Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination (Set 2), Dec, 2019

Course: Quantitative Methods **Semester: I**
Program: MBA(OG) **Time: 3 Hours**
Course code: DSQT 7001 **Max. Marks: 100**

Instructions: Please maintain the sequence of answers as per the questions, Initial one hour and last half an hour there will be no exit. Please entangle your graph sheets at last but leaving one page inside your answer sheets.

SECTION A **(10 * 2 Marks Each = 20 Marks)**

Q1.	Box Plot is most used graphical representation in business as it gives more accurate information about data A. True B. False C. Can't say	**2**	**CO1**
Q2.	Which set of order pair is function {(9,5).(10,5),(9,-5),(10,-5)} {(2,-2).(5,9),(5,7),(1,4)} {(6,-5).(7.-3),(8,-5),(9,1)} {(3,4).(4,-3),(7,4),(10,-5)} A. {(9,5).(10,5),(9,-5),(10,-5)} B. {(3,4).(4,-3),(7,4),(10,-5)} C. {(2,-2).(5,9),(5,7),(1,4)} D. {(6,-5).(7.-3),(8,-5),(9,1)}	**2**	**CO1**
Q3.	A person is employed at monthly salary of Rs. 75000/- with an annual increment of Rs. 2500. How much does he earn in 10 years? A. Rs. 1,04,50000 B. Rs. 1,03,50000 C. Rs. 1,05,50000 D. Rs. 1,06,50000	**2**	**CO1**
Q4.	Which of the following shows the most correct variation of the 'Y' values around the regression lines? A. $\sum(\boldsymbol{Y}-\overline{\boldsymbol{Y}})^{\boldsymbol{2}}$ B. $\sum(\boldsymbol{Y}-\widehat{\boldsymbol{Y}})^{\boldsymbol{2}}$ C. $\sum\sum(\boldsymbol{Y}-\widehat{\boldsymbol{Y}})^{\boldsymbol{2}}$ D. $\sum(\boldsymbol{Y}+\widehat{\boldsymbol{Y}})^{\boldsymbol{2}}+\sum(\boldsymbol{Y}-\widehat{\boldsymbol{Y}})^{\boldsymbol{2}}$	**2**	**CO1**
Q5.	Coefficient of variation of the sales revenue of one company is 23% and other company has 32%, which company has better sales revenue?	**2**	**CO1**

	A. Company 1 B. Company 2 C. Company 1& 2 D. None		
Q6.	Area covered by the normal curve within $\mu \pm 3\sigma$ limits is A. 68.27% B. 100% C. 99.73% D. 95.45%	**2**	**CO1**
Q7.	Probability of not mutually exclusive event is A. P(A or B)=P(A) X P(B) B. P(A or B)=P(A) + P(B) C. P(A or B)=P(A) / P(B) D. P(A or B)=P(A) + P(B)-P (A and B)	**2**	**CO1**
Q8.	Poisson Distribution is Limiting case of Binomial Distribution A. True B. Might be C. False D. Can't Say	**2**	**CO1**
Q9.	Expected value and weighted average are the same thing. A. No B. Possible C. Yes D. Varies as per situation	**2**	**CO1**
Q10.	Skewness measures the degree of flatness or peakedness whereas kurtosis measures the degree of asymmetry A. No B. Possible C. Yes D. Varies as per situation	**2**	**CO1**
	SECTION B	**(4* 5 Marks Each -20 Marks)**	
Q11.	A firm invest Rs. 50,000 each year in a research programme where the rate of return is 10% per annum on the investment. What is the total value of the investment after 10 years if the return on investment in a year is added to the investment in the next year?	**5**	**CO2**

