Name:_____

$I\ D$ $N\ O$	:						$DR.$ $LATIF$	$Sec\ 1$ $8\ am$	$Sec\ 2$ $7\ am$	$Sec\ 3$ $10\ am$

$Time$ $180\ Min$	$Seat\ :$ $No.\ :$				$Marks$ 180		$DR.$ $SCHAUZ$	$Sec\ 4$ $11\ am$	$Sec\ 5$ $9\ am$

NOTE: 1. The questions are not in any order of difficulty at all. 2. All questions carry equal number of marks. 3. Only the nonprogramable calculators are allowed. 4. All types of PAGERS, OR MOBILES ARE NOT ALLOWED to be with you during the examination. 5. Use an HB 2 pencil. 6. Use a good eraser. Do not use the eraser attached to the pencil. 7. Write your name, ID number and Section number on the examination paper and in the upper left corner of the answer sheet. 8. When bubbling your ID number and Section number, be sure that bubbles match with the number that you write. 9. The test Code Number is already typed and bubbled in your answer sheet. Make sure that it is the same as that printed on your question paper. 10. When bubbling, make sure that the bubbled space is fully covered. 11. When erasing a bubble, make sure that you do not leave any trace of penciling. 12. Count that the Test has THIRTY Questions and EIGHTEEN Pages. 13. Please BUBBLE carefully only right answer letter $(A$ or B or C or D or $E)$ corresponding to the correct answer to each question in the enclosed computerized Omar Sheet, with pencil only. 14. Please do not leave any question unbubbled in the Answer Sheet. 15. Please check that the version of your question paper and the answer sheet enclosed with it matches correctly. The versions are $001,\ 002,\ 003,\ 004$.

==========

Compound Interest Formulae: $S = P(1+r)^n$, $P = A(1+r)^{-n}$.

Effective Interest Formula: $r_e = \left(1 + \frac{r}{n}\right)^n - 1$.

Continuos Interest Formula: Present $P = Ae^{-rt}$. Effective Interest Formula: $r_e = e^r - 1$.

Ordinary Annuity Formulae (End): Future Value = $S = R.\left[\frac{(1+r)^n - 1}{r}\right]$.

Present Value: $A = R.\left[\frac{1-(1+r)^{-n}}{r}\right]$.

Annuity Due Formulae (Beginning): Future Value = $S = R.\left[\frac{(1+r)^{n+1} - 1}{r} - 1\right]$.

Present Value = $A = R.\left[1 + \frac{1-(1+r)^{-n+1}}{r}\right]$.

${}^nP_r = \frac{n!}{(n-r)!}$; $\left(\begin{array}{c} n \\ r \end{array}\right) = {}^nC_r = \frac{n!}{r!\,(n-r)!}$. $\#(A \cup B) = \#(A) + \#(B) - \#(A \cap B)$

Probability Laws: $P(A \cup B) = P(A) + P(B) - P(A \cap B)$.

Conditional Probability: $P(A/B) = \frac{P(A \cap B)}{P(B)}$. Events A and B are Independent $\Longleftrightarrow$

$P(A \cap B) = P(A)\,P(B) \iff P(A/B) = P(A) \Longleftrightarrow P(B/A) = P(B)$.

BINOMIAL DISTRIBUTION: $P(X = x) = \left(\begin{array}{c} n \\ x \end{array}\right) p^x q^{n-x}$; $x = 0,\ 1,\ 2,\ 3,\ 4,\ \ldots, n$; $q = 1 - p$. Mean $= \mu = np$; $Var(X) = \sigma^2 = npq$.

Q1. 102AL29. (Manufacturing Decision). A firm manufacturing cars wants to know whether to manufacture their own fan belts, which the firm has been purchasing from outside suppliers at $\$\ 2.50$ for each unit.

Manufacturing the belts by the firm will increase its fixed costs by $\$\ 1500$ each month, but it will cost only $\$\ 1.70$ to manufacture each belt.

