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RJM-102

Ph.D. IN JOURNALISM AND MASS COMMUNICATION (PHDJMC)

Term-End Examination

December, 2017

00312

RJM-102 : DATA ANALYSIS AND STATISTICAL APPLICATIONS

Time : 3 hours *Maximum Marks : 100*

Note : *Section A is* ***compulsory****. Answer any* ***four*** *questions from Section B and any* ***two*** *questions from Section C.*

SECTION A

1. Define the following : *10×2=20*

(a) Trimmed Mean

(b) Alternative Hypothesis

(c) Categorical Variable

(d) Discrete Data

(e) Critical Value

(f) Histogram

(g) Arithmetic Mean

(h) Ordinal Variable

(i) P-value

(j) Range

SECTION B

*Answer any **four** questions :* *4×10=40*

2. Find the Mean and Standard Deviation for the following dataset of senior citizens spending time with ICT devices in a week. Interpret the data according to the context.

   21, 63, 14, 35, 91, 42, 56, 11, 77 35

3. Find the following from the given dataset :

   (a) % of male and female students;

   (b) % of Arts, Science, Commerce, and Professional program students;

   (c) % of Male Arts, Male Science, Male Commerce and Male Professional program students;

   (d) % of Female Arts, Female Science, Female Commerce and Female Professional program students.

Students / Program	*Arts*	*Science*	*Commerce*	*Professional*
Male	10	17	11	10
Female	11	18	12	11

4. Find frequency distribution for Girls, Boys and Total Class. Dataset is about the time spent by a class of students in watching television programmes in a month :

S. No.	*Time Intervals (minutes)*	*Girls*	*Boys*
1	140 – 149	0	0
2	130 – 139	0	32
3	120 – 129	0	48
4	110 – 119	1	29
5	100 – 109	0	18
6	90 – 99	3	14
7	80 – 89	5	5
8	70 – 79	6	5
9	60 – 69	14	0
10	50 – 59	7	1
11	40 – 49	11	0
12	30 – 39	4	0

5. Undertake a Chi Square test on the following dataset. Use the attached Chi Square table to validate your Null or Alternate hypothesis.

Medium / Gender	*Male*	*Female*
Radio	5	5
Newspaper	5	20
Television	10	5

6. Find the r-value for the following rank order dataset. Use the attached Spearman Rank-order coefficient table to find the Level of Significance of p-value of your hypothesis.

Student	*Class Rank*	*Test Score*
A	12	440
B	8	580
C	15	400
D	1	740
E	3	700
F	20	280
G	10	520
H	2	700
I	9	500
J	6	660
K	16	440
L	4	640
M	11	520
N	5	680
O	14	460
P	17	320
Q	7	600
R	19	300
S	13	440
T	18	340

SECTION C

*Answer any **two** questions :* *2×20=40*

7. Find out the r-value by using Pearson's test for the following dataset X and Y, where X is the number of absentees in a media course and Y is the final exam marks for 7 students. Validate your hypothesis.

X	1	0	2	6	4	3	3
Y	95	90	90	55	70	80	85

8. Apply unpaired two-tailed t-test for the following dataset to find the difference between the male and the female users using ICT applications. Use the attached t-table to find out the Significance Level of your hypothesis.

Hours of usage of ICT per week								
Male	5	7	5	3	5	3	3	9
Female	8	1	4	6	6	4	1	2

9. A study was conducted on media access in the area of rural segment on a sample of 200 illiterates and 400 literates. At the end of the study, it was found out that 48% of illiterates and 73% of literates had an option to access a media outlet. Use Z-test to find the difference of proportions between these two groups.

PEARSON'S CORRELATION COEFFICIENT *r* (Critical Values)

Level of Significance for a One-Tailed Test										
	.05	.025	.01	.005	.0005		.05	.025	.01	.005 / .0005
Level of Significance for a Two-Tailed Test										
df=(N-2)	.10	.05	.02	.01	.001	*df=(N-2)*	.10	.05	.02	.01 / .001
1	0.988	0.997	0.9995	0.9999	0.99999	21	0.352	0.413	0.482	0.526 / 0.640
2	0.900	0.950	0.980	0.990	0.999	22	0.344	0.404	0.472	0.515 / 0.629
3	0.805	0.878	0.934	0.959	0.991	23	0.337	0.396	0.462	0.505 / 0.618
4	0.729	0.811	0.882	0.971	0.974	24	0.330	0.388	0.453	0.496 / 0.607
5	0.669	0.755	0.833	0.875	0.951	25	0.323	0.381	0.445	0.487 / 0.597
6	0.621	0.707	0.789	0.834	0.928	26	0.317	0.374	0.437	0.479 / 0.588
7	0.582	0.666	0.750	0.798	0.898	27	0.311	0.367	0.430	0.471 / 0.579
8	0.549	0.632	0.715	0.765	0.872	28	0.306	0.361	0.423	0.463 / 0.570
9	0.521	0.602	0.685	0.735	0.847	29	0.301	0.355	0.416	0.456 / 0.562
10	0.497	0.576	0.658	0.708	0.823	30	0.296	0.349	0.409	0.449 / 0.554
11	0.476	0.553	0.634	0.684	0.801	40	0.257	0.304	0.358	0.393 / 0.490
12	0.457	0.532	0.612	0.661	0.780	60	0.211	0.250	0.295	0.325 / 0.408
13	0.441	0.514	0.592	0.641	0.760	120	0.150	0.178	0.210	0.232 / 0.294
14	0.426	0.497	0.574	0.623	0.742	∞	0.073	0.087	0.103	0.114 / 0.146
15	0.412	0.482	0.558	0.606	0.725					
16	0.400	0.468	0.542	0.590	0.708					
17	0.389	0.456	0.529	0.575	0.693					
18	0.378	0.444	0.515	0.561	0.679					
19	0.369	0.433	0.503	0.549	0.665					
20	0.360	0.423	0.492	0.537	0.652					

