International Institute of Health Management Research (IIHMR)
NEW DELHI
Batch- 2020-22
Term Exams: April 2022

Time – 2 Hrs **Total marks: 70**

Bio-Statistics -604

SECTION I

Attempt any two questions (Please Write Max 2 page) (17*2=34 Marks)

Q 1. Define Data and Describe **five** suitable source of data.

Q2. Describe in detail **any 4 ways** (Simple Random Sampling, Systematic Sampling, Stratified Sampling, Cluster Sampling, Multistage Sampling etc) of drawing most common probability samples.

Q3. What are characteristics of the Binomial distribution and normal distribution?

SECTION II

Each question should be scanned and uploaded separately

Attempt any two questions (18*2=36 Marks)

Q 1. **The Probability of Dying after a Heart Attack-** The likelihood that a patient with a heart attack dies of the attack is 0.04 (i.e., 4 of 100 die of the attack). Suppose we have 5 patients who suffer a heart attack, **What is the probability that all will survive?**

Q 2. A small study is conducted involving 17 infants to investigate the association between gestational age at birth, measured in weeks, and birth weight, measured in grams..

Find Pearson correlation coefficients (r) of Gestational Age and Birth Weight?

Infant ID #	Gestational Age (wks) X	Birth Weight (gm) Y	XY	X2	Y2
1	34.7	1895	65756.5	1204.09	3591025
2	36.0	2030	73080	1296	4120900
3	29.3	1440	42192	858.49	2073600
4	40.1	2835	113683.5	1608.01	8037225
5	35.7	3090	110313	1274.49	9548100
6	42.4	3827	162264.8	1797.76	14645929
7	40.3	3260	131378	1624.09	10627600
8	37.3	2690	100337	1391.29	7236100
9	40.9	3285	134356.5	1672.81	10791225
10	38.3	2920	111836	1466.89	8526400

11	38.5	3430	132055	1482.25	11764900
12	41.4	3657	151399.8	1713.96	13373649
13	39.7	3685	146294.5	1576.09	13579225
14	39.7	3345	132796.5	1576.09	11189025
15	41.1	3260	133986	1689.21	10627600
16	38.0	2680	101840	1444	7182400
17	38.7	2005	77593.5	1497.69	4020025
Total			**1921163**	**25173.21**	**150934928**
Average	**38.35882**	**2902**			

Note: SQRT (1238329496) = 35189.9062

Q 3: A district medical officer seeks to estimate the proportion of children in the district receiving appropriate childhood vaccination. Assuming a simple random sample of a community is to be selected, **how many children must be studied** if the resulting estimate is to fall within 10 percentage points of the true proportion with 95% confidence? **Note: Use formula or Use Below table to estimate the sample size**

Table 1b: Sample Size to Estimate P to Within **d** Absolute Percentage Points with **95%** Confidence

Anticipated Population Proportion (**P**)

d	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95
0.01	1825	3457	4898	6147	7203	8067	8740	9220	9508	9604	9508	9220	8740	8067	7203	6147	4898	3457	1825
0.02	456	864	1225	1537	1801	2017	2185	2305	2377	2401	2377	2305	2185	2017	1801	1537	1225	864	456
0.03	203	384	544	683	800	896	971	1024	1056	1067	1056	1024	971	896	800	683	544	384	203
0.04	114	216	306	384	450	504	546	576	594	600	594	576	546	504	450	384	306	216	114
0.05	73	138	196	246	288	323	350	369	380	384	380	369	350	323	288	246	196	138	73
0.06	51	96	136	171	200	224	243	256	264	267	264	256	243	224	200	171	136	96	51
0.07	37	71	100	125	147	165	178	188	194	196	194	188	178	165	147	125	100	71	37
0.08	29	54	77	96	113	126	137	144	149	150	149	144	137	126	113	96	77	54	29
0.09	23	43	60	76	89	100	108	114	117	119	117	114	108	100	89	76	60	43	23
0.10	18	35	49	61	72	81	87	92	95	96	95	92	87	81	72	61	49	35	18
0.11	15	29	40	51	60	67	72	76	79	79	79	76	72	67	60	51	40	29	15
0.12	13	24	34	43	50	56	61	64	66	67	66	64	61	56	50	43	34	24	13
0.13	11	20	29	36	43	48	52	55	56	57	56	55	52	48	43	36	29	20	11
0.14	9	18	25	31	37	41	45	47	49	49	49	47	45	41	37	31	25	18	9
0.15	8	15	22	27	32	36	39	41	42	43	42	41	39	36	32	27	22	15	8
0.20	5	9	12	15	18	20	22	23	24	24	24	23	22	20	18	15	12	9	5
0.25	*	6	8	10	12	13	14	15	15	15	15	15	14	13	12	10	8	6	*

* Sample size less than 5