How many (minimum number) belts must be used by the firm each month to justify manufacturing the belts themselves?

$A \longrightarrow 1870$

$*B \longrightarrow 1876$

$C \longrightarrow 1500$

$D \longrightarrow 3750$

$E \longrightarrow 2550$

==========

Q2. 71AL22. (Mixtures). Ten pounds of peanuts worth $75\ cents$ per pound and 12 pounds of walnuts worth 80 cents per pound are mixed with pecans worth $\$\ 1.10$ per pound to produce a mixture worth 90 cents per pound.

How many pounds of pecans should be used?

$A \longrightarrow 10$

$B \longrightarrow 12$

$*C \longrightarrow 13.5$

$D \longrightarrow 14$

$E \longrightarrow 15$

==========

Q3. 246Tan21S. 207T3E. Use the Geometric Method to find the maximum (M) and minimum (m) of

$P = 10x + 15y$

subject to the following inequalities

$$\begin{cases} x + y \leq 10 \\ 3x + y \geq 12 \\ -2x + 3y \geq 3 \\ x \geq 0, \quad y \geq 0 \end{cases}$$

Then the maximum value M and the minimum value m of P have the following correct relation:

$A \longrightarrow \dfrac{M}{m} = 2$

$B \longrightarrow M - m = 74$

$C \longrightarrow M + m = 198$

$D \longrightarrow M + m = 268$

$*E \longrightarrow M + m = 220$

==========

Q4. 218MS11. (Misture Problem). Minimize the cost of preparing the following mixture, which is made up of three foods, I, II, III.

Food I costs \$2 per unit, food II costs \$ 1 per unit, and food III costs \$ 3 per unit.

Each unit of food I contains 2 ounces of protein and 4 ounces of carbohydrate;

Each unit of food II contains 3 ounces of protein and 2 ounces of carbohydrate;

and each unit of food III has 4 ounces of protein and 2 ounces of carbohydrate.

The mixture must contin at least 20 ounces of protein and 15 ounces of carbohydrate.

Let x, y, z represent the number of units of foods I, I, III, respectively.

Then the constraint in terms of the system of linear inequalities in order to minimize the cost $C = 2x + y + 3z$, is given by:

$$(A).\begin{cases} 2x + 3y + 4z \leq 20 \\ 4x + 2y + 2z \geq 15 \\ x \geq 0, \quad y \geq 0, \quad z \geq 0 \end{cases} \qquad (B).\begin{cases} 2x + 3y + 4z \geq 20 \\ 4x + 2y + 2z \leq 15 \\ x \geq 0, \quad y \geq 0, \quad z \geq 0 \end{cases}$$

$$(C).\begin{cases} 2x + 3y + 4z \leq 20 \\ 4x + 2y + 2z \leq 15 \\ x \geq 0, \quad y \geq 0, \quad z \geq 0 \end{cases}$$

$$(D).\begin{cases} 3x + 2y + 4z \geq 15 \\ 4x + 2y + 2z \geq 20 \\ x \geq 0, \quad y \geq 0, \quad z \geq 0 \end{cases}$$

$$*(E)\,.\begin{cases} 2x & + & 3y & + & 4z & \geq & 20 \\ 4x & + & 2y & + & 2z & \geq & 15 \\ x & \geq & 0, & y & \geq 0, & z \geq & 0 \end{cases}$$

==========

Q5. 233SM23. Use the Simplex Method to solve the standard linear programing problem.

