

Dr. Raja Latif. Time: One Hour and Thirty Minutes, Marks: 100. Marks Obtained:

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Write Your Name below by using Capital Alphabets only.

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Write	Your	own	identity	number	correctly	check	section	Serial Number
						6(1 : 10pm)	7(2 : 10pm)	

NOTE: Show complete solution with all steps for full credit.

The questions are not in any order of difficulty at all.

In case of multiple choice questions check only the right choice.

Please count that this examination has SEVENTEEN questions and TEN pages. You may use calculators.

Qstn #	Maxim. Marks	Marks Obtained	Grade	Important remarks or comments if there are any.
1	6			
2	6			
3	6			
4	6			
5	6			
6	6			
7	6			
8	6			
9	6			
10	6			
11	6			
12	4			
13	6			
14	6			
15	6			
16	6			
17	6			
Sum	100			

Statement

Q.1. License Plate Possibilities. How many different license plate numbers can be made using TWO letters followed by FIVE digits, if letters may be repeated, but digits are not repeated?

Choices

- A 456976
- B 2725632
- C 3407040
- D 6760000
- E 1757600
- F 6922240
- G 20442240
- H 8112000
- J 40442240
- N None of the above choices is correct.

Statement

Q.2. A menu offers a choice of 4 salads, 8 main dishes, and 5 desserts.

How many different menus consisting of one salad, one main dish, and one dessert are possible?

Choices

- A $\rightarrow (8!) \cdot (3!) \cdot (5!)$
- B $\rightarrow (8!) + (3!) + (5!)$
- C $\rightarrow 133$
- D $\rightarrow 43$
- E $\rightarrow 120$
- F $\rightarrow 240$
- G $\rightarrow 1080$
- H $\rightarrow 17$
- K $\rightarrow 160$
- N \rightarrow None of the above choices is correct.

Statement

Q.3. 334SM. Suppose that out of 1500 first year students at a certain college, 350 are taking History, 300 are taking *Mathematics*, and 270 are taking both history and Mathematics. How many first-year students are taking history or Mathematics?

Choices

- A → 320
- B → 340
- C → 360
- D → 380
- E → 400
- F → 420
- G → 440
- H → 460
- I → 480
- J → 500
- K → 650
- N → *None* of the above choices is correct.

Statement

Q.4. 370LG23. A student has two examinations on the same day. If the probability of passing the first examination is 0.80 and the probability of passing the second examination is 0.70. Suppose that the events of passing the two examinations are independent. Find the probability that the student will pass the first examination or the second examination or both examinations.

Choices

- A → 0.56
- B → 0.70
- C → 0.80
- D → 0.82
- E → 0.84
- F → 0.86
- G → 0.88
- H → 0.90
- I → 0.92
- J → 0.94
- K → 0.96
- N → *None* of the above choices is correct.

Statement

Q.5. 375LG76. Studying. A Professor has found that the probability that a student studies for a test is 0.6, the probability that a student gets a good grade on a test is 0.70, and the probability that both occur (happen) is 0.56. Given that a student studies, find the probability that the student gets a good grade.

Choices

- A \rightarrow 0.24
- B \rightarrow 0.42
- C \rightarrow 0.48
- D \rightarrow 0.56
- E \rightarrow 0.60
- F \rightarrow 0.70
- G \rightarrow 0.74
- H \rightarrow 0.80
- I \rightarrow 0.84
- J \rightarrow 0.90
- K \rightarrow 0.96
- N \rightarrow None of the above choices is correct.

Statement

Q.6. TB146Rolf80. A group contains 13 men and 15 women. How many different ways can four people from the group be arranged in a row with a man first, a woman second, a man third, and a woman fourth?

Man	Woman	Man	Woman
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Choices

- A \rightarrow 28
- B \rightarrow 183
- C \rightarrow 195
- D \rightarrow 8190
- E \rightarrow 9555
- F \rightarrow 16380
- G \rightarrow 32760
- H \rightarrow 36480
- I \rightarrow 38220
- J \rightarrow 131040
- K \rightarrow 491400
- N \rightarrow None of the above choices is correct.

Statement

Q.7. TB155Rolf175. How many different ways can a student select 2 finite math books

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and 3 algebra books from 8 finite math and 5 algebra books?

Choices

- A → 78
- B → 156
- C → 240
- D → 260
- E → 280
- F → 420
- G → 560
- H → 1120
- I → 4480
- J → 6720
- K → 40320
- N → *None* of the above choices is correct.

