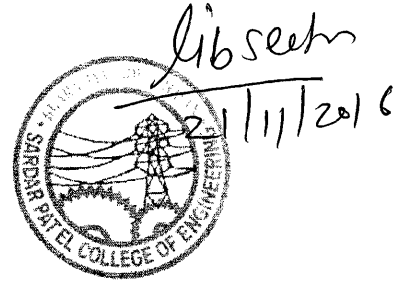




Bharatiya Vidya Bhavan's  
**Sardar Patel College of Engineering**  
 (A Government Aided Autonomous Institute)  
 Munshi Nagar, Andheri (West), Mumbai – 400058



**END SEM EXAM.**

**November 2016**

**Program: Civil Engineering**

**M. Tech. (Construction Management)**

**Duration: 4 hr**

**Course code: MTCM102**

**Maximum Marks: 100**

**Name of the Course: Applied Statistics & Quantitative Techniques**

*Master file.*

**Semester: I**

**Instructions:**

1. Neat diagrams must be drawn wherever necessary.
2. Figures to the right side indicate full marks.
3. Assume Suitable data if necessary and state it clearly

Question No.		Maximum Marks	Course Outcome Number	Module No.																						
Q1 (a)	From the prices of shares of 2 Construction Company h X and Y find out which one is more stable in value	8	CO1	1																						
	<table border="1"> <tbody> <tr> <td>X</td> <td>35</td> <td>54</td> <td>52</td> <td>53</td> <td>56</td> <td>58</td> <td>52</td> <td>50</td> <td>51</td> <td>49</td> </tr> <tr> <td>Y</td> <td>108</td> <td>107</td> <td>105</td> <td>105</td> <td>106</td> <td>107</td> <td>104</td> <td>103</td> <td>104</td> <td>101</td> </tr> </tbody> </table>	X	35	54	52	53	56	58	52	50	51	49	Y	108	107	105	105	106	107	104	103	104	101			
X	35	54	52	53	56	58	52	50	51	49																
Y	108	107	105	105	106	107	104	103	104	101																
(b)	The performance of labour is decided on the basis of scores obtained. The scores obtained by the labors follow a uniform distribution with 100 as maximum and minimum as 60. Find the mean score and standard deviation of scores. If the passing score is set at 70. What % of students will pass the examination?	8	CO2	2																						
(c)	Describe applications of Probability theory in Construction	4	Co2	2																						
Q2 (a)	The average number of transit mixer arrive at a site per minute are 2 Find the probability that during given minute: (i) No mixer arrives (ii) 3 or more mixer arrives.	8	CO2	2																						
(b)	The scores of the employee of construction company in their assessment examination follow normal distribution with mean 500 and standard deviation 100.	8	Co2	2																						

	a) Calculate the proportion of scores above 643			
	b) Calculate the minimum score that places a student in top 5%			
	c) Calculate the proportion of students scoring between 400 to 700			
(c)	Discuss testing of hypothesis	4	CO4	4
<b>Q3 (a)</b>	Discuss in detail probability and non probability sampling	6	CO2	3
(b)	Discuss the properties of t, F and $\chi^2$ Distributions	10	CO2	3
(c)	Explain importance of decision analysis in decision making.	4		6
<b>Q4 (a)</b>	The result of a survey of construction chemicals on sales of Brand Y as function of time period X are summarized below	8	CO3	5

	<b>X</b>	<b>Y</b>
Mean	30	120
Standard Deviation	4	9
Correlation Coefficient		0.92

- (a) Fit the regression line of Y on X and estimate the value of Y when X is 40  
 (b) Fit the line of X on Y and Estimate the value of X when Y is 160

(b)	In accounting department of a bank 100 accounts are selected at random and examined for errors.	12	CO4	4
-----	-------------------------------------------------------------------------------------------------	----	-----	---

Following results have been obtained.