CHI-SQUARE STATISTICAL TABLE (Critical Values)

DF	*P=0.10*	*P=0.05*	*P=0.025*	*P=0.01*	DF	*P=0.10*	*P=0.05*	*P=0.02*	*P=0.01*
1	2.706	3.841	5.024	6.635	21	29.615	32.671	35.479	38.932
2	4.605	5.991	7.378	9.210	22	30.813	33.924	36.781	40.289
3	6.251	7.815	9.348	11.345	23	32.007	35.172	38.076	41.638
4	7.779	9.488	11.143	13.277	24	33.196	36.415	39.364	42.980
5	9.236	11.070	12.833	15.086	25	34.382	37.652	40.646	44.314
6	10.645	12.592	14.449	16.812	26	35.563	38.885	41.923	45.642
7	12.017	14.067	16.013	18.475	27	36.741	40.113	43.195	46.963
8	13.362	15.507	17.535	20.090	28	37.916	41.337	44.461	48.278
9	14.684	16.919	19.023	21.666	29	39.088	42.557	45.772	49.588
10	15.987	18.307	20.483	23.209	30	40.256	43.773	46.979	50.892
11	17.275	19.675	21.920	24.725	31	41.422	44.985	48.232	52.191
12	18.549	21.026	23.337	26.217	32	42.585	46.194	49.480	53.486
13	19.812	22.362	24.736	27.688	33	43.745	47.400	50.725	54.776
14	21.064	23.685	26.119	29.141	34	44.903	48.602	51.966	56.061
15	22.307	24.996	27.488	30.578	35	46.059	49.802	53.203	57.302
16	23.542	26.296	28.845	32.000	36	47.212	50.998	54.437	58.619
17	24.769	27.587	30.191	33.409	37	48.363	52.192	55.668	59.893
18	25.989	28.869	31.526	34.805	38	49.513	53.384	56.896	61.162
19	27.204	30.144	32.852	36.191	39	50.660	54.572	58.120	62.428
20	28.412	31.410	34.170	37.566	40	51.805	55.758	59.342	63.691

Spearman Rank Order Correlation – Critical Values

Level of significance for two-tailed test				
N[a]	0.10	0.05	0.02	0.01
5	0.900	1.000	1.000	–
6	0.829	0.886	0.943	1.000
7	0.714	0.786	0.893	0.929
8	0.643	0.738	0.833	0.881
9	0.600	0.683	0.783	0.833
10	0.564	0.648	0.746	0.794
12	0.506	0.591	0.712	0.777
14	0.456	0.544	0.645	0.715
16	0.425	0.506	0.601	0.665
18	0.399	0.475	0.564	0.625
20	0.377	0.450	0.534	0.591
22	0.359	0.428	0.508	0.562
24	0.343	0.409	0.485	0.537
26	0.329	0.392	0.465	0.515
28	0.317	0.377	0.448	0.496
30	0.306	0.364	0.432	0.478

t Table

cum. prob	$t_{.50}$	$t_{.75}$	$t_{.80}$	$t_{.85}$	$t_{.90}$	$t_{.95}$	$t_{.975}$	$t_{.99}$	$t_{.995}$	$t_{.999}$	$t_{.9995}$
one-tail	**0.50**	**0.25**	**0.20**	**0.15**	**0.10**	**0.05**	**0.025**	**0.01**	**0.005**	**0.001**	**0.0005**
two-tail	**1.00**	**0.50**	**0.40**	**0.30**	**0.20**	**0.10**	**0.05**	**0.02**	**0.01**	**0.002**	**0.001**
df											
1	0.000	1.000	1.376	1.963	3.078	6.314	12.71	31.82	63.66	318.31	636.62
2	0.000	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	22.327	31.599
3	0.000	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	10.215	12.924
4	0.000	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	0.000	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	5.893	6.869
6	0.000	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	0.000	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	0.000	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	0.000	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	0.000	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	0.000	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	0.000	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	0.000	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	0.000	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	0.000	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	0.000	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	3.686	4.015
17	0.000	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.646	3.965
18	0.000	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.610	3.922
19	0.000	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	0.000	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.552	3.850
21	0.000	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.527	3.819
22	0.000	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	0.000	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.485	3.768
24	0.000	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	0.000	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.450	3.725
26	0.000	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.435	3.707
27	0.000	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.421	3.690
28	0.000	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.408	3.674
29	0.000	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.396	3.659
30	0.000	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.385	3.646
40	0.000	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.307	3.551
60	0.000	0.679	0.848	1.045	1.296	1.671	2.000	2.390	2.660	3.232	3.460
80	0.000	0.678	0.846	1.043	1.292	1.664	1.990	2.374	2.639	3.195	3.416
100	0.000	0.677	0.845	1.042	1.290	1.660	1.984	2.364	2.626	3.174	3.390
1000	0.000	0.675	0.842	1.037	1.282	1.646	1.962	2.330	2.581	3.098	3.300
z	0.000	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.090	3.291
	0%	50%	60%	70%	80%	90%	95%	98%	99%	99.8%	99.9%
						Confidence Level					

Z-table

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
–3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
–3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
–3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
–3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
–3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
–2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
–2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
–2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
–2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
–2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
–2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
–2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
–2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
–2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
–2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
–1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
–1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
–1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
–1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
–1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
–1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
–1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
–1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
–1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
–1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
–0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
–0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
–0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
–0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
–0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
–0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
–0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
–0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
–0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
–0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641