Statement

Q.8. TB166Rolf60. Five students are seated at random in a row, their last names all begin with different letters.

What is the probability they are seated in alphabetical order?

Example:

Ahmad	Daud	Samir	Usman	Younis
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Choices

- A → $\frac{1}{5}$
- B → $\frac{1}{24}$
- C → $\frac{1}{120}$
- D → $\frac{1}{11}$
- E → $\frac{1}{720}$
- F → $\frac{5}{12}$
- G → 0.50
- H → 0.75
- I → 0.889
- J → 1.00
- K → 0.01
- N → *None* of the above choices is correct.

Statement

Q.9. TB170Rolf100. In a group of 100 students 50 take history, 35 take sociology, and 15

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take both history and sociology. A student is selected at random.

Find the probability the student is taking history or sociology.

Choices

- A → 0.15
- B → 0.25
- C → 0.35
- D → 0.50
- E → 0.65
- F → 0.70
- G → 0.75
- H → 0.80
- I → 0.85
- J → 1.90
- K → 0.95
- N → *None* of the above choices is correct.

Statement

Q. 10. 306GSS21. Jane has two friends who do not know each other. Each of them has heard the same rumor. The probability that each will tell Jane is 60%. What is the probability that Jane does not hear the same rumor from either of these friends?

Choices

- A → 0.08
- B → 0.16
- C → 0.24
- D → 0.36
- E → 0.40
- F → 0.52
- G → 0.60
- H → 0.66
- I → 0.80
- J → 0.88
- K → 0.96
- N → *None* of the above choices is correct.

Statement

Q. 11. 306GSS21. The following table provides some information about students at a certain college.

	Work full time	Work Part-time	Not Working	Total
First-year	130	460	210	800
Sophomore	100	500	150	750
Junior	80	420	100	600
Senior	200	300	50	550
Total	510	1680	510	2700

Find the probability that a student selected at random is

(a) A senior

Answer: Probability; = _____

(b) Working full time

Answer: Probability; = _____

(c) Working full time, given that the student does not work

Answer: Probability; = _____

(d) A first-year student, given that the student does not work

Answer: Probability; = _____

(e) A junior or senior, given that the student does not work

Answer: Probability; = _____

(f) Working part time or full time, given that the student is a sophomore or a junior.

Answer: Probability; = _____

Q. 12. Read the following statements very carefully. Then Mark TRUE ($T\checkmark$) or FALSE ($F \times$) in the middle box for each of the following statements.

(a)

TRUE		FALSE
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 Two mutually exclusive (disjoint) events with nonzero probability cannot be independent.

(b)

TRUE		FALSE
------	--	-------

 The number of permutations of 4 different objects taken 4 at a time is 12.

(c)

TRUE		FALSE
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 If $P(E) = 0.4$ and $P(F) = 0.3$, then $P(E \cup F)$ must be equal to 0.7.

(d)

TRUE		FALSE
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 Let $A = \{1, 2, 3, 4, 5, 6\}$ and $B = \{2, 4, 6, 8\}$. Then the number of elements in the set $(A \cap B) \cup A$ is equal to 10.

Q.13. 359SM29. A box has 9 marbles in it, 5 red and 4 white. Suppose we draw a marble from the box, replace it (Put it back into the box), and then draw another marble from the same box. Find the probability that

(a) Both marbles are red.

Answer: Probability = _____.

(b) Exactly one of the two marbles is red.

Answer: Probability = _____.

Statement

Q.14. 297SM.35. The digits 0 through 9 are written on 10 cards. Six different cards are drawn, and a 6 – *digit* number is formed.

How many different 6 – *digit* numbers can be formed.

Choices

- A → 5040
- B → 6240
- C → 30240
- D → 65260
- E → 65600

- F → 124460
- G → 151200
- H → 45360
- I → 60480
- J → 120900
- K → 152600
- N → *None* of the above choices is correct.

Q.15. Letter Arrangement. 474TB15. How many distinguishable horizontal arrangements of the letters in MISSISSIPPI are possible?

Q. 16. 434TB23. A student answers each question on a 10 – *question* true-false examination in a random fashion. If each question is worth 10 points, what is the probability that the student scores exactly 90 points.

Q.17. 358SM27. Recovery Rate. The recovery rate from a flu is 0.92. If 2 people have this flu, what is the probability (assume independence) that

(a) Both will recover

Probability: = _____

(b) Exactly *one* will recover?

Probability = _____

(c) At least (Minimum) *one* will recover?

Probability = _____