Maximize: $Z = 40x_1 + 60x_2 + 50x_3$,

subject to the constraints:

$$\begin{cases} 2x_1 & + & 2x_2 & + & x_3 & \leq & 8 \\ x_1 & - & 4x_2 & + & 3x_3 & \leq & 12 \\ x_1 & \geq 0 & , & x_2 & \geq 0, & x_3 & \geq 0 \end{cases}$$

Initial Simplex Tableau:

$$\begin{bmatrix} 2 & 2 & 1 & 1 & 0 & 0 & : & 8 \\ 1 & -4 & 3 & 0 & 1 & 0 & : & 12 \\ .. & .. & .. & .. & .. & .. & : & \cdots \\ -40 & -60 & -50 & 0 & 0 & 1 & : & 0 \end{bmatrix}$$

The Maximum Value of $Z =$

$A \longrightarrow 30000$

$B \longrightarrow 20$

$C \longrightarrow 240$

$*D \longrightarrow 352$

$E \longrightarrow 35000$

==========

Q6. 423LGR74. (Defective Items). A sample shipment of five hair dryers is chosen at random. The probability of exactly 0, 1, 2, 3, 4, or 5 hair dryers being defective is given in the following table:

Number Defective	0	1	2	3	4	5
Probability	0.34	0.26	0.18	0.12	0.07	0.03

Let α be the probability that at least three hair dryers are defective and let β be the probability that no more than three dryers are defective.

Then:

$A \longrightarrow \alpha + \beta = 1$

$B \longrightarrow \alpha - \beta = 0.68$

$*C \longrightarrow \alpha\beta = 0.198$

$D \longrightarrow 4\alpha = \beta$

$E \longrightarrow \alpha^2 + \beta^2 \geq \alpha + \beta$

==========

Q7. 72LGR2. Solve the following system of equations:

$$\begin{cases} x + 5z = -6 + y \\ 3x + 3y = 10 + z \\ x + 3y + 2z = 5 \end{cases}$$

Then

$A \longrightarrow x + y + z = -1$

$B \longrightarrow x + y + z = 0$

$C \longrightarrow x + y + z = 1$

$*D \longrightarrow x + y + z = 2$

$E \longrightarrow x + y + z = 3$

==========

Q8. 153SM60. (Cookie Orders). A cookie company makes three kinds of cookies - oatmeal raisin, chocolate chip, and shortbread - packaged in small, medium, and large boxes.

The small box contains 1 dozen oatmeal raisin and 1 dozen chocolate chip, and 1 dozen shortbread;

the medium box has 2 dozen oatmeal raisin, 1 dozen chocolate chip, and 1 dozen shortbread;

the large box contains 2 dozen oatmeal raisin, 2 dozen chocolate chip, and 3 dozen shortbread.

If you require exactly 15 dozen oatmeal raisin, 10 dozen chocolate chip, and 11 dozen shortbread cookies, how many boxes of each size should you buy?

Let $x =$ number of small boxes,

let y =number of medium boxes, and

let z = number of large boxes.

Set up the system of equations without solution.

$$(A)\,.\begin{cases} x + 2y + 2z = 10 \\ x + y + 2z = 15 \\ x + y + 3z = 11 \end{cases}$$

$$(B)\,.\begin{cases} x + y + 2z = 15 \\ x + 2y + 2z = 10 \\ x + y + 3z = 11 \end{cases}$$

$$(*C)\,.\begin{cases} x + 2y + 2z = 15 \\ x + y + 2z = 10 \\ x + y + 3z = 11 \end{cases}$$

$$(D)\,.\begin{cases} x + 2y + 2z = 15 \\ x + y + 2z = 10 \\ 3x + y + z = 11 \end{cases}$$

$$(E)\,.\begin{cases} x + 2y + 2z = 15 \\ x + 2y + z = 10 \\ x + y + 3z = 11 \end{cases}$$

==========

Q9. 233SM5E. Write the DUAL of the Standard Minimum Linear Programing Problem

Minimize $C = 6x + 8y + z$,

subject to the constraints:

$$\begin{cases} 3x + 5y + 3z \geq 20 \\ x + 3y + 2z \geq 9 \\ 6x + 2y + 5z \geq 30 \\ x \geq 0,\ y \geq 0,\ z \geq 0 \end{cases}$$

in the Form of Standard Maximum Linear Programing Problem and then write the Initial Simplex Tableau of it.

