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

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Business Statistics **Semester: II**
Program: BBA (Core, AIS, AM, DM, OG) **Time: 03 Hours**
Course code: DSQT1004 **Max. Marks: 100**
Instructions:

SECTION A

		Marks	CO
Q	Choose an appropriate answer.		
1.	(i) The range of the probability for an event E is (a) $P(E) \geq 1$ (b) $P(E) \leq 0$ (c) $0 \leq P(E) \leq 1$ (d) $-1 \leq P(E) \leq 1$ (ii) What is the total numbers of outcomes if we throw four dice? (a) $1/(6)^4$ (b) 216 (c) $(6)^4$ (d) None of these (iii) For a platykurtic curve the value of β_2 is (a) 3 (b) Less than 3 (c) Greater than 3 (d) $-3 \leq \beta_2 \leq 3$ (iv) The Karl pearson's coefficient of correlation and covariance between two variable X and Y is -0.85 and -15 respectively. If the standard deviation of Y is 3 then the standard deviation of X will be. (a) 5.88 (b) -0.85 (c) -15 (d) Can't find (v) Correlation is the most popular statistical measure that indicates	**20**	**CO1**

(a) Whether or not the relationship exist?
(a) Direction of relationship within the variables (Direct or indirect)?
(a) Relationship is strong or Weak?
(b) All of the above

(vi) The Geometric mean of the observations 2, 2, 2, 4, 0 will be

(a) 2
(b) 3
(c) 4
(d) None of these

(vii) If the value of regression coefficients is b_{xy} and b_{yx} then correlation coefficient (r) will be

(a) $\pm\frac{b_{xy}}{b_{yx}}$
(b) $\pm\sqrt{b_{xy}.b_{yx}}$
(c) $b_{xy}.b_{yx}$
(d) $b_{xy}+b_{yx}$

(viii) Relation between Arithmatic Mean (A), Geometric Mean (G) and Harmonic Mean (H) is

(a) G=AH
(b) G^2=A+H
(c) G^2=A.H
(d) G^2=A-H

(ix) Median of 2, 3, 8, 2, 4, 8 will be

(a) 5
(b) 3
(c) 2
(d) 3.5

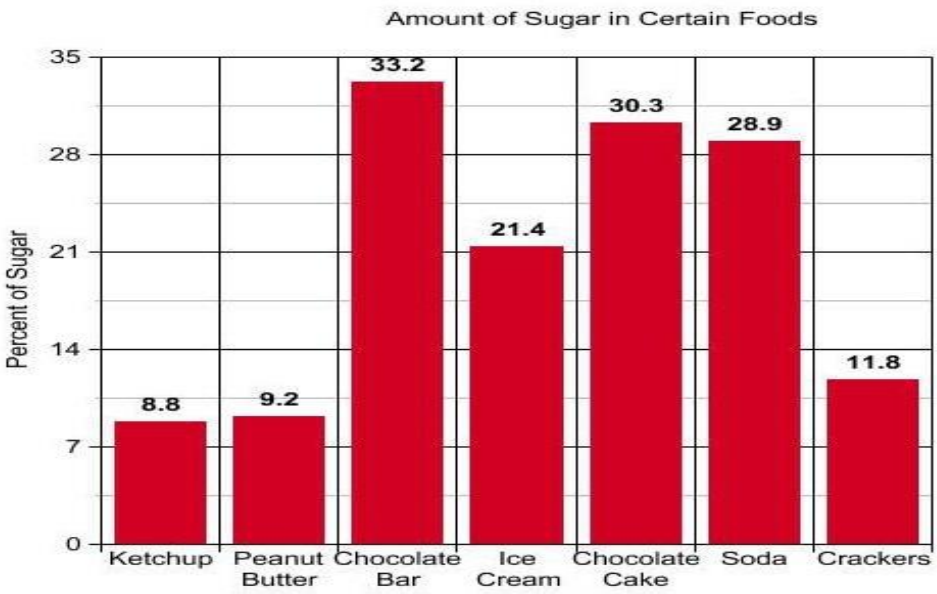
(x) A bag contains a green ball, a white ball and a black ball all balls being of the same shape and size. Rohan takes a ball from the bag without looking into it, the probability that he takes out a black ball will be

(a) 1/2
(b) 1/3
(c) 1/4
(d) None of these

SECTION B

Q Fill in the blanks.

