Seat No:_____   Enrollment No:_____

PARUL UNIVERSITY
FACULTY OF COMMERCE
M.Com. (Hons), Summer 2017 – 18 Examination

Semester: 3   Date: 05/06/2018
Subject Code: 16201205   Time: 10:30 am to 1:00 pm
Subject Name: Quantitative Techniques for Financial Decision   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1.A) Choose the correct answer   (06)

1. $\frac{d}{dx}\left(\frac{1}{x^2}\right) =$ _____

    a) $\frac{1}{2x}$ b) $-\frac{2}{x^3}$

    c) $\log x$ d) 0

2. The observation which has highest frequency is known as _____

    a) Geometric Mean   b) Median

    c) Arithmetic Mean   d) Mode

3. If the value of correlation coefficient is 0, we say that there is _____ between the variables.

    a) perfect correlation   b) no correlation

    c) defective correlation   d) reciprocal correlation

4. If $b_{yx} = \mathbf{0.5}\ \&\ b_{xy} = 2$ then the correlation coefficient $r =$ _____

    a) 0.1   b) 1

    c) 10   d) 0.25

5. Two events A and B are independent then $p(A \cup B) =$ _____

    a) $p(A) + p(B) - p(A)p(B)$ b) $p(A) + p(B)$

    c) $p(A)p(B)$ d) 0

6. If two lines are perpendicular to each other, the corresponding system of equation has _____.

    a) two solution   b) unique solution

    c) no solutions   d) infinite solutions

B) Answer the following.   (06)

1. If $z = e^x + 2xy - \cos y$ then $\frac{\partial z}{\partial x} = ?$

2. Find $\int \left(\frac{1}{x} + 2e^x\right) dx$

3. Write the equation of line of regression of x on y.

4. If $b_{xy} = 0.3, \bar{x} = 100, \bar{y} = 15$ then for $y = 25$; $x =?$

5. $p(A) = 0.6 = p(B)$ and $p(A \cap B) = 0.3$ then find $P(A/B)$?

6. $2\log(a) = \log a^2$ [True / False]

Q.2 Answer the following.   (12)

1. Discuss any one of the methods to create a decision tree.

2. (i) Solve the following system using addition: $3x - 2y = 1; x + y = 2$
   (ii) Solve graphically: $x + y = 4;\ \ 2x + y = 6$

3. Two coins are tossed simultaneously.
   Find the probability of getting (i) no H, (ii) one H, (iii) two H, (iv) at least one H.

Q.3 Answer the following.   (Any Three)   **(18)**

1. Find S.D. for the distribution giving 300 cars according to their selling days.

x	0	1	2	3	4	5	6	7
f	1	2	3	4	7	4	4	4

2. In a normal distribution mean $\mu = 21.5$ and s.d. $\sigma = 2.5$. Find the following:
    (i) $P(18 \leq X)$ (ii) $P(X \leq 25)$ (iii) $P(X \geq 25)$ (iv) $P(18 \leq X \leq 25)$

3. Find the Pearson's Correlation Coefficient of the following data:

x	100	101	102	102	100	99	97	98	96	95
y	98	99	99	97	95	92	95	94	90	91

4. Differentiate : (i) $y = e^{3x} \cos 2x$ (ii) $y = 3x^2 + \log x - \tan x$

Q.4 Answer the following.   (Any two)

1 A. Find the equation of regression line of y on x from the following data and estimate y for $x = 1$.   **(05)**

x	0	2	4	5	7
y	5	3	2	1	0

   B. Integrate $y = 2x \sin 3x + e^{3x}$ **(04)**

2. A. If $p(A) = \frac{1}{3}, p(B') = \frac{1}{4}, P(A \cap B) = \frac{1}{6}$ then find the following: **(05)**
       (i) $p(B)$ (ii) $p(A \cup B)$ (iii) $p(A' \cup B')$ (iv) $p(A' \cap B')$ (v) $p(A'|B')$

   B. On an average 1.5 percent of electric bulbs are found to be defective in a bulb manufacturing   **(04)**
      factory. Using Poisson distribution find the probability of 4 defective bulbs in a box of 200 bulbs.

3. Find the mean, median and mode of the following data: **(09)**

Class	10-19	20-29	30-39	40-49	50-59
f_i	2	9	15	14	10

Normal Distribution table:

Z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998
3.5	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998
3.6	0.4998	0.4998	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.7	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.8	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.9	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000