$$(*A)\,.\begin{bmatrix} 3 & 1 & 6 & 1 & 0 & 0 & 0 & : & 6 \\ 5 & 3 & 2 & 0 & 1 & 0 & 0 & : & 8 \\ 3 & 2 & 5 & 0 & 0 & 1 & 0 & : & 1 \\ .. & .. & .. & .. & .. & .. & .. & : & \cdots \\ -20 & -9 & -30 & 0 & 0 & 0 & 1 & : & 0 \end{bmatrix}$$

$$(B)\,.\begin{bmatrix} 3 & 1 & 6 & 1 & 0 & 0 & 0 & : & -6 \\ 5 & 3 & 2 & 0 & 1 & 0 & 0 & : & -8 \\ 3 & 2 & 5 & 0 & 0 & 1 & 0 & : & -1 \\ .. & .. & .. & .. & .. & .. & .. & : & \cdots \\ 20 & 9 & 30 & 0 & 0 & 0 & 1 & : & 0 \end{bmatrix}$$

$$(C)\,.\begin{bmatrix} 3 & 1 & 6 & 1 & 0 & 0 & 0 & : & 6 \\ 5 & 3 & 2 & 0 & 1 & 0 & 0 & : & 8 \\ 3 & 2 & 5 & 0 & 0 & 1 & 0 & : & 1 \\ .. & .. & .. & .. & .. & .. & .. & : & \cdots \\ -30 & -9 & -20 & 0 & 0 & 0 & 1 & : & 0 \end{bmatrix}$$

$$(D)\,.\begin{bmatrix} 3 & 1 & 6 & 1 & 0 & 0 & 0 & : & 6 \\ 5 & 3 & 2 & 0 & 1 & 0 & 0 & : & 8 \\ 3 & 2 & 5 & 0 & 0 & 1 & 0 & : & 1 \\ .. & .. & .. & .. & .. & .. & .. & : & \cdots \\ 20 & 9 & 30 & 0 & 0 & 0 & 1 & : & 0 \end{bmatrix}$$

$$(E)\,.\begin{bmatrix} 3 & 1 & 6 & 1 & 0 & 0 & 0 & : & -20 \\ 5 & 3 & 2 & 0 & 1 & 0 & 0 & : & -9 \\ 3 & 2 & 5 & 0 & 0 & 1 & 0 & : & -30 \\ .. & .. & .. & .. & .. & .. & .. & : & \cdots \\ 6 & 8 & 1 & 0 & 0 & 0 & 1 & : & 0 \end{bmatrix}$$

==========

Q10. 137TB35. (Biology). Biologists studied the nutritional effects on rats that were fed a diet containing $10\ \%$ protein.

The protein consisted of yeast and corn flour.

By varying the percentage, P, of yeast in the protein mix, the group estimated that the average weight gain (in grams) of a rat over a period of time was

$f(P) = -\frac{1}{50}P^2 + 2P + 30,\ 0 \leq P \leq 100.$

Find the maximum weight gain.

$A \longrightarrow 50$

$B \longrightarrow 60$

$C \longrightarrow 70$

$*D \longrightarrow 80$

$E \longrightarrow 100$

==========

Q11. (Market Equilibrium) The demand for goods produced by an industry is given by the equation

$p^2 + q^2 = 169,$

where p is the price and q is the quantity demanded.

The supply is given by

$p = q + 7.$

Find the equilibrium price p.

$A \longrightarrow p = 5$

$B \longrightarrow p = 10$

$*C \longrightarrow p = 12$

$D \longrightarrow p = 8$

$E \longrightarrow p = 9$

==========

Q12. 3.2TB31(Charges**)**. A business-copier repair company charges a fixed amount plus an hourly rate for a service call.