No. of Errors	0	1	2	3	4	5	6
No Of accounts	36	40	19	2	0	2	1

With this information verify that the errors are distributed according to Poisson Probability law?  
 Tabulated vale of  $\chi^2 = 7.815$  Degree freedom is 1, and  $\alpha = 0.05$

<b>Q5 (a)</b>	A businessman has an option of selling a product in domestic market or in export market	12	CO3	6
---------------	-----------------------------------------------------------------------------------------	----	-----	---

Items	For Export market	For Domestic market
Probability of Selling	0.6	1.0
Prob. Of keeping delivery Schedule	0.8	0.9
Prob. Of not meeting delivery Schedule	Rs. 50,000	Rs. 10,000
Selling price	Rs. 9,00,000	Rs. 8,00,000
Cost of Third Party Inspection	30000	Nil
Prob. Of Collection of sale amount	0.9.	0.9

If the product is not to be sold in export market, it can be sold in domestic market. There are no other implications like interest and time.

- (i) Draw decision tree using the data given above  
 (ii) Should the businessman go for selling the product in the export market? Justify your answer.

(b)	Calculate the rank correlation coefficient between	8	Co3	5
-----	----------------------------------------------------	---	-----	---

<b>X</b>	<b>70</b>	<b>65</b>	<b>71</b>	<b>62</b>	<b>58</b>	<b>69</b>	<b>78</b>	<b>64</b>
<b>Y</b>	<b>91</b>	<b>76</b>	<b>65</b>	<b>83</b>	<b>90</b>	<b>64</b>	<b>55</b>	<b>48</b>

<b>Q6 (a)</b>	A company manufactures around 150 machines. The daily production varies from 146 to 154 depending upon the availability of raw materials and other working conditions	<b>12</b>	<b>CO3</b>	<b>5</b>
---------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------	------------	----------

Production per Day	probability	Production per day	Probability
146	0.04	151	0.1
147	0.09	152	0.2
148	0.12	153	0.12
149	0.14	154	0.08
150	0.11		

Finished machines are transported in special truck accommodating 150 machines. Using following random Numbers 90,81,76,75,64,43,18,26,10,12,65,68,69,61,57 Simulate process to find out

- (i) What will be the average number of machines waiting in the factory?
- (ii) What will be the average number of empty space on the lorry?

<b>(b)</b>	The demand for Cement during the past 6 years is summarized	<b>8</b>	<b>CO3</b>	<b>5</b>
------------	-------------------------------------------------------------	----------	------------	----------

Year (x)	2011	2012	2013	2014	2015	2016
<b>Demand(y)</b>	<b>60</b>	<b>72</b>	<b>58</b>	<b>90</b>	<b>82</b>	<b>100</b>

- (a) Fit a linear regression to estimate the demand of cement
- (b) Compute the demand of cement 2021

<b>Q7 (a)</b>	<p>Following matrix shows time (in Hours) required to complete specific job "J" by particular worker (A, B, C, D and E). As a site engineer allot one job to one worker only, such a that it will take minimum time to complete all the job.</p> <p style="text-align: center;">J1   J2   J3   J4   J5</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>A</td> <td>11</td> <td>7</td> <td>10</td> <td>17</td> <td>10</td> </tr> <tr> <td>B</td> <td>13</td> <td>21</td> <td>7</td> <td>11</td> <td>13</td> </tr> <tr> <td>C</td> <td>13</td> <td>13</td> <td>15</td> <td>13</td> <td>14</td> </tr> <tr> <td>D</td> <td>18</td> <td>10</td> <td>13</td> <td>16</td> <td>14</td> </tr> <tr> <td>E</td> <td>12</td> <td>8</td> <td>16</td> <td>19</td> <td>10</td> </tr> </tbody> </table>	A	11	7	10	17	10	B	13	21	7	11	13	C	13	13	15	13	14	D	18	10	13	16	14	E	12	8	16	19	10	<b>10</b>	<b>CO3</b>	<b>7</b>
A	11	7	10	17	10																													
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(b)

There are 3 suppliers of special hydraulic crane from Japan, South Korea and Germany. You are manager in a company. Projects are going on at 4 different locations Ahmedabad, Bhopal, Chennai and Dubai. Following Table shows requirement of crane at site and capacity of providers to provide maximum number of cranes. As a company manager take a decision, so as to minimize cost of procurement.

Site Location	Demand at site (in No.)
Ahmedabad	20
Bhopal	30
Chennai	50
Dubai	50

Supplier	Capacity of supply (in No.)
Japan	40
South Korea	60
Germany	50

This table will give you cost in Thousand dollars to procure one crane from specific supplier to specific site including transportation cost and all taxes.

