DU Master of Operational Research

Topic:- MOR

1) When the correlation coefficient, *r*, is close to one:

[Question ID = 8182]

1. There is no relationship between the two variables

    [Option ID = 32725]
2. There is a strong linear relationship between the two variables

    [Option ID = 32726]
3. It is impossible to tell if there is a relationship between the two variables

    [Option ID = 32727]
4. The slope of the regression line will be close to one

    [Option ID = 32728]

2) Let the distribution of heights of women aged between 18 to 24 is approximately normally distributed with a mean of 65.5 inches and standard deviation of 2.5 inches. The *z-score* for a woman six feet tall is:

[Question ID = 8183]

1. 2.60

    [Option ID = 32729]
2. 4.11

    [Option ID = 32730]
3. 1.04

    [Option ID = 32731]
4. 1.33

    [Option ID = 32732]

3) The mean deviation from the median is:[Question ID = 8184]

1. Equal to that measured from another value [Option ID = 32733]
2. Maximum if all the observations are positive [Option ID = 32734]
3. Greater than that measured from any other value [Option ID = 32735]
4. Less than that measured from any other value [Option ID = 32736]

4) Let A and B be the two possible outcomes of an experiment and supposed that the

P(A) = 0.4, P(AUB)= 0.7 and P(B) = a.

The choice of a for which A and B are mutually exclusive is:

[Question ID = 8185]

1. 0.5

    [Option ID = 32737]
2. 0.2

    [Option ID = 32738]
3. 0.3

    [Option ID = 32739]
4. 0.6

    [Option ID = 32740]

5) A box of nine golf gloves contains two left-handed and seven right-handed gloves. If three gloves are selected without replacement, what is the probability that all of them are left-handed:[Question ID = 8186]

1. 1 [Option ID = 32741]
2. 0 [Option ID = 32742]
3. 7/18 [Option ID = 32743]
4. 49/81 [Option ID = 32744]

6) The occurence of degeneracy while solving a transportation problem means that:[Question ID = 8187]

1. Total supply equals total demand [Option ID = 32745]
2. The solution so obtained is not feasible [Option ID = 32746]
3. The few allocations become negative [Option ID = 32747]
4. None of these [Option ID = 32748]

7) Cost of providing service in a queuing system increases with:[Question ID = 8188]

1. Increased mean-time in the queue [Option ID = 32749]
2. Increased arrival rate [Option ID = 32750]
3. Decreased mean-time in the queue [Option ID = 32751]
4. Decreased arrival rate [Option ID = 32752]

8) Consider two queuing disciplines in a single server queue.

Case 1 has a first come first served discipline and Case 2 has last come first served discipline. If the average waiting time in the two cases are W_1 and W_2 respectively, then which of the following inferences would be true?

[Question ID = 8189]

1. $W_1 > W_2$

    [Option ID = 32753]
2. $W_1 < W_2$

    [Option ID = 32754]
3. $W_1 = W_2$

    [Option ID = 32755]
4. Data is insufficient to draw any logical inference

    [Option ID = 32756]

9) With the transportation methods, the initial solution can be generated in any fashion one chooses. The only restriction is that:[Question ID = 8190]
1. The supply and demand constraints are satisfied [Option ID = 32757]
2. The solution is not degenerate [Option ID = 32758]
3. The solution must be optimal [Option ID = 32759]
4. North-West corner method must be used [Option ID = 32760]

10) Re-order level depends upon two factors, lead time and _____.[Question ID = 8191]
1. Inventory [Option ID = 32761]
2. Warehouse [Option ID = 32762]
3. Procurement [Option ID = 32763]
4. Safety stock [Option ID = 32764]

11) In _____ analysis, parameters for classification of inventory is unit price of material.[Question ID = 8192]
1. ABC [Option ID = 32765]
2. HML [Option ID = 32766]
3. VED [Option ID = 32767]
4. EOQ [Option ID = 32768]

12) Given the function $f(x) = x^3 - 4x^2 + 5x$ the open interval where the function f is concave down is:

[Question ID = 8193]
1. $(4/3, +\infty)$

[Option ID = 32769]
2. $(-\infty, 4/3)$

[Option ID = 32770]
3. $(-\infty, 4/3]$

[Option ID = 32771]
4. $[4/3, +\infty)$

[Option ID = 32772]

13) The average value of the function $f(x) = e^{-x^2}$ on the closed interval [-1,1] is:

[Question ID = 8194]
1. 0

[Option ID = 32773]
2. 0.368

[Option ID = 32774]
3. 0.747

[Option ID = 32775]
4. 1

[Option ID = 32776]

14) If f is differentiable at $x = a$, which of the following could be false?