If a customer is billed $\$\ 150$ for a one-hour service call and $\$\ 280$ for a $three - hour$ service call, find a linear function

$f(x) = Kx + L$

that describes the price of a service call, where x is the number of hours of service. Then $K + L =$

$A \longrightarrow 280$

$*B \longrightarrow 150$

$C \longrightarrow 65$

$D \longrightarrow 85$

$E \longrightarrow 120$

==========

Q13.TB20. B139Z. Computing Growth Time. How many months will it take $\$10000$ to grow to $\$12000$ if it is invested at 9% compounded monthly?

$A \longrightarrow 20$

$*B \longrightarrow 25$

$C \longrightarrow 30$

$D \longrightarrow 35$

$E \longrightarrow 15$

==========

Q14. TB17. A debt of $\$5000$ due five years from now and $\$\ 5000$ due ten years from now is to be repaid by a payment of $\$\ 2000$ in two years, a payment of $\$\ 4000$ in four years, and a final payment at the end of six years.

If the interest rate is 2.5% compounded annually, how much is the final payment?

$A \longrightarrow -\ \$\ 4536.85$

$B \longrightarrow \$\ 4202.50$

$C \longrightarrow \$\ 5519.06$

$*D \longrightarrow \$\ 3244.63$

$E \longrightarrow \$\ 5125.00$

==========

Q15. LH238**.** How much must be deposited today in an account paying 7.5% interest compounded continuously in order to have $\$10000$ in 4 years?

$A \longrightarrow \$\ 7488.01$

$*B \longrightarrow \$\ 7408.18$

$C \longrightarrow \$\ 7440.10$

$D \longrightarrow \$\ 8047.81$

$E \longrightarrow \$\ 7568.25$

==========

Q16. Rev. Text Book. 5.6. Q9. Suppose $\$\ 200$ is initially placed in a savings account and $\$\ 200$ is deposited at the end of every month for the next year.

If interest is at $8\ \%$ compounded monthly, how much is in the account at the end of the year?

$*A \longrightarrow \$\ 2506.59$

$B \longrightarrow \$\ 2599.20$

$C \longrightarrow \$\ 2592.00$

$D \longrightarrow \$\ 2599.87$

$E \longrightarrow \$\ 2567.89$

==========

Q17. (License Plate). A six-character license consists of three letters followed by three numbers. How many different license plats are possible?

(There are 26 letters in English alphabet)

$A \longrightarrow 15600000$

$B \longrightarrow 11232000$

$*C \longrightarrow 17576000$

$D \longrightarrow 22464000$

$E \longrightarrow 12654720$

==========

Q18. P361T8.2B30 $HIRING.$ A company personnel director must hire **six** people: four for the assembly department and **two** for the **shipping** department.

There are 10 applicants who are equally qualified to work in each department.

In how many ways can the personnel director fill the positions?

$A \longrightarrow 40320$

$B \longrightarrow 6048$

$C \longrightarrow 4800$

$*D \longrightarrow 3150$

$E \longrightarrow 600$

==========

Q19. 327AL21. The operator of a hot dog stall has found that 75% of all its customers use mustard, 40% use ketchup, and 25% use both.
Find the probability that a randomly chosen customer will use at least one of these.

$A \longrightarrow 0.65$

$B \longrightarrow 0.95$

$*C \longrightarrow 0.90$

$D \longrightarrow 0.75$

$E \longrightarrow 0.55$

==========

Q20. 392TB8.5HW51. Committee selection. Suppose six female and five male students wish to fill three openings on a campus committee on cultural diversity. If three of the students are chosen at random for the committee, find the probability that all three are female, given that at least one is female.

$A \longrightarrow 0.06452$

$B \longrightarrow 0.12121$

$C \longrightarrow 0.30921$

$D \longrightarrow 0.24242$

$*E \longrightarrow 0.129\,03$

==========

Q21.2.437TAN19. $PRODUCT\ RELIABILITY.$ The probability that a battery will last 10 hours or more is 0.80, and the probability that it will last 15 hours or more is 0.15.