	Ahmeda bad	Bhopal	Chennai	Duba
Japan	4	6	8	8
Korea	6	8	6	7
Germany	5	7	6	8

10

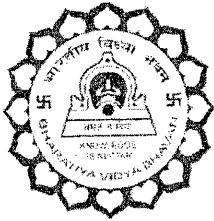
CO3

7

TABLE 1 Standard Normal Cumulative Distribution

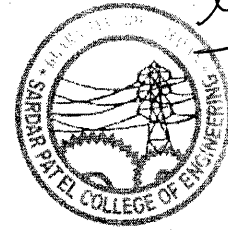
z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	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
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998

From Irwin Miller and John E. Freund, *Probability and Statistics for Engineers*, 2nd ed., © 1977, p. 487. Reprinted by permission of Prentice-Hall, Inc., Englewood Cliffs, NJ.



Bharatiya Vidya Bhavan's  
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*21/11/2016*

**END SEM EXAM.**

**November 2016**

**Program: Civil Engineering**

**M. Tech. (Construction Management)**

**Duration: 4 hr**

**Course code: MTCM102**

**Maximum Marks: 100**

**Name of the Course: Applied Statistics & Quantitative Techniques**

*Master file.*

**Semester: I**

**Instructions:**

1. Neat diagrams must be drawn wherever necessary.
2. Figures to the right side indicate full marks.
3. Assume Suitable data if necessary and state it clearly

Question No.		Maximum Marks	Course Outcome Number	Module No.																						
Q1 (a)	From the prices of shares of 2 Construction Company h X and Y find out which one is more stable in value	8	CO1	1																						
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(b)	The performance of labour is decided on the basis of scores obtained. The scores obtained by the labors follow a uniform distribution with 100 as maximum and minimum as 60. Find the mean score and standard deviation of scores. If the passing score is set at 70. What % of students will pass the examination?	8	CO2	2																						
(c)	Describe applications of Probability theory in Construction	4	Co2	2																						
Q2 (a)	The average number of transit mixer arrive at a site per minute are 2 Find the probability that during given minute: (i) No mixer arrives (ii) 3 or more mixer arrives.	8	CO2	2																						
(b)	The scores of the employee of construction company in their assessment examination follow normal distribution with mean 500 and standard deviation 100.	8	Co2	2																						

	a) Calculate the proportion of scores above 643			
	b) Calculate the minimum score that places a student in top 5%			
	c) Calculate the proportion of students scoring between 400 to 700			
(c)	Discuss testing of hypothesis	4	CO4	4
Q3 (a)	Discuss in detail probability and non probability sampling	6	CO2	3
(b)	Discuss the properties of t, F and $\chi^2$ Distributions	10	CO2	3
(c)	Explain importance of decision analysis in decision making.	4		6
Q4 (a)	The result of a survey of construction chemicals on sales of Brand Y as function of time period X are summarized below	8	CO3	5

	X	Y
Mean	30	120
Standard Deviation	4	9
Correlation Coefficient		0.92

- (a) Fit the regression line of Y on X and estimate the value of Y when X is 40  
 (b) Fit the line of X on Y and Estimate the value of X when Y is 160

(b)	In accounting department of a bank 100 accounts are selected at random and examined for errors.	12	CO4	4
-----	-------------------------------------------------------------------------------------------------	----	-----	---

Following results have been obtained.

No. of Errors	0	1	2	3	4	5	6
No Of accounts	36	40	19	2	0	2	1

With this information verify that the errors are distributed according to Poisson Probability law?  
 Tabulated vale of  $\chi^2 = 7.815$  Degree freedom is 1, and  $\alpha = 0.05$

Q5 (a)	A businessman has an option of selling a product in domestic market or in export market	12	CO3	6
--------	-----------------------------------------------------------------------------------------	----	-----	---

Items	For Export market	For Domestic market
Probability of Selling	0.6	1.0
Prob. Of keeping delivery Schedule	0.8	0.9
Prob. Of not meeting delivery Schedule	Rs. 50,000	Rs. 10,000
Selling price	Rs. 9,00,000	Rs. 8,00,000
Cost of Third Party Inspection	30000	Nil
Prob. Of Collection of sale amount	0.9.	0.9

If the product is not to be sold in export market, it can be sold in domestic market. There are no other implications like interest and time.