2.	(a) …….. divide the entire data in to two equal halves. (b) The algebraic sum of the deviations of an observation taken to its mean is always……. (c) A statistical technique which gives a functional relation between the variables X and Y is known as ……. analysis. (d) …… is the value at which frequency is high. (e) Mean of 2.5, 4.25, 6.75, 8.2, 2.8 is …… (f) Two coins are tossed. Probability of getting two Heads is …… (g) For perfect positive correlation, value of Karl Pearson Correlation coefficient will be …… (h) For positively skewed data Mean ……. Median. (< , >) (i) The Class interval 0-9, 10-19, 20-29, 30-39 are example of ……. Class interval. (inclusive/exclusive) (j) For asymmetrical data Mean = ……. Median - …….. Mode	**20**	**CO1**
	SECTION-C		
Q	Answer any five questions.		
3.	(a) Two dice are thrown simultaneously. Find the probability of getting sum as ten? (b) Two coins are tossed. Find the probability of getting exactly one Head?	**6**	**CO1**
4.	The following table shows the distribution of the number of hours worked each week (on average) for a sample of 100 community college students. **Hours Worked per Week** / **Number of Students** 0 – 10 / 24 10 – 20 / 14 20 – 30 / 39 30 – 40 / 18 40 – 50 / 5 Check whether the given data is symmetrical or not?	**6**	**CO2**
5.	The probability that a ticketless traveler is caught during trip is 0.1. If the traveler makes 4 trips, the probability that he/she will be caught during at least one of the trips is?	**6**	**CO2**
6.	Differentiate between correlation and regression?	**6**	**CO1**
7.	The amount of sugar in 7 different foods was measured as a percent. The data is summarized in the bar graph below.	**6**	**CO2**



(a) How many categories are in the graph?
(b) Which food had the lowest percentage of sugar?
(c) What percentage of sugar is in soda?
(d) What is the difference in percentage of sugar between ice cream and crackers?
(e) Which food had the highest percentage of sugar after Chocolate Bars?
(f) Arrange the categories in ascending order of the amount of sugar.

8. From a well-shuffled pack of cards two cards are drawn at random. Find the probability that the selected card are a King and an ace? **6** **CO2**

9. Calculate the first and third quartiles from the following data. 6 **CO1**

Size of Shoes	Frequency
0 - 10	5
10 - 20	7
20 - 30	8
30 - 40	12
40 - 50	28
50 - 60	22
60 - 70	10
70 - 80	8

SECTION-D

Q Answer the following Question.

From the data given below find **CO3**

X	7	4	8	6	5
Y	6	5	9	8	2

	(a) Two lines of regression equation. (b) The coefficient of correlation between the age and blood pressure? (c) Estimate X when Y is 15?	**15** **7.5** **7.5**	

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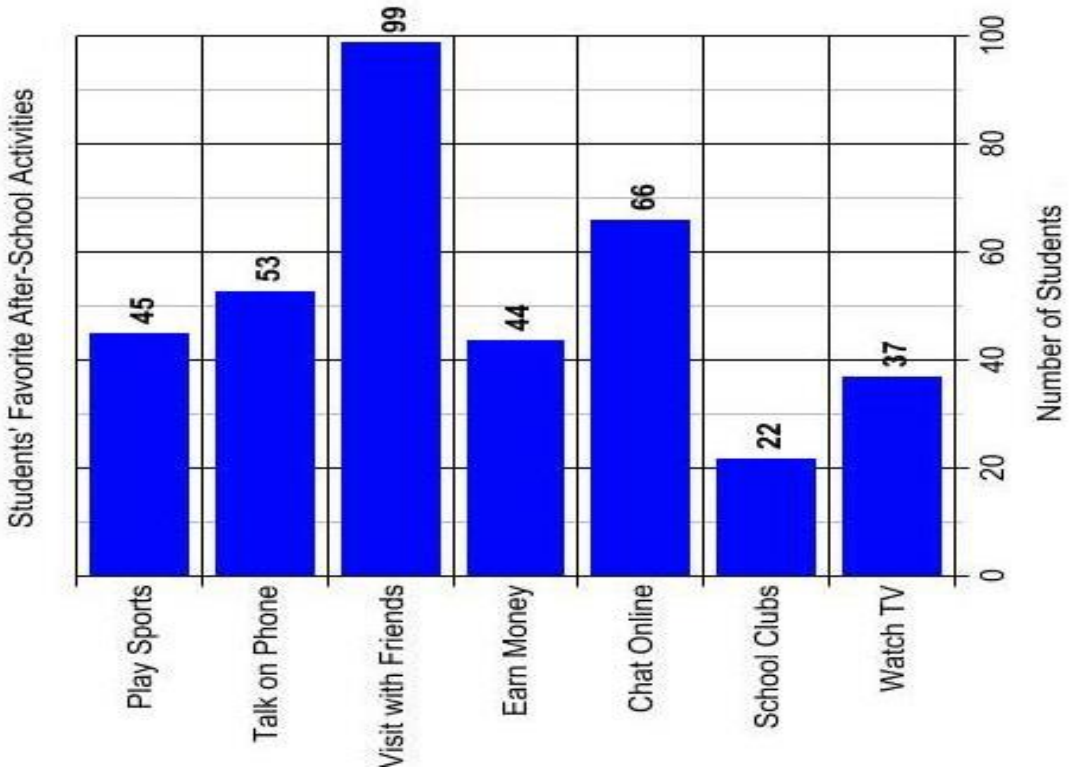
Instructions:

SECTION A

		Marks	CO
Q 1	Choose an appropriate answer.		
	(i) A bag contains a green ball, a white ball and a black ball all balls being of the same shape and size. Rohan takes a ball from the bag without looking into it, the probability that he takes out a black ball will be (a) 1/2 (b) 1/3 (c) 1/4 (d) None of these (ii) If number of students in the MBA class is 30 then probability that each will be included in the sample using simple random sampling is (a) 1/30 (b) $1/30^2$ (c) 1/10 (d) None of these (iii) The range of the probability for an event E is (a) $P(E)\geq 1$ (b) $P(E)\leq 0$ (c) $0\leq P(E)\leq 1$ (d) $-1\leq P(E)\leq 1$ (iv) For a Mesokurtic curve the value of β_2 is (a) 3 (b) Less than 3 (c) Greater than 3 (d) $-3\leq\beta_2\leq 3$ (v) The Karl pearson's coefficient of correlation and covariance between two variable X and Y is -0.85 and -15 respectively. If the standard deviation of Y is 3 then the standard deviation of X will be.	**20**	**CO1**

	(a) 5.88 (b) -0.85 (e) -15 (f) Can't find (vi) Correlation is the most popular statistical measure that indicates (a) Whether or not the relationship exist? (b) Direction of relationship within the variables (Direct or indirect)? (c) Relationship is strong or Weak? (d) All of the above (vii) The Geometric mean of the observations 2, 2, 2, 4, 0 will be (a) 2 (b) 3 (c) 4 (d) None of these (viii) Relation between Arithmatic Mean (A), Geometric Mean (G) and Harmonic Mean (H) is (a) G=AH (b) G^2=A+H (c) G^2=A.H (d) G^2=A-H (ix) Median of 2, 3, 8, 2, 4, 8 will be (a) 5 (b) 3 (c) 2 (d) 3.5 (x) If the value of regression coefficients is b_{xy} and b_{yx} then correlation coefficient (r) will be (a) $\pm\frac{b_{xy}}{b_{yx}}$ (b) $\pm\sqrt{b_{xy}.b_{yx}}$ (c) $b_{xy}.b_{yx}$ (d) $b_{xy}+b_{yx}$		
	SECTION B		
Q	Fill in the blanks.		
2.	(a) …….. divide the entire data in to two equal halves. (b) The algebraic sum of the deviations of an observation taken to its mean is always…….	**20**	**CO1**

	(c) A statistical technique which gives a functional relation between the variables X and Y is known as ……. analysis. (d) …… is the value at which frequency is high. (e) Mean of 2.5, 4.25, 6.75, 8.2, 2.8 is …… (f) Two coins are tossed. Probability of getting two Heads is …… (g) For perfect positive correlation, value of Karl Pearson Correlation coefficient will be …… (h) For positively skewed data Mean ……. Median. (< , >) (i) The Class interval 0-9, 10-19, 20-29, 30-39 are example of ……. Class interval. (inclusive/exclusive) (j) For asymmetrical data a. Mean = ……. Median - …….. Mode		
SECTION-C			
Q	Answer any five questions.		
3.	(a) From a well shuffled pack of cards two cards are drawn at random. Find the probability that the selected cards are face cards? (b) Three coins are tossed. Find the probability of getting exactly two Heads?	**6**	**CO2**
4.	The following table gives the weekly expenditure of 100 families. **Hours Worked per Week** | **Number of families** 0 - 10 | 14 10 - 20 | 23 20 – 30 | 27 30 – 40 | 21 40 – 50 | 15 Check whether the given data is symmetrical or not?	**6**	**CO2**
5.	The probability that a ticketless traveler is caught during trip is 0.1. If the traveler makes 4 trips, the probability that he/she will be caught during at least one of the trips is?	**6**	**CO2**
6.	Define skewness and kurtosis?	**6**	**CO1**
7.	A survey of students favorite after-school activities was conducted at a school. The graph below shows the results of this survey.	**6**	**CO1**



(a) Find total number of students, if each students is participating only in one activity?
(b) Which activity has the lowest percentage of participation?
(c) Which two activities are liked almost equally?
(d) List the categories from greatest to least participations?
(e) Find the difference of the number of student participated for talk on phone and chat online?
(f) How many students like to earn money?

8. Differentiate between correlation and regression? **6** **CO1**

9. Find the standard deviation of the following data? **6** **CO2**

Marks	Frequency
44-46	3
46-48	24
48-50	27
50-52	21
52-54	5

SECTION-D

Q Answer the following Question.

10. From the data given below find **CO2**

Age (in years)	47	80	61	39	91	70	97	69	75	71

Blood Pressure	57	111	73	51	124	67	121	108	97	91	

(a) Two lines of regression equation. **15**
(b) The coefficient of correlation between the age and blood pressure? **7.5**
(c) Estimate the blood pressure of a person aged 20 years? **7.5**