[Question ID = 8195]
1. f is continuous at $x = a$

[Option ID = 32777]
2. $\lim_{x \to a} f(x)$ exists

[Option ID = 32778]
3. $\lim_{x \to a} \frac{f(x)-f(a)}{x-a}$ exists

[Option ID = 32779]
4. $f''(a)$ is defined

[Option ID = 32780]

15) The solution of the differential equation $(x^2 + 1)\frac{dy}{dx} + (y^2 + 1) = 0$ is:

[Question ID = 8196]
1. $y = 2 + x^2$

[Option ID = 32781]
2. $y = \frac{1+x}{1-x}$

[Option ID = 32782]
3. $y = x(x - 1)$

[Option ID = 32783]
4. $y = \frac{1-x}{1+x}$

[Option ID = 32784]

16) The integrating factor of the differential equation $(x \log x)\frac{dy}{dx} + y = 2 \log x$ is:

[Question ID = 8197]
1. $\log(\log x)$

[Option ID = 32785]
2. e^x

[Option ID = 32786]
3. $\log x$

[Option ID = 32787]

4. x

[Option ID = 32788]

17)　The function $f(x) - 1 + |\sin x|$ is:

[Question ID = 8198]
1. continuous nowhere

[Option ID = 32789]
2. continuous everywhere

[Option ID = 32790]
3. not differentiable at *x=0*

[Option ID = 32791]
4. continuous everywhere and not differentiable at *x=0*

[Option ID = 32792]

18)　Suppose $f(x)$ is differentiable at $x = 1$ and $\lim\limits_{h \to 0} \frac{1}{h} f(1+h) = 5$, then $f'(1)$ equals:

[Question ID = 8199]
1. 3

[Option ID = 32793]
2. 4

[Option ID = 32794]
3. 5

[Option ID = 32795]
4. 6

[Option ID = 32796]

19) The binary equivalent of $(7401)_8$ is:

[Question ID = 8200]
1. $(111100000001)_2$

[Option ID = 32797]
2. $(101100000001)_2$

[Option ID = 32798]
3. $(111110000001)_2$

[Option ID = 32799]
4. $(111100010001)_2$

[Option ID = 32800]

20)　$1's$ complement representation of decimal number -17 using 8-bit representation is:

[Question ID = 8201]
1. 1110 1110

[Option ID = 32801]
2. 1101 1101

[Option ID = 32802]
3. 1100 1100

[Option ID = 32803]
4. 0001 0001

[Option ID = 32804]

21) In the following questions, a series of letters and numbers is given, the terms of which follow certain definite pattern in groups. However, some terms in the series are missing, which are given in the correct order as one of the alternatives. Choose the correct alternative.

Z _ 25 Y B 23 X C _ W _ 19 _ E 17

[Question ID = 8202]
1. A, 21, D, V

[Option ID = 32805]
2. A, 27, C, V

[Option ID = 32806]
3. X, 21, C, W

[Option ID = 32807]
4. 0.105

[Option ID = 32808]

22) In the following questions, a series of letters and numbers is given, the terms of which follow certain definite pattern in groups. However, some terms in the series are missing, which are given in the correct order as one of the alternatives. Choose the correct alternative.

D _ 6 E G P _ H J _ 12 K M B 15 _

[Question ID = 8203]
1. E, 7, J, L

[Option ID = 32809]
2. F, 8, M, K

[Option ID = 32810]
3. G, 9, I, M

[Option ID = 32811]
4. J, 9, V, N

[Option ID = 32812]

23) If a population has a mean equal to 25 and a standard deviation equal to 5, standard deviation for the sample mean for a sample size is:[Question ID

= 8204]
1. 5 [Option ID = 32813]
2. 10 [Option ID = 32814]
3. 2.5 [Option ID = 32815]
4. 0.5 [Option ID = 32816]

24) BIOS is used:[Question ID = 8205]
1. By operating system [Option ID = 32817]
2. By compiler [Option ID = 32818]
3. By interpretaor [Option ID = 32819]
4. By application software [Option ID = 32820]

25) How many bytes does 4 kilobytes represent?

[Question ID = 8206]
1. 512

    [Option ID = 32821]
2. 1024

    [Option ID = 32822]
3. 4096

    [Option ID = 32823]
4. 8192

    [Option ID = 32824]

26) The fullform of USB is:[Question ID = 8207]
1. Unshielded System Board [Option ID = 32825]
2. Universal System Board [Option ID = 32826]
3. Unidentified System Bus [Option ID = 32827]
4. Universal System Bus [Option ID = 32828]

27) Which of the following memory is non-volatile memory?[Question ID = 8208]
1. Secondry memory [Option ID = 32829]
2. Random memory [Option ID = 32830]
3. RAM [Option ID = 32831]
4. ROM [Option ID = 32832]

28) Which of the following is a measure of dispersion?[Question ID = 8209]
1. Percentiles [Option ID = 32833]
2. Quartiles [Option ID = 32834]
3. Inter-quartile range [Option ID = 32835]
4. Median [Option ID = 32836]

29) When the data are skewed to the right, the measure of skewness will be:

[Question ID = 8210]
1. Negative

    [Option ID = 32837]
2. Zero

    [Option ID = 32838]
3. Positive

    [Option ID = 32839]
4. One

    [Option ID = 32840]

30) The trace and determinant of a (2 x 2) matrix are known to be -2 and -35, respectively. Its eigen values are:[Question ID = 8211]
1. -30 and -5 [Option ID = 32841]
2. -37 and -1 [Option ID = 32842]
3. -7 and 5 [Option ID = 32843]
4. 17.5 and -2 [Option ID = 32844]

