

**King Saud University**

**College of Science**

**Department of Statistics & Operations Research**

**STAT 145**

**Mid-Term I Examination**

**First Semester**

**1434/35**

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|  | | | **Student Name** |
|  | **Section Number:** |  | **Student Number:** |
|  | **Serial Number**: |  | **Teacher Name:** |

⏩ Mobile Telephones are not allowed in the classrooms

⏩ Time allowed is 1 and 1/2 hour

⏩ Attempt all questions

⏩ Choose the nearest number to your answer

⏩ For each question, put the code of the correct answer in the following table beneath the question number:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** |
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| **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** | **30** |
|  |  |  |  |  |  |  |  |  |  |

**Answer the following questions:**

**Question 1:** In a study, let the frequency distribution table of the weight of a sample of 200 patients in a certain medical clinic are as follow:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Weight | Frequency | Cumulative Frequency | True Classes |
| 1 | 40 – 44 | 22 |  |  |
| 2 | 45 – 49 | 43 |  |  |
| 3 | 50 –54 | 52 |  |  |
| 4 |  | 46 |  |  |
| 5 | 60 – 64 |  |  |  |
|  | Total | 200 |

1. **The variable is:**

(A) The medical clinic (B) Patients in the clinic (C) The weight (D) None of these.

1. **The 4th class interval is:**

A) 55 – 59 B) 54 – 59 C) 55 – 60 D) 54 – 60

1. **The 5th frequency is:**

A) 22 B) 37 C) 43 D) 65

1. **The 3rd cumulative frequency is:**

A) 163 B) 65 C) 117 D) 52

1. **The 2nd true class interval is:**

A) 44.5 – 49.5 B) 44.5 – 48.5 C) 45.5 – 49.5 D) 44 – 50

**6) The type of the variable is:**

A) Quantitative Discrete B) Qualitative Nominal

C) Quantitative Continuous D) Qualitative Ordinal

**Question 2:** A random sample of 800 mothers from some health centre was investigated. The following table cross-tabulates the counts of mothers in the classifications of whether the baby was premature (ولادة مبكرة) or not and whether the mother smokes during pregnancy (الحمل) or not.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Premature (C) | Not-Premature (D) | Total |
| Smoke (A) | 150 | 250 | 400 |
| Not-Smoke (B) | 200 | 200 | 400 |
| Total | 350 | 450 | 800 |

**If a mother is randomly chosen, find:**

1. **Describe the event**  **in words**

A) Smoke and Not- Premature B) Not-Smoke given that Not- Premature

C) Smoke given that Not- Premature D) Not-Smoke or Premature

1. **The probability that she smokes is:**

A) 0.1875 B) 0.5 C) 0.5625 D) 0.4375

1. **The probability that she had a premature baby is**

A) 0.1875 B) 0.5 C) 0.5625 D) 0.4375

1. **The probability that she had a premature baby and she smokes is:**

A) 0.1875 B) 0.5 C) 0.5625 D) 0.4375

1. **The probability that she had a premature baby or she smokes is:**

A) 0.429 B) 0.375 C) 0.75 D) 0.43

1. **The probability that she had a premature baby given that she smokes is:**

A) 0.429 B) 0.375 C) 0.75 D) 0.43

1. **The events she had a premature baby and she smokes are**

A) Independent B) Dependent C) Disjoint D) None of them

**Question 3: The data below presents the number of hours spend in exercising each week for sample of 9 persons as follow:**

**A: 4 6 8 7 7 3 5 4 7**

1. **The sample mean is:**

A) 3.667 B) 5.222 C) 4.889 D) 5.667

1. **The sample median is:**

A) 7 B) 5 C) 6 D) 8

1. **The sample mode is:**

A) 7 B) 5 C) 6 D) 8

1. **The sample range is:**

A) 7 B) 5 C) 6 D) 8

1. **The sample standard deviation is:**

A) 2.134 B) 1.732 C) 3.442 D) 1.543

1. **The sample coefficient of variation is:**

A) 37.66 % B) 35.43 % C) 33.17 % D) 30.56 %

1. **If another data B of rat pups has provided the mean and the standard deviation then:**

A) Data **A** is more variation B) Data **B** is more variation

C) Both data have similar variation D) Comparison is not possible

**Question 4: A medical research team wished to evaluate effectiveness of a heart disease. This test was given the below results concerning 1000 objects:**

|  |  |  |  |
| --- | --- | --- | --- |
| Diagnosis  Test Result | Yes () | No () | Total |
| Positive () | 530 | 80 | 610 |
| Negative () | 20 | 370 | 390 |
| Total | 550 | 450 | 1000 |

1. **A false negative is:**

A) Test indicates a positive result when the person does not have the disease (│)

B) Test indicates a negative result when the person has the disease (│)

C) Test indicates a positive result when the person has the disease (│)

D) Test indicates a negative result when the person does not have the disease(│)

1. **The sensitivity of the symptom is**

A) 0.882 B) 0.401 C) 0.964 D) 0.986

1. **The specificity of the symptom is**

A) 0.822 B) 0.401 C) 0.964 D) 0.986

1. **Suppose it is known that the rate of the disease in the general population is 0.11, the predictive value positive of the symptom is**

A) 0.822 B) 0.401 C) 0.964 D) 0.986

**Question 5:** If P(A)= 0.2 , P(B)= 0.4 and , then

1. 

A) 0.35 B) 0.4 C) 0.3 D) 1.0

1. 

A) 0.5 B) 0.4 C) 0.625 D) 0.75

1. 

A) 0.35 B) 0.30 C) 0.2 D) 0.15

1. **The events A and B are**

A) Disjoint B) Not disjoint C) Independent D) None of these

**Question 6:**

**29) Suppose that A and B are two independent events then:**

A) B)

C)**** D)

1. **One of the following is affected by extreme values is**

A) Mode B) Median C) Mean D) None of these