacity of a woman to bear children.

6.Define Mortality.

Ans: Mortality refers to deaths occurring in the population due to sickness, accident etc.

7.What is Infant mortality rate?

Ans: Infant mortality rate is defined as average number of infant deaths per thousand live births in a year.or children die before they attain age of one year.

8.What is Neo natal mortality rate?

Ans:Neo natal mortality rate is defined average number of neo natal deaths (death before the child attains 1 month of age)per 1000 live births in a year.

9. What is maternal mortality rate?

Ans: Maternal mortality rate is defined as average number of deaths among mother due to child birth per 1000 births in a year.

10.Define Cohort.

Ans:Cohort is a group of individuals who are born at the same time & who experience the same mortality conditions.

11.What is Radix?

Ans:Radix is the size of the cohort(Generally 100000).

12. What is longevity?

Ans: Longevity is the expected number of years that a new born baby would live.

13. What are vital events ?

Ans : Vital events are births deaths, marriage , divorce, etc.,

14. What is Demography?

Ans : Demography concerned with human population and it is also concerned with the social implication of population variance.

15. What are the importance and uses of life table?

Ans: Life tables are useful in planning, administration , population control, public health care etc.,

5 MARKS QUESTIONS

1. From the following data calculate TFR, GFR and ASFR.

Age(years)	Women Population	No.of births to women
15-19	84790	343
20-24	70010	14541
25-29	72660	16736
30-34	75920	12218
35-39	75100	756
40-44	71620	82
45-49	66660	45

Solution :

Age(years)	Women Population	No.of births to women	ASFR
15-19	84790	343	4.5
20-24	70010	14541	207.7
25-29	72660	16736	230.33
30-34	75920	12218	160.93
35-39	75100	756	10.07
40-44	71620	82	1.15
45-49	66660	45	0.68

TOTAL	516760	44721	614.91
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$$\text{GFR} = \frac{\text{No.Of live births occurring in the year} \times 1000}{\text{Average population of women of child bearing age}}$$

$$= \frac{44721}{516760} \times 100 = 86.54$$

$$\text{TFR} = 5 \times \Sigma \text{ASFR} = 5 \times 614.91 = 3074.55 \text{ per thousand women.}$$

2. Calculate Net Reproduction Rate from the following data.

Age	Women Population	Survival rate	No of female birth
15-19	4907	0.956	101
20-24	4817	0.947	431
25-29	4441	0.937	316
30-34	3911	0.929	161
35-39	3684	0.917	68
40-44	3371	0.905	26
45-49	2911	0.890	9

Solution :

Age	Women Population	Survival rate	No of female Birth	WSFR	S X WSFR
15-19	4907	0.956	101	20.6	19.69
20-24	4817	0.947	431	89.5	84.76
25-29	4441	0.937	316	71.2	66.86
30-34	3911	0.929	161	41.2	38.27
35-39	3684	0.917	68	18.4	16.87
40-44	3371	0.905	26	7.7	6.97
45-49	2911	0.890	9	3.1	2.76

TOTAL	2842				236.18
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$$NRR = i \times \sum Sx \text{ WSFR}$$

$$= 5 \times 236.18$$

$$= 1180.9$$

$$NRR \text{ per women} = \frac{1180.9}{1000} = 1.1809$$

Since the value is greater than 1 the population is increasing.

3. Calculate Gross Reproduction Rate from the following data.

Age	Women Population	No of female Birth
15-19	54000	2371
20-24	52000	8935
25-29	49000	8414
30-34	46000	4072
35-39	41000	1846
40-44	36000	437
45-49	31000	184

Solution:

Age	Women Population	No of female Birth	WSFR
15-19	54000	2371	43.91
20-24	52000	8935	171.83
25-29	49000	8414	171.71
30-34	46000	4072	88.52
35-39	41000	1846	45.02
40-44	36000	437	12.14

45-49	31000	184	5.94
TOTAL	309000	26259	539.07

$$GRR = i \times \text{WSFR}$$

$$= 5 \times 539.07 = 2695.35$$

$$GRR \text{ per women} = \frac{2695.35}{1000} = 2.695$$

Since this number is greater than 1 population is increasing.

TEN MARKS QUESTIONS

1. For the following data compute standardised death rates in two towns A and B. Which town is healthier ?

Age group (in years)	Town A		Town B		Standard Population
	Population	Deaths	Population	Deaths	
0 – 10	4000	36	3000	30	2000
10 -25	12000	48	20000	100	3000
25 – 60	6000	60	4000	48	6000
60 and above	8000	152	3000	60	4000

Solution :

For Town A

Age group (in years)	Town A		ASDR [A]	Standard Population [P]	PA
	Population	Deaths			
0 – 10	4000	36	9	2000	18000
10 -25	12000	48	4	3000	12000
25 – 60	6000	60	10	6000	60000
60 and above	8000	152	19	4000	76000
				15000	166000

$$\text{SDR} = \frac{\Sigma PA}{\Sigma P} = \frac{166000}{15000} = 11.06$$

For Town B

Age group (in years)	Town B		ASDR [B]	Standard Population [P]	PB
	Population	Deaths			
0 – 10	3000	30	10	2000	20000
10 -25	20000	100	5	3000	15000
25 – 60	4000	48	12	6000	72000
60 and above	3000	60	20	4000	80000
				15000	187000

$$\text{SDR} = \frac{\Sigma PB}{\Sigma P} = \frac{187000}{15000} = 12.46$$

Comment : Town A is more healthier as death rate is low.

2. Compute Standardised death rate for the towns A and B by taking town A as the standard population. Find which city is more healthy.

Age group (years)	Town A		Town B	
	Population	Deaths	Population	Deaths
Below 5	35000	360	80000	1000
5 – 30	40000	400	100000	1040
Above 30	20000	280	16000	240

Solution :

Town A

Age group (years)	Town A		ASDR A	PA
	Population	Deaths		
Below 5	35000	360	10.2857	360000
5 – 30	40000	400	10	400000

Above 30	20000	280	14	280000
	95000			1040000

$$\text{SDR} = \frac{\Sigma PA}{\Sigma P} = \frac{1040000}{95000} = 10.95$$

For Town B

Age group (years)	Town B		ASDR	Standard	PB
	Population	Deaths	A	Population [P]	
Below 5	80000	1000	12.5	35000	437500
5 – 30	100000	1040	10.4	40000	416000
Above 30	16000	240	15	20000	300000
				95000	1153500

$$\text{SDR} = \frac{\Sigma PB}{\Sigma P} = \frac{1153500}{95000} = 12.14$$

Conclusion : Town A is more healthier.

3. From the following data calculate standardised deathrate and hence find out which Town is healthier.(take Town B as standard)

Age group (years)	Town A		Town B	
	Population	Death per 1000	Population	Death per 1000
0-9	400	40	600	30
10-19	1500	4	1000	5
20-59	2400	10	3000	8
60 & above	700	30	400	50

Solution :

Here Deaths per 1000 means ASDR.

Age group	Town A	Town B
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(years)	P (St.popln)	A=ASDR	PA	B = ASDR	PB
0-9	600	40	24000	30	18000
10-19	1000	4	4000	5	5000
20-59	3000	10	30000	8	24000
60 & above	400	30	12000	50	20000
	5000		70000		67000

$$\text{SDR (for town A)} = \frac{\sum PA}{\sum P} = \frac{70000}{5000} = 14$$

$$\text{SDR (for town B)} = \frac{\sum PB}{\sum P} = \frac{70000}{5000} = 13.4$$

Town B is healthier.