

Q 1: Write down True or False: (5 Marks)

- a) The set of all possible outcomes of a random experiment is called “**Experiment**” ()
- b) For any experiment, $p(\Omega) = 0$ ()
- c) If $P(A \cup B) = 0$, then A and B are **Disjoint** ()
- d) The Population Variance for Binomial Distribution is $\sigma^2 = npq$ ()
- e) Expected value of discrete random variable **X** defined as $\sum X P(X)$ ()

Q2: The following table shows **90** patients classified by gender and blood group (3 Marks)

Gender	Blood Group				Total
	A	B	O	AB	
Male (M)	25	17	15	6	
Female(F)	11	9	3	4	
Total					

What is **The probability that a patient selected randomly is**

1- Female?

- i) $\frac{63}{27}$ ii) $\frac{27}{90}$ iii) $\frac{57}{90}$ iv) $\frac{27}{80}$

2- Male and has the blood group B?

- i) $\frac{9}{90}$ ii) $\frac{9}{26}$ iii) $\frac{17}{90}$ iv) $\frac{23}{90}$

3- Female or has the blood group O?

- i) $\frac{49}{90}$ ii) $\frac{42}{90}$ iii) $\frac{36}{90}$ iv) $\frac{23}{90}$

Q3: Suppose we know that **A and B are independent** events with $P(B/A) = 0.4$ and $P(A) = 0.3$, Complete ?:
(5 Marks)

1) $P(A/B) =$

2) $P(A \cup B) =$

3) $P(B \cap A) =$

4) $P(A^c) =$ (5) $P(B^c)$

Q4: Consider the discrete random variable X with the following probability distribution

X	0	1	2	3	Total
P(X)	0.625	0.1875	0.125	0.0625	1.00

Find?

1- $P(X = 1)$ (1)

2- $P(X \geq 2)$ (0.5)

3- $P(X > 2)$ (0.5)

4- $P(X \leq 2)$ (0.5)

5- $P(1 \leq X \leq 3)$ (0.5)

6- $P(X > 8)$ (1)

7- Expected value (1)

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Q5 : For the standard Normal distribution z find each probability?

Note : use the table attached , page 3

1- $P(z \leq 1.95)$

.....
.....(1)

2- $P(0.78 \leq z \leq 1.95)$

.....
.....(1)

Z table

	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
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	0.6950	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

Good Luck ,,,,