- (i) Draw decision tree using the data given above  
 (ii) Should the businessman go for selling the product in the export market? Justify your answer.

(b)	Calculate the rank correlation coefficient between	8	Co3	5
-----	----------------------------------------------------	---	-----	---

X	70	65	71	62	58	69	78	64
Y	91	76	65	83	90	64	55	48

<b>Q6 (a)</b>	A company manufactures around 150 machines. The daily production varies from 146 to 154 depending upon the availability of raw materials and other working conditions	<b>12</b>	<b>CO3</b>	<b>5</b>
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Production per Day	probability	Production per day	Probability
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147	0.09	152	0.2
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Finished machines are transported in special truck accommodating 150 machines. Using following random Numbers 90,81,76,75,64,43,18,26,10,12,65,68,69,61,57 Simulate process to find out

- (i) What will be the average number of machines waiting in the factory?
- (ii) What will be the average number of empty space on the lorry?

<b>(b)</b>	The demand for Cement during the past 6 years is summarized	<b>8</b>	<b>CO3</b>	<b>5</b>
------------	-------------------------------------------------------------	----------	------------	----------

Year (x)	2011	2012	2013	2014	2015	2016
<b>Demand(y)</b>	<b>60</b>	<b>72</b>	<b>58</b>	<b>90</b>	<b>82</b>	<b>100</b>

- (a) Fit a linear regression to estimate the demand of cement
- (b) Compute the demand of cement 2021

<b>Q7 (a)</b>	<p>Following matrix shows time (in Hours) required to complete specific job "J" by particular worker (A, B, C, D and E). As a site engineer allot one job to one worker only, such a that it will take minimum time to complete all the job.</p> <p style="text-align: center;">J1   J2   J3   J4   J5</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td style="text-align: center;">A</td> <td>11</td> <td>7</td> <td>10</td> <td>17</td> <td>10</td> </tr> <tr> <td style="text-align: center;">B</td> <td>13</td> <td>21</td> <td>7</td> <td>11</td> <td>13</td> </tr> <tr> <td style="text-align: center;">C</td> <td>13</td> <td>13</td> <td>15</td> <td>13</td> <td>14</td> </tr> <tr> <td style="text-align: center;">D</td> <td>18</td> <td>10</td> <td>13</td> <td>16</td> <td>14</td> </tr> <tr> <td style="text-align: center;">E</td> <td>12</td> <td>8</td> <td>16</td> <td>19</td> <td>10</td> </tr> </tbody> </table>	A	11	7	10	17	10	B	13	21	7	11	13	C	13	13	15	13	14	D	18	10	13	16	14	E	12	8	16	19	10	<b>10</b>	<b>CO3</b>	<b>7</b>
A	11	7	10	17	10																													
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E	12	8	16	19	10																													



(b)

There are 3 suppliers of special hydraulic crane from Japan, South Korea and Germany. You are manager in a company. Projects are going on at 4 different locations Ahmedabad, Bhopal, Chennai and Dubai. Following Table shows requirement of crane at site and capacity of providers to provide maximum number of cranes. As a company manager take a decision, so as to minimize cost of procurement.

Site Location	Demand at site (in No.)
Ahmedabad	20
Bhopal	30
Chennai	50
Dubai	50

Supplier	Capacity of supply (in No.)
Japan	40
South Korea	60
Germany	50

This table will give you cost in Thousand dollars to procure one crane from specific supplier to specific site including transportation cost and all taxes.

	Ahmeda bad	Bhopal	Chennai	Duba
Japan	4	6	8	8
Korea	6	8	6	7
Germany	5	7	6	8

10

CO3

7

TABLE 1 Standard Normal Cumulative Distribution

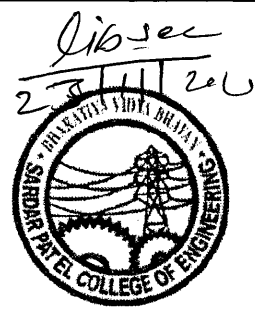
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0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	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
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998

From Irwin Miller and John E. Freund, *Probability and Statistics for Engineers*, 2nd ed., © 1977, p. 487. Reprinted by permission of Prentice-Hall, Inc., Englewood Cliffs, NJ.



