



THE OPEN UNIVERSITY OF SRI LANKA
BACHELOR OF MANAGEMENT STUDIES HONOURS (BMS) DEGREE
PROGRAMME
LEVEL 05
ASSIGNMENT TEST – 2017/18
QUANTITATIVE TECHNIQUES FOR MANAGEMENT II – MCU3209
DURATION: TWO HOURS

DATE: 17th February 2018

TIME: 10.00AM – 12.00 NOON

Instructions

Answer any 4(FOUR) Questions.

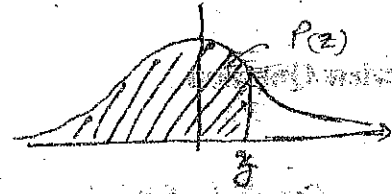
- Show all your workings.
- Each question carries 25 marks.
- Use of a non-programmable calculator is allowed.
- Standard Normal table is attached.
- This paper contains 5 Questions.

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1. (a) Evaluate ${}^n C_r p^r q^{n-r}$, when $n = 5$, $r = 3$ and $p = 0.7$
- (b) A telephone switchboard has 8 lines operating. The probability of any given line being defective is 0.3.
- (i) What is the probability of 2 lines being defective?
 - (ii) What is the probability of less than 3 lines being defective?
- (c) (i) A six sided disk is thrown 5 times. What is the probability of getting "6" at least once?
- (ii) What is the least number of times a dice should be thrown such that the probability of getting "6" at least once is more than 0.8?
2. (a) Evaluate $\frac{e^{-a} a^x}{x!}$ when $a = 2$ and $x = 3$.
- (b) Applications for the post of a data analyst arrives in a Poisson passion at a rate of 2 per hour.
- (i) What is the probability of receiving 3 applications in the next hour?
 - (ii) What is the probability of receiving 3 applications in the next 2 hours?

- (iii) If the counter that receives applications is open 10 hours a day, what is the probability of receiving 10 applications in the next day? (Use Normal approximation to Poisson distribution.)
3. (a) State the properties of the Normal Distribution with suitable illustrations.
- (b) The weight of children around age 2 years old was found to be normally distributed with mean 18 kg and standard deviation 3kgs.
- (i) What percentage of children will weigh more than 24 kgs?
- (ii) What percentage of children will weigh less than 15 kgs?
4. (a) Explain how a Normal Distribution is transformed to a Standard Normal Distribution.
- (b) The Electricity Board has observed that the monthly consumption of electricity by consumers in one of its division is normally distributed with mean 120 units and standard deviation 30 units. Pertaining to this division:
- (i) What percentage of consumers consume less than 90 units a month?
- (ii) What percentage of consumers will consume more than 180 units a month?
- (iii) Above what level of monthly consumption will the highest 10% of consumers use?
5. (a) Why do people resort to sampling instead of carrying out full enumeration?
- (b) Explain the terms 'point estimate' and 'interval estimate'.
- (c) To estimate the lifespan of bulbs a sample of 64 bulbs were examined and it was observed that their life span is 800 hrs. with a standard deviation of 40hrs.
- (i) Develop a 95% confidence interval estimate of the life span of bulbs.
- (ii) Develop a 80% confidence interval estimate of life time of bulbs.

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Standard normal distribution



z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.500000	.503989	.507978	.511966	.515953	.519939	.523922	.527903	.531881	.535856
0.1	.539828	.543795	.547758	.551717	.555670	.559618	.563559	.567495	.571424	.575345
0.2	.579260	.583166	.587064	.590954	.594835	.598706	.602568	.606420	.610261	.614092
0.3	.617911	.621720	.625516	.629300	.633072	.636831	.640576	.644309	.648027	.651732
0.4	.655422	.659097	.662757	.666402	.670031	.673645	.677242	.680822	.684386	.687933
0.5	.691462	.694974	.698468	.701944	.705401	.708840	.712260	.715661	.719043	.722405
0.6	.725747	.729069	.732371	.735653	.738914	.742154	.745373	.748571	.751748	.754903
0.7	.758036	.761148	.764238	.767305	.770350	.773373	.776373	.779350	.782305	.785236
0.8	.788145	.791030	.793892	.796731	.799546	.802337	.805105	.807850	.810570	.813267
0.9	.815940	.818589	.821214	.823814	.826391	.828944	.831472	.833977	.836457	.838913
1.0	.841345	.843752	.846136	.848495	.850830	.853141	.855428	.857690	.859929	.862143
1.1	.864334	.866500	.868643	.870762	.872857	.874928	.876976	.879000	.881000	.882977
1.2	.884930	.886861	.888768	.890651	.892512	.894350	.896165	.897958	.899727	.901475
1.3	.903200	.904902	.906582	.908241	.909877	.911492	.913085	.914657	.916207	.917736
1.4	.919243	.920730	.922196	.923641	.925066	.926471	.927855	.929219	.930563	.931888
1.5	.933193	.934478	.935745	.936992	.938220	.939429	.940620	.941792	.942947	.944083
1.6	.945201	.946301	.947384	.948449	.949497	.950529	.951543	.952540	.953521	.954486
1.7	.955435	.956367	.957284	.958185	.959070	.959941	.960796	.961636	.962462	.963273
1.8	.964070	.964852	.965620	.966375	.967116	.967843	.968557	.969258	.969946	.970621
1.9	.971283	.971933	.972571	.973197	.973810	.974412	.975002	.975581	.976148	.976705
2.0	.977250	.977784	.978308	.978822	.979325	.979818	.980301	.980774	.981237	.981691
2.1	.982136	.982571	.982997	.983414	.983823	.984222	.984614	.984997	.985371	.985738
2.2	.986097	.986447	.986791	.987126	.987455	.987776	.988089	.988396	.988696	.988989
2.3	.989276	.989556	.989830	.990097	.990358	.990613	.990863	.991106	.991344	.991576
2.4	.991802	.992024	.992240	.992451	.992656	.992857	.993053	.993244	.993431	.993613
2.5	.993790	.993963	.994132	.994297	.994457	.994614	.994766	.994915	.995060	.995201
2.6	.995339	.995473	.995604	.995731	.995855	.995975	.996093	.996207	.996319	.996427
2.7	.996533	.996636	.996736	.996833	.996928	.997020	.997110	.997197	.997282	.997365
2.8	.997445	.997523	.997599	.997673	.997744	.997814	.997882	.997948	.998012	.998074
2.9	.998134	.998193	.998250	.998305	.998359	.998411	.998462	.998511	.998559	.998605