Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM & ENERGY STUDIES
End Term Examination (Online) – Jan, 2020

Program: MBA-(BA) **Semester: I**
Subject/Course: Quantitative Methods **Max. Marks: 100**
Course Code: DSQT 7001 **Duration: 3 Hours**

Q.No	Section A Choose the Correct Answer in each of the following:	Marks	COs
Q1.	On the 17th July, Jatin has Rs. 400,000 savings and decides to spend Rs. 20,000 each year on the anniversary of this date, after how many approximate withdrawals will he have left with Rs. 18,000? He ignores any interest he receives. a) 17 b) 16 c) 18 d) 19	5	CO1
Q2.	Which samples exhibits the consistency? a) 2, 4, 6, 8, 10, 12 b) 2, 2, 3, 11, 12, 12 c) 2, 3, 4, 10, 11, 12 d) 2, 6, 7, 7, 8, 12	5	CO1
Q3.	Suppose a life insurance company sells a Rs. 2, 40,000 one-year term life insurance policy to a 25-year old female for Rs. 2100. The probability that the female survives the year is 0.99592. Find the expected value of this policy for the insurance company. a) Rs. 2100 b) Rs. 239790 c) Rs. 978 d) Rs. 1,122	5	CO1
Q4.	Some test scores follow a normal distribution with a mean 18 and a standard deviation of 6. What proportion of test takers have scored between 12 and 24? a) 22% b) 20 c) 34% d) 68 %	5	CO1

<table>
<tr><td>Q5.</td><td>A regression analysis between sales (in Rs. 10000) and price (in Rs.) resulted in the following equation:
y=40,000-8x

The above equation implies that an
(a) Increase of Rs. 1in price is associated with a decrease of Rs. 8 in sales
(b) Increase of Rs. 8in price is associated with a increase of Rs. 40000 in sales
(c) Increase of Rs. 1in price is associated with a decrease of Rs. 32000 in sales
(d) decrease of Rs. 1in price is associated with a Increase of Rs. 40000 in sales</td><td>5</td><td>CO1</td></tr>
<tr><td>Q6.</td><td>In the series 2 ,----,----,----,----,----, 32 find the missing value for third term
a) 19
b) 12
c) 24
d) 27</td><td>5</td><td>CO1</td></tr>
<tr><td></td><td>Section B</td><td></td><td></td></tr>
<tr><td>Q7.</td><td>According to Student Monitor, a New Delhi Research firm, the average cumulated college student loan debt for a graduating senior is Rs. 18, 00,000. Assume that the standard deviation of such student loan debt is Rs. 3, 97,880. 30% of these graduating seniors owe more than what amount (what is that minimum amount above with that they can complete their education)?</td><td>10</td><td>CO2</td></tr>
<tr><td>Q8.</td><td>Tickets for a certain show (Opera) bearing numbers from 1 to 100. The odd number tickets were sold by receiving equal Rs. 100 multiple of thrice the number on the ticket while the even number tickets were issued by receiving Rs. 100 multiple to twice the number on the ticket. How much was received by the issuing agency in total if all the tickets were sold until the show begins?</td><td>10</td><td>CO2</td></tr>
<tr><td>Q9.</td><td>Obesity in children is a major concern because it puts them at risk for several serious medical problems. Some researchers believe that a major issue related to this is that children these days spend too much time playing games in their cell phones /watching television and not enough time being active. Based on a sample of boys roughly the same age and height, data were collected regarding hours of involved in electronic gadgets per day and their weight. Compute Pearson’s correlation coefficient and indicate whether the correlation is significant.

<table><tr><td>Busy with cell phone game (hrs.)</td><td>1.5</td><td>5.0</td><td>3.5</td><td>2.5</td><td>4.0</td><td>1.0</td><td>0.5</td></tr><tr><td>Weight in (kg.)</td><td>40</td><td>55</td><td>48</td><td>42</td><td>50</td><td>40</td><td>38</td></tr></table></td><td>10</td><td>CO3</td></tr>
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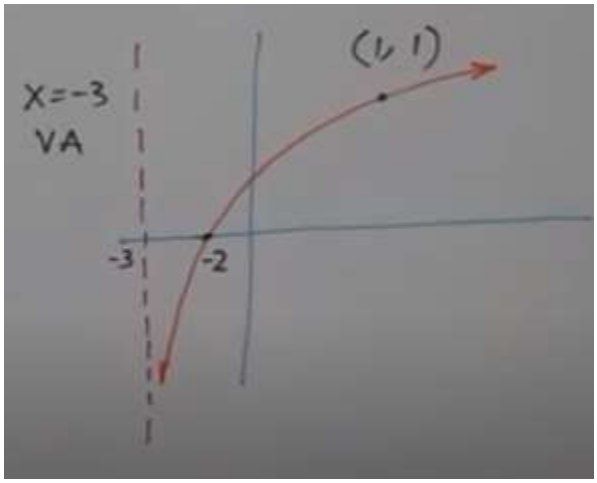
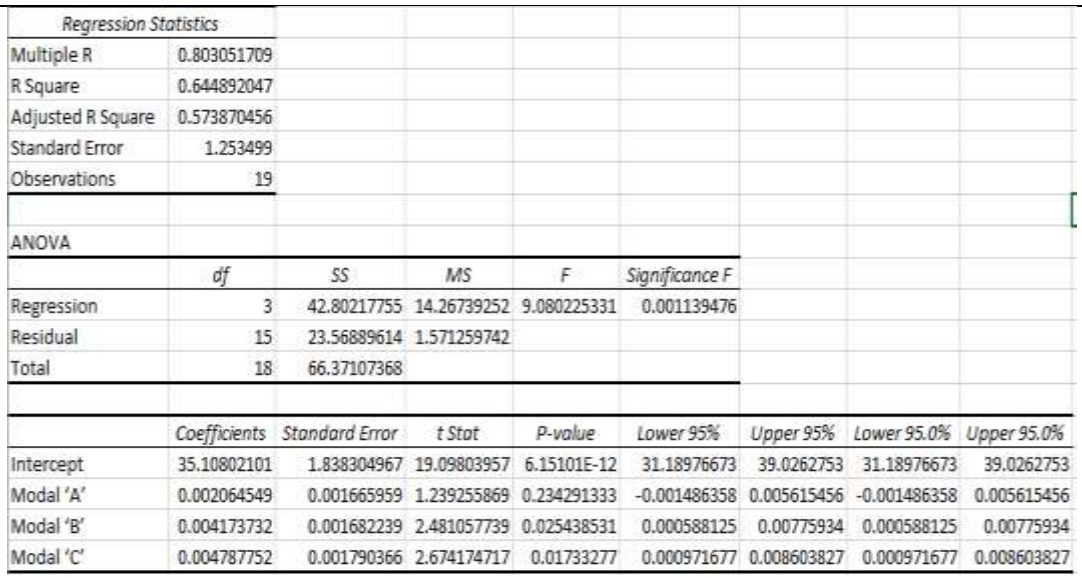
Q10.	In the following graph, analyze the function along with domain and range  	10	CO3
Q11.	Following data shows the different cost (in thousands of INR) incurred to run three different warehouse with different unit of production. The excel output for multiple regression on these data is also given.	10	CO3