Bharatiya Vidya Bhavan's  
**Sardar Patel College of Engineering**

(A Government Aided Autonomous Institute)  
Munshi Nagar, Andheri (West), Mumbai – 400058



**END SEMESTER**

**NOVEMBER 2016**

**Date : 18/11/2016**

**Program : M.TECH- Construction Management**

**Duration : 4 Hr**

**Course code : MTCM105**

**Maximum Marks : 100**

**Name of the Course : Elective I - Safety Management**

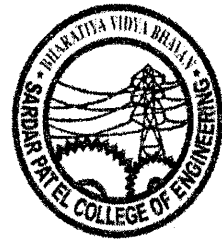
**Semester : I**  
*Master file.*

**Instructions: Question no 1 is compulsory**  
**Attempt any four from the remaining 6 Questions.**  
**Each Question carries 20 marks.**

Q.No.		Maximum Marks	Course Outcome Number	Module No.
Q1. A	Explain the concept Safety at Construction site, Explain the need and importance of safety at construction site	(10)	1	1
B	Explain the various Occupational Diseases to which construction workers are exposed to	(10)	1	1
Q3. A	Explain the main hazards in Excavation	(10)	2	2
B	Explain the benefits of Safety Management to various parties involved in project management	(10)	2	2
Q3. A	Explain the causes for fire at Construction site,	(10)	4	4
B	What are the causes for mental stress .Suggest steps to overcome stress	(10)	4	4
Q4. A	(a)Explain Safety Audit, Discuss broad areas for Safety Audit Evaluation.	(10)	3	3
B	Explain various standards for safety Audit	(10)	3	3
Q5. A	Explain Safety Measures for handling Materials at site	(10)	5	5
B	Suggest safety precautions for material handling at site.	(10)	5	5
Q6.A	Explain electrical shock protection measures for Welders	(10)	6	6
B	Explain various types of electrical injury	(10)	6	6
Q7. A	Explain the consequences of Accident at site	(10)	7	7
B	Explain the salient features of OSHA(USA)	(10)	7	7



Bharatiya Vidya Bhavan's  
**Sardar Patel College of Engineering**  
 (A Government Aided Autonomous Institute)  
 Munshi Nagar, Andheri (West), Mumbai – 400058



**End Semester Exam**

**November 2016**

Max Marks: 100 Marks

Duration: 4 hrs

Class: Construction Management

Semester: I

Program: M.tech

Name of the course: **Advanced Construction Techniques**

Master file.

Instruction:

- Attempt any five (5) questions

Q no.		Max. Marks	CO	MODULE NO.
Q:1				
A	Elaborate Sub surface soil Exploration.	(08)	CO1	1
B	Explain in detail Liquefaction of soil.	(06)	CO1	1
C	Discuss the role of pre-cast technology in development of smart cities justify your answers with example.	(08)	CO5	5
Q:2				
A	Different methods of Mechanical soil Stabilization and explain any one in detail.	(10)	CO2	2
B	Describe various methods of dewatering and explain any one in detail.	(10)	CO2	2
Q:3	Short Notes on <u>any (4) four:</u>			
A	Grillage	(5)	CO4	4
B	Tunnel Drainage	(5)	CO3	3
C	Tunnel Lining	(5)	CO3	3
D	Shoring	(5)	CO4	4
E	Tunnel Ventilation	(5)	CO3	3
F	Rock Tunnelling	(5)	CO3	3

