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Daffodil International University
Faculty of Business & Entrepreneurship
Department of Accounting
Course Title: Business Statistics
Course Code: 0542-102

Semester: Summer 2026 **Examination: Final Time: 2 Hours**
Full Marks: 40
Section: 5A **Teachers' Initial: RNK**

[NB: Answer all the following questions]

SL		Questions	[CLO, Level]	Marks
Q1	a)	**Define** the following terms (i) Sample Space, (ii) Mutually Exclusive Event.	[CLO-2, L-2]	2
	b)	**Explain** the concept of the Sampling error and Random Variable.	[CLO-2, L-2]	3
Q2		The following table lists the probability distribution of the number of customer complaints received per day by a customer service center based on historical records. Customer Complaints per Day: 0 | 1 | 2 | 3 | 4 Probability: 0.12 | 0.28 | 0.20 | 0.25 | 0.15		
	a)	**Illustrate** this probability distribution graphically.	[CLO-2, L-2]	2
	b)	**Demonstrate** the above table find the probability that the number of breakdowns for this machine during a given week is i. exactly 4 breakdowns; ii. 0 to 3 breakdowns; iii. more than 2 break down; iv. at most 4 breakdowns	[CLO-2, L-3]	4
Q3		Suppose all 200 employees of a company were asked whether they are in favor of paying high salaries to CEOs of US companies. The following table shows the response of these 200 employees. In Favor: Male 30, Female 8 Against: Male 90, Female 72		
	a)	**Solve** the following conditional probability i. $P(In\ Favor \mid Female)$ ii. $P(Against \mid Male)$ iii. $P(Male \mid In\ Favor)$	[CLO-3, L-3]	6
	b)	**Select** whether the events 'Male' and 'Female' are mutually exclusive?	[CLO-3, L-3]	1
Q4	a)	A teacher gives a quiz to 6 students. Based on past records, the probability that a student answers a question correctly is 0.6. **Applying** binomial probability distribution, find the probability- i. Exactly 4 students answer the question correctly. 0.31104 ii. At most 2 students answer the question correctly. 0.17919	[CLO-3, L-3]	6
	b)	On an average, 7 customers arrive at a shop per hour. **Applying** the Poisson probability distribution, find the probability- i. At most 5 customers will arrive in the next hour. 0.30068 ii. No customers will arrive in the next hour.	CLO-3, L-3]	5
Q5	a)	**Choose** the following probabilities for the standard normal distribution. i. $P(z < -1.96)$ 0.0250 ii. $P(-0.78 \leq z \leq 2.16)$ 0.7669	[CLO-3, L-3]	3

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	b)	The heights of plants in a nursery are normally distributed with a mean of 50 cm and a standard deviation of 5 cm. **Identify** the probability that a randomly selected plant has a height between 45 cm and 55 cm. 0.6826	[CLO-3, L-3]	3
Q6		A bakery claims that the average weight of a loaf of bread is 500 g. A sample of 100 loaves has a mean weight of 506 g. The population standard deviation is 20 g. At the 5% level of significance, **test for** the current mean weight is different from 500 g.	[CLO-4, L-4]	5

Standard Normal Distribution (Z) Table

Values are cumulative probabilities P(Z ≤ z)

Z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
-3.0	0.0013	0.0013	0.0013	0.0013	0.0012	0.0012	0.0010	0.0010	0.0009	0.0009
-2.9	0.0019	0.0019	0.0018	0.0017	0.0016	0.0015	0.0014	0.0013	0.0012	0.0011
-2.8	0.0026	0.0025	0.0024	0.0023	0.0022	0.0021	0.0020	0.0018	0.0017	0.0016
-2.7	0.0035	0.0034	0.0032	0.0031	0.0029	0.0028	0.0026	0.0025	0.0023	0.0022
-2.6	0.0047	0.0045	0.0043	0.0041	0.0039	0.0037	0.0036	0.0034	0.0032	0.0031
-2.5	0.0062	0.0060	0.0057	0.0055	0.0052	0.0050	0.0047	0.0045	0.0043	0.0041
-2.4	0.0082	0.0078	0.0075	0.0071	0.0068	0.0064	0.0062	0.0059	0.0056	0.0054
-2.3	0.0107	0.0104	0.0100	0.0096	0.0092	0.0088	0.0084	0.0080	0.0076	0.0072
-2.2	0.0139	0.0136	0.0132	0.0128	0.0122	0.0119	0.0114	0.0109	0.0104	0.0100
-2.1	0.0179	0.0174	0.0168	0.0162	0.0156	0.0151	0.0146	0.0140	0.0134	0.0129
-2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
-1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
-1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
-1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
-1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
-1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
-1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
-1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
-1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
-1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
-1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
-0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
-0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
-0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
-0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
-0.5	0.3085	0.3051	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2809	0.2776
-0.4	0.3446	0.3409	0.3372	0.3336	0.3299	0.3264	0.3228	0.3192	0.3156	0.3121
-0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3519	0.3483
-0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
-0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6949	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990