4 /136

1001N1505

Candidate's Seat No :_____

MBA in BI Sem.-1 Examination

BI-105

ASDM

January-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Instructions :(1) This paper contains **FIVE** questions.
(2) All questions are compulsory.
(3) Question No.**2, 3, 4** have internal options.
(4) Figures in the right side in parenthesis indicate marks.

Q:1 **(A)** Explain in detail the role of data in business. **(07)**

(B) Six coins are tossed for 200 times and the frequency distribution for number of heads is as under. Find first four central moments, skewness, kurtosis. Also find (γ_1) and also find (γ_2). **(07)**

No. of heads	0	1	2	3	4	5	6
Frequency	2	16	40	84	40	16	2

Q:2 **(A)** The probability that a patient will get reaction of a particular injection is 0.0001. 2000 patients are given that injection. Find the probabilities that (i) 3 patients will get reaction (ii) more than 2 patients will get reaction. **(07)**
$(e^{-2} = 0.135)$

(B) An entrance test of 200 marks is conducted for higher study.20,000 students remain present in the examination and the marks obtained by them follows normal distribution with mean 120 and standard deviation 20. The rules for the result are as under: **(07)**

(a) Students who acquire less than 40 percent marks are failed.

(b) An additional test is conducted for the students acquiring marks between 40 percent and 48 percent

(c)Students who acquire mark between 48 percent and 75 percent are called for personal interview

(d) Students who acquire marks more than 75 percent get direct admission for the higher studies.

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3

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Find approximate number of students who: (1) failed in test (2) appeared for additional 100 marks test (3) appeared for personal interview and (4) got direct admission for the higher studies.

OR

Q:2 **(A)** In the dispensary of Dr. Urvi Shah, 10% patients out of 50 patients are suffering from cold. If 5 patients are inquired randomly, find the probability that not more than 2 of them are are not suffering from cold. Also find the average number of patients suffering from cold. **(07)**

(B) A man speaks the truth 4 out of 5 times. He throws a die and reports that it is actually a six. Find the probability that it is actually a six. **(07)**

Q:3 **(A)** A company has the head office at Kolkata and a branch office at Mumbai. The personal director wanted to know if the workers at the two places would like the introduction of a new plan of work and a survey was conducted for this purpose. Out of a sample of S0 workers at Kolkata 62% favoured the new plan, At Mumbai out of a sample of 400 workers 41% were against the new plan. Is there any significant difference between the two groups in their attitude towards the new plan at 5% level of significance ? **(07)**

(B) In a certain factory there are two independent processes manufacturing the same item. The average weight in a sample of 250 items produced from one process is found to be 120 grams with a S.D. of 12gms. While the corresponding figures in a sample of 400 items from other process are 124 and 14. Is the difference between the mean weight significant at 1% level of significance? **(07)**

OR

Q:3 **(A)** For a random sample of 25observations taken from a normal population mean is 42.5 and sum of squares of the deviations of observations taken from the mean is 216. Test the hypothesis at 5% and 1% level of significance that the population mean be 44 and give your conclusion. $[t_{(24,0.05)} = 2.064, t_{(24,0.01)} = 2.797, t_{(25,0.01)} = 2.787\ ]$ **(07)**

(B) The memory test of ten students was conducted, before training and after training. Do you, is there any significant effect due to training? $t_{(9,0.05)} = 2.66$ **(07)**

Students No.	1	2	3	4	5	6	7	8	9	10
Marks before training	42	32	67	55	53	62	54	66	21	56
Marks after training	37	41	71	67	66	55	57	62	37	57

N 1505 3

Q:4 By using χ^2 distribution test the hypothesis that the following distribution follows binomial distribution. **(14)**

No. of heads	0	1	2	3	4	5	6	7	8	9
Frequency	1	2	10	50	154	100	98	94	2	1

$[\chi^2_{(5,0.05)} = 11.07]$

OR

Q:4 Prepare two-way ANOVA table for the data given below and give your comment about it: **(14)**

Machine	**Operators**		
	1	2	3
1	530	526	538
2	524	529	528
3	533	524	535
4	536	531	530
5	527	535	533

Use coding method subtracting 530 from each data value. [Given F(8, 2)=19.4, F(8,4)=6.04]

Q:5 Do as directed: **(14)**

I. Power of test = ...
II. Define Null hypothesis.
III. State the formula of correction factor.
IV. What is the value of Z at 10% level of significance?
V. For a normal distribution, the estimated value of quartile deviation is 12. Find the value of standard distribution.
VI. Seven students of a group get 20, 20, 20, 20, 20, 20, 20 marks in a test of 45 marks. What is the standard deviation of their marks?
VII. What is the probability of having 5 Thursdays in the month of February in a year which is not a leap year?

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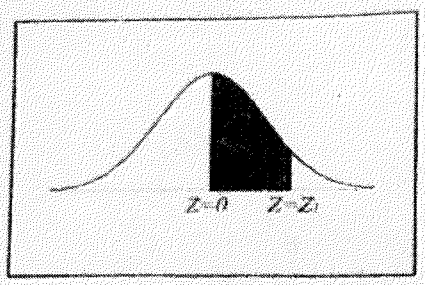
Table of Standard Normal Curve



Area Under the Standard Normal Curve

$Z = 0$ to $Z = Z_1$, z being standard normal variate

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
0.7	.2580	.2611	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4762	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990
3.1	.4990	.4991	.4991	.4991	.4992	.4992	.4992	.4992	.4993	.4993
3.2	.4993	.4993	.4994	.4994	.4994	.4994	.4994	.4995	.4995	.4995
3.3	.4995	.4995	.4995	.4996	.4996	.4996	.4996	.4996	.4996	.4997
3.4	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4998
3.5	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998