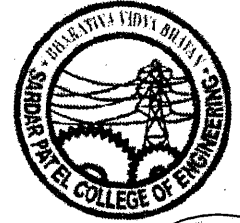
Q:4				
A	Describe procedure for drilled shaft and explain casing method with neat sketch.	(10)	CO4	4
B	Explain reinforcing steel and types.	(5)	CO6	6
C	Elaborate Environmental influences on structures.	(5)	CO7	7
Q:5				
A	Elaborate different type of formwork used in construction industries with their advantages.	(10)	CO5	5
B	List down the components of precast & pre-stressed concrete.	(5)	CO5	5
C	Write short note on dikes and their types with figure.	(5)	CO4	4
Q:6	Write short note on:			
A	Underwater concreting and explain Tremie method.	(8)	CO6	6
B	Shield tunnelling with diagram.	(7)	CO3	3
C	Pre-placed aggregate concrete.	(5)	CO6	6
Q:7				
A	List down non-conventional materials for construction and elaborate environmental influence on structures.	(5)	CO7	7
B	Explain TBM with sketch and list advantages & disadvantages.	(7)	CO3	3
C	Explain bonded and unbounded post-tensioning system.	(8)	CO5	5



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*lib sem*  
 23/11/2016



**END SEMESTER**  
**NOVEMBER 2016**

2

Date : 23/11/2016

Program : M.TECH- Construction Management

Duration : 4 Hr

Course code : MTCM104

Maximum Marks : 100

Name of the Course : Accounting & Finance Management

Semester : I

Instructions: Question no 1 is compulsory  
 Attempt any four from the remaining 6 Questions.  
 Each Question carries 20 marks.

Master file.

