MIDTERM EXAMINATION – BUSINESS ANALYTICS

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Name: _____   Course/Year/Section: _____   **Score**

I. Write **T** if the statement is true. Otherwise, write **False**. Every correct answer is worth 2 points.

1. Business Analytics uses data, IT software, statistical and quantitative analysis to help managers make informed decisions.

2. Data used in business analytics are usually related to an organization's processes, production, supplies, sales, and marketing.

3. Business Analytics only allows examination of historical data and does not provide prediction of business trends.

4. Big Data refers to the accumulation of a large amount of data from a single source, usually a Point-of-Sale system.

5. Rankings (first, second, third) are considered Categorical / Nominal data.

6. The arithmetic mean of a sample and the arithmetic mean of a population can be determined by using the AVERAGE(data range) function.

7. In a set of data, the mean determines the midpoint of the data set.

8. If a data set has a mode of 26, it means that the number of values in the data set is 26.

9. The larger the variance, the more the data are spread out from the mean.

10. To compute the standardized value or z-score of a given data set, the Chebyshev's theorem is applied.

II. Write the letter of the correct answer. Every correct answer is worth 2 points. **(Use capital letters only)**

1. Which of the following business questions is typically answered by descriptive analytics?
    A. What will happen to Brand X's sales if its price is increased by 10%?
    B. How many and what types of customers bought product A?
    C. How much should we produce to maximize profit?
    D. All of the given choices

2. Which of the following business questions is typically answered by prescriptive analytics?
    A. What is the region with the most number of sales in the first quarter of 2020?
    B. What is the impact of the recent marketing campaign to the overall sales of the product?
    C. What is the optimal ratio of materials to decrease production cost by 5%?
    D. None of the given choices

Customers of a delivery service were given survey forms to determine their satisfaction rating. They were asked to provide the following:
    - Gender
    - Age
    - Region
    - Length of using the delivery service
    - Overall satisfaction (using a scale of 1–5, going from poor to excellent)
    - Whether they will recommend the service to others (answerable by Yes or No)

3. Which of the survey items is/are ordinal? (Write all that apply)
    A. Gender   `
    B. Region
    C. Overall satisfaction
    D. Whether they will recommend the service to others

4. Which of the survey items is/are categorical? (Write all that apply)
    A. Gender

B. Age

C. Region

D. Length of using the delivery service

5. Which of the following is / are NOT affected by outliers? (Write all that apply)

A. Interquartile Range

B. Mean

C. Range

D. Median

6. A store owner knows that the delivery of product A takes a standard of 2 weeks (14 days) with a standard deviation of 2 days. If the store owner uses the second empirical rule, in how many days will the delivery most probably arrive?

A. 12 – 16 days

B. 10 – 18 days

C. 14 – 16 days

D. 13 – 15 days

7. A business analyst used the function **=QUARTILE.INC(E2:E105,1)**. Which of the following is / are true? (Write all that apply)

A. The analyst wants to determine the first quartile (Q1) of the data set.

B. The mean, $\bar{x}$, is at cell E105.

C. The first observation is at cell E2.

D. There are 105 observations in the data set.

	A	B	C	D	E	F
1	Weddings					
2						
3	Couple's Income	Bride's age	Payor	Wedding cost	Attendance	Value Rating
4	$130,000	22	Bride's Parents	$60,700.00	300	3
5	$157,000	23	Bride's Parents	$52,000.00	350	1
6	$98,000	27	Bride & Groom	$47,000.00	150	3
7	$72,000	29	Bride & Groom	$42,000.00	200	5
8	$86,000	25	Bride's Parents	$34,000.00	250	3
9	$90,000	28	Bride & Groom	$30,500.00	150	3
10	$43,000	19	Bride & Groom	$30,000.00	250	3
11	$100,000	30	Bride & Groom	$30,000.00	300	3
12	$65,000	24	Bride's Parents	$28,000.00	250	3
13	$78,000	35	Bride & Groom	$26,000.00	200	5
14	$73,000	25	Bride's Parents	$25,000.00	150	5
15	$75,000	27	Bride & Groom	$24,000.00	200	5
16	$64,000	25	Bride's Parents	$24,000.00	200	1
17	$67,000	27	Groom's Parents	$22,000.00	200	5
18	$75,000	25	Bride's Parents	$20,000.00	200	5
19	$67,000	30	Bride's Parents	$20,000.00	200	5
20	$62,000	21	Groom's Parents	$20,000.00	100	1
21	$75,000	19	Bride's Parents	$19,000.00	150	3
22	$52,000	23	Bride's Parents	$19,000.00	200	1
23	$64,000	22	Bride's Parents	$18,000.00	150	1
24	$55,000	28	Bride's Parents	$16,000.00	100	5
25	$53,000	31	Bride & Groom	$14,000.00	100	1
26	$62,000	24	Bride's Parents	$13,000.00	150	1
27	$40,000	26	Bride's Parents	$7,000.00	50	3
28	$45,000	32	Bride & Groom	$5,000.00	50	5

8. Refer to the figure above. The manager wants to know the number of weddings with a value rating of 5. Which of the following functions should be used?

A. =COUNT(F4:F28,"=5")

B. =COUNTIF(F4:F28,"=5")

C. =COUNTIFS(F4:F28,"=5")

D. =COUNTIF(F4:F28,=5)

9. The function **=AVERAGEIF(C4:C28,C6,A4:A28)** determines what value?
   A. The average income of the couples who got married.
   B. The average number of weddings who were paid by the bride and groom.
   C. The average income of the bride and groom who paid their own weddings.
   D. The number of couples with a high income.

10. What function should be used to determine the number of weddings with 150 attendees or more?
   A. =COUNTIF(E4:E28,<=150)
   B. =COUNTIFS(E4:E28,"<=150")
   C. =COUNTIF(E4:E28,"<=150")
   D. =COUNTIFS(E4:E28,<=150)

III. Answer one of the questions below in at least 5 sentences. (5 points)

1. Explain why analytics is important in today's business environment.
2. Give a specific industry, business, or organization where business analytics can be of use. Provide specific scenarios on how business analytics can be beneficial to your chosen industry, business, or organization.
3. Suggest some metrics that a hotel might want to collect about their guests. How might these metrics be used with business analytics to support decisions at the hotel?

IV. For the data set **Weddings** in Test II, determine the following:
a. Average couple's income
b. Average wedding cost
c. Variance of the wedding cost
d. Standard deviation of the wedding cost
e. Z-score of the wedding cost

Note: Use the population formula.

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