Given that a battery has lasted 10 hours or more, find the probability that it will last 15 hours or more?

$A \longrightarrow 0.1283$

$B \longrightarrow 0.9500$

$*C \longrightarrow 0.1875$

$D \longrightarrow 0.8150$

$E \longrightarrow 0.1580$

==========

Q22. 461TB36. $Shooting\ Gallery.$ At a shooting gallery, Bill, Jim, and Linda each take one shot at a moving target.

The probability that Bill hits the target is $0.7,$ and for Jim and Linda, the probabilities are $0.6,$ and $0.7,$ respectively. Assume independence to find the probability that exactly one of them hits the target.

$A \longrightarrow 0.4889$

$*B \longrightarrow 0.222$

$A \longrightarrow \mathbf{0.333}$

$A \longrightarrow 0.444$

$A \longrightarrow 0.5556$

==========

Q23. Ref.427TB9HW598Rolf. An experiment randomly selects two people from a group of five men and four women.

A random variable X is the number of women selected.

Find the probability distribution of X.

$(*A)$.

x	0	1	2
$P(X=x)$	$\frac{5}{18}$	$\frac{10}{18}$	$\frac{3}{18}$

(B).

x	0	1	2
$P(X=x)$	$\frac{3}{18}$	$\frac{10}{18}$	$\frac{5}{18}$

(C).

x	0	1	2
$P(X=x)$	$\frac{3}{18}$	$\frac{5}{18}$	$\frac{10}{18}$

(D).

x	0	1	2
$P(X=x)$	$\frac{10}{18}$	$\frac{5}{18}$	$\frac{3}{18}$

(E).

x	0	1	2
$P(X=x)$	$\frac{1}{18}$	$\frac{4}{18}$	$\frac{10}{18}$

==========**Q24.**432TI

20. For a certain large population, the probability that a randomly selected person has a computer is 0.7. If five persons are selected at random, find the probability that at least four have a computer.

$*A \longrightarrow 0.52822$

$B \longrightarrow 0.06053$

$C \longrightarrow 0.83193$

$D \longrightarrow 0.16807$

$E \longrightarrow 0.36015$

==========

Q25. A group of students were asked if they are satisfied with the food in the cantina. The responses are listed in the following table:

Class Level	Satisfied	Not Satisfied	Total
Freshman	30	30	60
Sophomore	24	16	40
Total	54	46	100

If a student is randomly selected, use the above table to calculate the following three probabilities:
$\alpha :=$ the probability that the student is satisfied,
$\beta : =$ the probability that the student is an unsatisfied freshman,
$\gamma :=$ the probability that the student is unsatisfied given that he is a freshman.
Now the sum $\alpha + \beta + \gamma$ equals:

$A \longrightarrow 1.94$

$*B \longrightarrow 1.34$

$C \longrightarrow 1.94$

$D \longrightarrow 0.92$

$E \longrightarrow 2.08$

==========

Q26. We examine the following sample of measurement data: $3, 4, 10, 0, -2, 6, 4, 5$
Let M be the corresponding mode, m the median and s the sample standard deviation, then $M + m + s$ equals:

$A \longrightarrow 6.0$

$*B \longrightarrow 11.5$

$C \longrightarrow 8.0$

$D \longrightarrow 6.5$

$A \longrightarrow 12.5$

==========

Q27. The life expectancy of Arabic Camels is normally distributed with mean at $\mu = 44$ years and standard deviation of $\sigma = 8$ years.
What is the probability that a randomly selected camel has a life expectancy between 38 and 50 years?

$A \longrightarrow 0.7734$

$B \longrightarrow 0.2266$

$*C \longrightarrow 0.5468$

$D \longrightarrow 0.7157$

$E \longrightarrow 0.0051$

==========

Q28. 10.2LHH592Q11. Find the sample standard deviation s for the grouped data as given below:
Number of credits for a sample of college students.