Q.No.		Maximum Marks	Course Outcome Number	Module No.																																																
Q1. A	Explain the importance of Book keeping																																																			
B	Journalise the following and post them into Ledger 1997	(6)	1	6																																																
	July 1 Ramesh commenced Business with <u>cash</u> Rs 16000 July 2 Sold <u>goods</u> to <u>Raj</u> on <u>credit</u> , Rs. Rs 6500 July 3 Paid cash to Sudheesh Rs. 7000 July 4 Goods lost by fire Rs 690 July 8 Purchased a Computer for cash Rs. 12000 July 14 Received cash on Account from Raj Rs. 8000 July 30 Goods distributed as samples Rs 326	(14)	1	6																																																
Q2	From the following details of shri Ramesh prepare Trading and Profit and Loss Account for the year ended 30.3.1998 and a Balance Sheet as on date	(20)																																																		
	<table border="0"> <tr> <td>Particulars.</td> <td>Debit (rs)</td> <td>Credit (rs)</td> </tr> <tr> <td>Capital</td> <td></td> <td>38000</td> </tr> <tr> <td>Drawings</td> <td>25000</td> <td></td> </tr> <tr> <td>Purchases</td> <td>16000</td> <td></td> </tr> <tr> <td>Sales return</td> <td>4000</td> <td></td> </tr> <tr> <td>Purchase return</td> <td></td> <td>900</td> </tr> <tr> <td>Furniture</td> <td>6000</td> <td></td> </tr> <tr> <td>Sales cash</td> <td></td> <td>10000</td> </tr> <tr> <td>Sales credit</td> <td></td> <td>10000</td> </tr> <tr> <td>Buildings</td> <td>12000</td> <td></td> </tr> <tr> <td>Stock 1-4-1997</td> <td>6000</td> <td></td> </tr> <tr> <td>Sundry expenses</td> <td>500</td> <td></td> </tr> <tr> <td>Bills payable</td> <td></td> <td>1000</td> </tr> <tr> <td>Commission Received</td> <td></td> <td>250</td> </tr> <tr> <td>Rent and taxes</td> <td>250</td> <td></td> </tr> <tr> <td>Wages and salaries</td> <td>7230</td> <td></td> </tr> </table>	Particulars.	Debit (rs)	Credit (rs)	Capital		38000	Drawings	25000		Purchases	16000		Sales return	4000		Purchase return		900	Furniture	6000		Sales cash		10000	Sales credit		10000	Buildings	12000		Stock 1-4-1997	6000		Sundry expenses	500		Bills payable		1000	Commission Received		250	Rent and taxes	250		Wages and salaries	7230			3	6
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	Carriage inwards 250																							
	Carriage outwards 350.																							
	Bills receivable 800																							
	Travelling expenses 600																							
	Bad Debts 400																							
	Sundry debtors 10800																							
	Insurance premium. 300																							
	Postage 150																							
	Motor car expenses 1200																							
	Cash in hand 880																							
	Sundry creditors 4380																							
	Motor car 5800																							
	Closing stock on 31.3. 1998 rs 12250 market value Rs 14000																							
Q3. A	Explain Accounting concepts in detail	(10)	3																					
B	Explain the features of trading and profit and loss account.	(10)	3																					
Q4	from the following Balance sheet of Non such company. prepare the following Ratios for the Year ending 31-3-1997(A) current Ratio ( b) Quick Ratio and (c)Debt- Equity Ratio	(20)																						
	<table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left;">Liabilities</th> <th style="text-align: left;">Assets</th> </tr> </thead> <tbody> <tr> <td>Equity share capital 500000</td> <td>Goodwill 250000</td> </tr> <tr> <td>12%preference Share Capital 250000</td> <td>Land &amp; Building 350000</td> </tr> <tr> <td>General Reserve 50000</td> <td>Furniture 50000</td> </tr> <tr> <td>Profit &amp; Loss A/c 200000</td> <td>Stock 300000</td> </tr> <tr> <td>Provision for tax 88000</td> <td>Bills receivable 15000</td> </tr> <tr> <td>Bills payable 62000</td> <td>Sundry debtors75000</td> </tr> <tr> <td>Bank Overdraft 10000</td> <td>Bank 100000</td> </tr> <tr> <td>Sundry Creditors 40000</td> <td>Marketable Securities 10000</td> </tr> <tr> <td>12% Debentures 250000</td> <td>Plant&amp;Machinery 300000</td> </tr> </tbody> </table>	Liabilities	Assets	Equity share capital 500000	Goodwill 250000	12%preference Share Capital 250000	Land & Building 350000	General Reserve 50000	Furniture 50000	Profit & Loss A/c 200000	Stock 300000	Provision for tax 88000	Bills receivable 15000	Bills payable 62000	Sundry debtors75000	Bank Overdraft 10000	Bank 100000	Sundry Creditors 40000	Marketable Securities 10000	12% Debentures 250000	Plant&Machinery 300000	3	3	6
Liabilities	Assets																							
Equity share capital 500000	Goodwill 250000																							
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12% Debentures 250000	Plant&Machinery 300000																							
Q5. A	Define Ratios List out different Types of Ratios and Explain their significance	(14)	4	6																				
B	List out the items coming under Current Assets and Current liabilities	(6)	5	6																				
Q6	The following particulars are obtained from the books of dream Flower Co. Ltd for the year ended 31st March 2001.Prepare the income statement in the vertical form:	(20)	5	6																				
	<table style="width: 100%; border: none;"> <tbody> <tr> <td>Opening stock 12,000</td> <td>Sales 15,00,000</td> </tr> <tr> <td>Closing stock 17,000</td> <td>purchases 10,00,000</td> </tr> <tr> <td>Carriage inwards 20,000</td> <td>Carriage outwards 42,000</td> </tr> <tr> <td>Salaries 75,000</td> <td>Debenture interest 20,000</td> </tr> <tr> <td>Interest paid 30,000</td> <td>Loss on sale of machinery 30,000</td> </tr> <tr> <td>Rent 20,000</td> <td>Interest received on investments 25,000</td> </tr> <tr> <td>Telephone charges 12,400</td> <td>Advertisement 50,000</td> </tr> <tr> <td>Depreciation on assets.32,000</td> <td>Interest on bank Deposits 14,000</td> </tr> <tr> <td>Dividend paid 25,000</td> <td>Transfer to general reserve 11,000</td> </tr> </tbody> </table>	Opening stock 12,000	Sales 15,00,000	Closing stock 17,000	purchases 10,00,000	Carriage inwards 20,000	Carriage outwards 42,000	Salaries 75,000	Debenture interest 20,000	Interest paid 30,000	Loss on sale of machinery 30,000	Rent 20,000	Interest received on investments 25,000	Telephone charges 12,400	Advertisement 50,000	Depreciation on assets.32,000	Interest on bank Deposits 14,000	Dividend paid 25,000	Transfer to general reserve 11,000					
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	Taxes@50%	Wages paid	3,000			
<b>Q7. A</b>	Define Cash flow Statement, Explain the activities resulting in cash flow generation .			(10)	6	6
<b>B</b>	Explain the importance of cash flow statement			(10)	7	6