Day	Cost in 000' of INR	Modal 'A'	Modal 'B'	Modal 'C'
1	44.44	515	541	928
2	43.94	929	692	711
3	44.47	800	710	824
4	41.53	979	675	758
5	46.34	1165	1147	635
6	44.92	651	939	901
7	43.20	847	755	580
8	43.00	942	908	589
9	40.97	630	738	682
10	48.58	1113	1175	1050
11	45.00	1086	1075	984
12	44.30	843	640	828
13	42.07	500	752	708
14	44.35	813	989	804
15	45.97	1190	823	904
16	47.78	1200	1108	1120
17	43.20	731	590	1065
18	44.07	1089	607	1132
19	44.61	786	513	839

	 a) **Develop** a regression model from the summary b) Also **predict** the cost if 'A model is 1500, 'B model is 1400 and 'C model is 1200.		
	Section C (Case Study)		
Q12.	As India battles its worst pandemic crisis, there will be a huge toll on the economy and the automobile industry, in particular, will take a hit. The initial estimates are scary, but the recovery could be expected with some timely government intervention. So in the automobile sector, as the current lockdown nears its end and business plan to revive operations, it will effectively be a fortnight of preparation to jump start business operations. This would be across aspects of employee engagement, cash and liquidity management, sales and marketing revival and operational continuity. In terms of marketing revival, it has been observed that there is tough competition between petrol car and diesel car in terms of consumer preferences. New Consumers are in dilemma while purchasing cars. One side petrol cars are cheaper and create less pollution and on the other side diesel cars are better in terms of mileage means less fuel consumption which is economical, but car with diesel engine is little expensive. Diesel cars need more maintenance. Petrol is expensive than diesel. Government is not allowing diesel cars in odd-even situation. So when consumer goes for purchasing, he has all the consequences in his mind. However, the following data is given for 320 middle-aged customers who has done five purchasing in lifetime. The following data has been recovered for number of petrol car purchased by the customer. **Build/Develop** the expected frequency curve (column) and Compare to the observed frequency of customer, which can prove whether customers are biased in selecting petrol cars. Interpret your solution for Business decision making in Automobile sector.	20	CO4

Regression Statistics

Multiple R	0.803051709
R Square	0.644892047
Adjusted R Square	0.573870456
Standard Error	1.253499
Observations	19

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	42.80217755	14.26739252	9.080225331	0.001139476
Residual	15	23.56889614	1.571259742		
Total	18	66.37107368			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	35.10802101	1.838304967	19.09803957	6.15101E-12	31.18976673	39.0262753	31.18976673	39.0262753
Modal 'A'	0.002064549	0.001665959	1.239255869	0.234291333	-0.001486358	0.005615456	-0.001486358	0.005615456
Modal 'B'	0.004173732	0.001682239	2.481057739	0.025438531	0.000588125	0.00775934	0.000588125	0.00775934
Modal 'C'	0.004787752	0.001790366	2.674174717	0.01733277	0.000971677	0.008603827	0.000971677	0.008603827

Number of Petrol car purchased(r)	**0**	**1**	**2**	**3**	**4**	**5**	Total
Observed Frequency of customer($O_{i)}$	5	45	80	110	50	30	320

OR

Two Friends Adithya Shankar and Ankit Bhatt they joined a reputed domain specific University to pursue their MBA degree (4 semester program). After clearing third semester, When the placement companies came, they both were selected in two different companies with the starting monthly salary of INR 40000/-, but due to different HR policy their yearly increment policy were quite different. Adithya's Company use to give Rs. 10000/- yearly increment whereas Ankit's company has incremental policy of 10% on current salary.

a) How much salary did each friends received after 15 years?
b) In which year will Ankit exceed Rs. 80000?
c) Build/plot a line graph of their monthly salary
d) In which year does Ankit catch up with Adithya' s salary?