College Credits	Frequency
$0 - 24$	4
$25 - 49$	3
$50 - 74$	6
$75 - 99$	3
$100 - 124$	5
$125 - 149$	9

$A \longrightarrow 48.44$

$B \longrightarrow 43.60$

$*C \longrightarrow 45.20$

$D \longrightarrow 54.80$

$E \longrightarrow 46.40$

==========

Q29.17. Given an interest rate of $5\ \%$ compounded annually.
Calculate the future value of an annuity of $\$\ 2000$ due at the end of each year for three years and $\$\ 5000$ due thereafter at the end of each year for four years.

$*A \longrightarrow \$\ 29214.39$

$B \longrightarrow \$\ 20762.12$

$C \longrightarrow \$\ 22543.42$

$D \longrightarrow \$\ 28732.12$

$E \longrightarrow \$\ 31024.35$

==========

Q30. A debt of $\$\ 6000$ due in six years from now is to be paid off by three payments:$\$\ 1000$ now, $\$\ 3000$ in three years, and a final payment at the end of five years.
What would this payment be if an interest rate of $6\ \%$ compounded annually is assumed?

$A \longrightarrow \$\ 804.24$

$B \longrightarrow \$\ 2000.00$

$C \longrightarrow \$\ 1120.10$

$D \longrightarrow \$\ 475.58$

$*E \longrightarrow \$\ 951.16$

==========

Q31. How many distinguishable permutations of the letters in the word PURPOSELESS are possible?

$*A \longrightarrow 1663200$

$B \longrightarrow 39916800$

$C \longrightarrow 23324600$

$D \longrightarrow 3326400$

$E \longrightarrow 800000$

==========

Q32. A manufacturer produces a product for which the fixed cost is $400000\ SR$ per year and the variable cost is $325\ SR$ per unit.

Assume that 25 percent of the produced units can be sold for $700\ SR$ per unit while the rest has to be sold for $600\ SR$ per unit. Find the number of units that should be produced each year so that the annual profit is $1000000\ SR$.

$A \longrightarrow 10000$

$B \longrightarrow 14286$

$C \longrightarrow 50000$

$*D \longrightarrow 2000$

$E \longrightarrow 1,600$

==========

Q33. Let $(x, y) = (\alpha, \beta)$ be a solution to the following system of equations:

$$\begin{cases} \sqrt{x+4} - y = 0 \\ x + y - 16 = 0 \end{cases}$$

Then $\alpha + \beta$ equals

$A \longrightarrow 11$

$B \longrightarrow 19$

$*C \longrightarrow 20$

$D \longrightarrow 25$

$E \longrightarrow 42$

==========

Q34. Compute the Variance of the random variable X with probability distribution as follows.

x	-4	-3	-1	0	2	5
$f(x) = P(X = x)$	0.1	0.1	0.2	0.3	0.1	0.2

$A \longrightarrow 7.59$

$*B \longrightarrow 8.01$

$C \longrightarrow 9.01$

$D \longrightarrow 10.01$

$E \longrightarrow 12.01$

==========

Q35.A pair of fair dice is rolled, and the number on each die is noted. What is the probability that the sum of the numbers that turn up is less than 5?

$A \longrightarrow \frac{5}{6}$

$B \longrightarrow \frac{2}{3}$

$C \longrightarrow \frac{1}{2}$

$D \longrightarrow \frac{1}{3}$

$*E \longrightarrow \frac{1}{6}$

==========

Q36. In a certain family a strange genetic defect was found. In this family, the probability that a newborn has an extremely long nose is $10\ \%$.
If the family has 10 kids, then the probability that more then one child has an extremely long nose is approximately:

$A \longrightarrow 0.264$

$B \longrightarrow 0.387$

$C \longrightarrow 0.172$

$D \longrightarrow 0.613$

$E \longrightarrow 0.500$

==========