<table>
<tr><td>Q12.</td><td>The mean and variance of a discrete variable(x) are 6 and 2, respectively. Assuming X to follow a binomial distribution, find P($5 \leq X \leq 7$)</td><td>5</td><td>CO2& CO3</td></tr>
<tr><td>Q13.</td><td>The sum of 50 observations is 500, the sum of their squares is 6000, and median is 12. Compute the coefficient of variation and coefficient of skewness.</td><td>5</td><td>CO2& CO3</td></tr>
<tr><td>Q14.</td><td>A distributors of LPG Cylinders knows that 5% cylinder has some defect due to any reason (leakage/loose valve/other). If he sells in a lot of 100, and guarantees that not more than 10 cylinders will be defective, what is the probability that a lot will fail to meet the guaranteed quality?</td><td>5</td><td>CO4</td></tr>
<tr><td colspan="4">SECTION-C (2* 15 Marks Each- 30 Marks)</td></tr>
<tr><td>Q15.</td><td>The director of Management training program is interested to know whether ther is a positive association between a trainee’s score prior to his/her joining the program and same trainee’s score after the completion of the training. The director has obtained the score of 10 trainee’s as follows:
<table>
<tr><td>Trainee</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr>
<tr><td>Rank Score I before Training</td><td>1</td><td>4</td><td>10</td><td>8</td><td>5</td><td>7</td><td>3</td><td>2</td><td>6</td><td>9</td></tr>
<tr><td>Rank Score II after the training</td><td>2</td><td>3</td><td>9</td><td>10</td><td>5</td><td>6</td><td>1</td><td>4</td><td>7</td><td>8</td></tr>
</table></td><td>15</td><td>CO1</td></tr>
<tr><td>Q16.</td><td>The average daily sales of 500 branch officials was Rs. 1, 50,000 and the standard deviation was Rs. 15,000. Assuming the distribution to be normal, indicate how many branches have sales between
a)Rs. 1,20,000 and Rs. 145,000
b)Rs. 1,40,000 and Rs. 1,65,000
c)More than Rs. 1,65,000</td><td>15</td><td>CO1</td></tr>
<tr><td colspan="4">SECTION-D (30 Marks)
Case Study
(Business Model for Advertising Expenditure)</td></tr>
<tr><td>Q17.</td><td>Marketing promotion strategy integrates the organization’s communication initiatives, combining advertising, personal selling, sales promotion, interactive/internal marketing, direct marketing, and public relation to communicate with buyers and others who influence purchasing decision. (David W. Cravens, 2009) So sales of new product is depends on aggressive promotion strategy of the company and existing product sales not only depends on promotion but also ex experience & brand image. Promotion plays an essential role in achieving impressive growth and financial</td><td></td><td>CO4</td></tr>
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performance for Louis Vuitton, the largest and most profitable luxury brand in the world. (The Vuitton Machine, 2004)
Advertisement is most significant, extensively used, non-personal communication and expensive marketing promotion tool. We enjoy various advantages of using
advertising to communicate with buyers are the low cost per exposure, the variety of media (newspaper, magazine, television, radio, internet, direct mail and outdoor advertising), control of exposure, consistent message content (can be adjustable on objective) and opportunity for creative business design. (David W.
Cravens, 2009) We observed that most of the companies of our country are showing the advertisement expenditure in their financial statement and only few companies are disclose business promotion expenditure which are not countable due to insufficient data.

Relationship between Advertising Expenditure and Sales Revenue:
Advertising is any paid form of non-personal presentation and promotion of ideas and goods or services by and identified sponsor. (D. Bennett, 1995) Through advertising is used to establish a basic awareness of the product or service in the mind of the potential customer and to build up knowledge about it. (D.P.Morden, 1991) Additionally, Advertising does not inform the public that a product exists but promotes its benefits, it also persuades, induces people to like, prefer and buy a product to others (Young C.E., 2005) Sales revenue is the total amount of money that the firm gets from the sale of all its goods and services
in a given period of time. This is usually six months or a year if a firm produced only one product or service, the sales revenue will be the price of the product multiplied by the number of products sold. In the case of more than ne product or service the revenue from each needs to be added together (wood, 1996). Advertising have a positive relationship with demand of product or service. (Verdon, 1968). It is also
positive relationship with sales by co-integration method. (Leong, 1996). In the same way, Variables of advertising and sales are not only integrated of same order but these are co- integrated with each other. It is also found that the causal relationship between advertising expenditure and sales effects in both directions. (Lee,
1996). Additionally, advertising expenses caused sales but sales do not simultaneous cause advertising expenditure from Granger causality test. (Leach, 1996). On other factors are remain control (company size, sales
Growth etc) a measurable relationship between advertising expenditure and sales. (Kamber, 2002). So, advertisement has influenced on sales, through its relative effectiveness was not the same for all the categories of firms (small, medium and large scale firm). (Sundarsan, 2007) As a result it is also found that a large scale firm
can better use their marketing promotion expenses due to their benefit of economies of scale and effectiveness of advertisement is varying on manufacturing and non – manufacturing sector. Consequently, it is the complex relationship between advertising expenditure and sales revenue. Advertising expenditure is crucial factor, not only one factor which determining sales revenue through increasing popularity of product or service. (Sharma, July,2009) So, maximum number of research were conducted on determined to measure the sales effect of advertising expenditure instead of settling on communication effect measure (John and Judy, 1996)

	The data relate to TV advertising expenditures, newspaper advertising expenditure and sales for four consecutive months is given as follows (Name of the company has been kept disguised) Fit a multiple regression line Yon X i.e. $Y = \alpha + \beta_1 X_1 + \beta_2 X_2$ and find coefficient of determination to interpret the business model properly.		

TV advertising expenditure (0000'Rs.) X_1	4	7	9	12
Newspaper expenditure (0000'Rs.) c	1	2	5	8
Sales (Rs. 10 lakh.) Y	7	12	17	20