Department of Statistics and Operations Research
College of Science
King Saud University

Name of Student: _____ Student's Number: _____

Teacher's name: Dr. _____ Section number:_____

1	2	3	4	5	6

7	8	9	10	11	12

13	14	15	16	17	18

19	20	21	22	23	24

Marks for the term	

- Mobile Telephones are not allowed in the classrooms
- Time allowed is 1 and 1/2 hours
- Attempt all questions
- Choose the nearest number to your answer
- For each question, put the code of the correct answer in the above table under the question number

Q1- The following information has been collected from 75 patients who visited the diabetic clinic in Riyadh:

Age (years)	Frequency	Relative Frequency	Cumulative Frequency
05 - 14	6	0.08	6
15 - 24	9	**X**	15
25 - 34	**Y**	0.24	33
35 - 44	24	0.32	57
45 - 54	15	0.20	**Z**
55 - 64	3	0.04	75

1- the value of **X** is :

A) 0.12 B) 0.20 C) 9 D) 12

2- the value of **Y** is :

A) 0.18 B) 0.20 C) 18 D) 12

3- the value of **Z** is :

A) 80 B) 0.20 C) 0.72 D) 72

4- If the ages have mean=35.1 and standard deviation = 12.76, then the coefficient of variation ($C.V$) of the ages is :

A) 0.765 B) 36.35% C) 162.82 D) 12.76

5- the unit of the $C.V$ of age is :

A) Year B) kg C) No unit D) None

6- If the $C.V$ of the patient weight is 27.5%, then:

A) Age has more variability B) Weight has more variability

C) Both have the same variability D) None

Q2- If one person is selected randomly from a set of 75 persons which are classified according to three categories of ages and three categories of weights:

	Slim (S)	Normal (N)	Fat (F)	
(05 – 24) year ($A1$)	15	10	2	**27**
(25 – 44) year ($A2$)	10	12	3	**25**
(45 – 64) year ($A3$)	7	11	5	**23**
	32	**33**	**10**	**75**

7- The probability $P(A1 \cup N)$ is:

A) 4/5 B) 2/3 C) 2/15 D) 72

8- The probability $P(A1 \mid N)$ is:

A) 10/27 B) 10/75 C) 10/33 D) None

9- The probability $P(\overline{N})$ is

A) 13/75 B) 12/75 C) 11/25 D) 14/25

10- The events $A1$ and N are:

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

11- The events S and F are:

A) Mutually exclusive (Disjoint) B) Not Disjoint

C) Independent D) None

12- The probability $P(S \cup F)$ is:

A) 14/25 B) 2/3 C) 1/3 D) 11/25

Q3- the weights to nearest kg of 7 patients are: 16, 10, 9, 46, 15, 16, 10:

13- the median of weight is:

A) 10 B) 15 C) 19.1 D) 46

14- the mean of weight is:

A) 10 B) 15 C) 19.1 D) 17.43

15- this data has:

A) One mode B) Two modes C) Three modes D) No mode

16- for this data, the best of center measure is:

A) The mode B) The median C) The mean D) None

17- The range of this data is:

A) 7 B) -6 C) 6 D) 37

18- The standard deviation of this data is:

A) 167.95 B) 12.96 C) 17.43 D) 12.0

Q4- In order to check the reliability of a given Lab in Riyadh, suppose a sample with diabetic disease (D) and another without disease ($\overline{D}$) had the Lab tests and the results are as given below:

	Present (D)	Absence ($\overline{D}$)
Positive (T)	630	15
Negative ($\overline{T}$)	20	335

Use this data to answer the questions:

19- The probability of false positive result is:

A) 3/70 B) 7/20 C) 2/65 D) 7/200

20- The probability of false negative result is:

A) 3/70 B) 7/20 C) 2/65 D) 7/200

21- The sensitivity of the test is:

A) 67/70 B) 3/70 C) 2/65 D) 63/65

22- The specificity of the test is:

A) 67/70 B) 3/70 C) 2/65 D) 63/65

If the true Diabetic percentage in Riyadh is 20%, then:

23- The predictive value positive of the test is:

A) 0.977 B) 0.85 C) 0.944 D) 0.992

24- The predictive value negative of the test is:

A) 0.977 B) 0.85 C) 0.944 D) 0.992