31) You have carried out a regression analysis; but, after thinking about the relationship between variables, you have decided to swap the explanatory and the response variables. After re-fitting the regression model to the data, it is expected that:[Question ID = 8212]
1. The value of the correlation cofficient will change [Option ID = 32845]
2. The value of SSE will change [Option ID = 32846]
3. The value of cofficient of determination will change [Option ID = 32847]
4. The sign of the slope will change [Option ID = 32848]

32) The $\lim\limits_{h \to 0} \frac{|h|}{h}$ is:

[Question ID = 8213]
1. 1

    [Option ID = 32849]
2. -1

    [Option ID = 32850]
3. $+\infty$

    [Option ID = 32851]
4. Limit does not exist

    [Option ID = 32852]

33) It _____ the best idea to pay for those tickets by credit card. It was too risky.[Question ID = 8214]
1. may not have been [Option ID = 32853]
2. may not be [Option ID = 32854]
3. might not be [Option ID = 32855]
4. must not have been [Option ID = 32856]

34) We'll never know what might have happened _____ the email earlier.[Question ID = 8215]
1. if he sent [Option ID = 32857]

2. had he sent [Option ID = 32858]
3. if he has sent [Option ID = 32859]
4. did he sent [Option ID = 32860]

35) Which of the following sets of vectors in R³ are linearly independent?

[Question ID = 8216]

1. $[(1,0,0),(0,1,0),(1,1,0)]$

[Option ID = 32861]

2. $[(1,0,0),(0,1,1),(0,0,1)]$

[Option ID = 32862]

3. $[(0,1,0),(1,0,1),(1,1,0)]$

[Option ID = 32863]

4. $[(0,0,1),(0,1,0),(0,1,1)]$

[Option ID = 32864]

36) The value of the integral $\int_{0}^{100\pi} |\sin x| dx$ is equal to:

[Question ID = 8217]

1. 100

[Option ID = 32865]

2. 1

[Option ID = 32866]

3. 200

[Option ID = 32867]

4. 100π

[Option ID = 32868]

37) The maximum slope of the curve $-x^3 + 6x^2 + 2x + 1$ is

[Question ID = 8218]

1. 14

[Option ID = 32869]

2. 16

[Option ID = 32870]

3. 19

[Option ID = 32871]

4. -13

[Option ID = 32872]

38) If $a < 0$ then the function $f(x) = ax^2 + bx + c$ has

[Question ID = 8219]

1. maximum value

[Option ID = 32873]

2. minimum value

[Option ID = 32874]

3. constant value

[Option ID = 32875]

4. positive value

[Option ID = 32876]

39) A fitted least squares regression line:

[Question ID = 8220]

1. may be used to predict a value of y if the corresponding x value is given

[Option ID = 32877]

2. is evidence for a cause-effect relationship between x and y

[Option ID = 32878]

3. can only be computed if a strong linear relationship exists between x and y

[Option ID = 32879]

4. None of these

[Option ID = 32880]

40) In least squares regression, which of the following is not a required assumption about the error term $\in$?

[Question ID = 8221]

1. The expected value of the error term is one

[Option ID = 32881]

2. The variance of the error term is the same for all values of x

[Option ID = 32882]

3. The values of the error term are independent

[Option ID = 32883]

4. The error term is normally distributed

[Option ID = 32884]

41) What is the proportion of the total area under the normal curve within plus and minus two standard deviations of the mean?[Question ID = 8222]

1. 68% [Option ID = 32885]
2. 99.7% [Option ID = 32886]
3. 34% [Option ID = 32887]
4. 95% [Option ID = 32888]

42) To test the significance of an observed sample correlation coefficient, we use:

[Question ID = 8223]

1. Binomial distribution

    [Option ID = 32889]
2. F distribution

    [Option ID = 32890]
3. χ^2 distribution

    [Option ID = 32891]
4. t distribution

    [Option ID = 32892]

43) The memory that has shortest access time is:[Question ID = 8224]

1. Cache memory [Option ID = 32893]
2. Magnetic core memory [Option ID = 32894]
3. Magnetic bubble memory [Option ID = 32895]
4. RAM [Option ID = 32896]

44) The expression $x + x'y$ is equal to:

[Question ID = 8225]

1. x

    [Option ID = 32897]
2. y

    [Option ID = 32898]
3. $x - y$

    [Option ID = 32899]
4. $x + y$

    [Option ID = 32900]

45) The points of inflexion of normal distribution curve are:

[Question ID = 8226]

1. $\sigma. \mu$

    [Option ID = 32901]
2. $\mu \pm \sigma$

    [Option ID = 32902]
3. $\pm \sigma$

    [Option ID = 32903]
4. $\pm \mu$

    [Option ID = 32904]

46) The binary integers that are formed by finding 1's complement and adding 1 to it are called:[Question ID = 8227]

1. 3's complement [Option ID = 32905]
2. 2's complement [Option ID = 32906]
3. 1's complement [Option ID = 32907]
4. ones string [Option ID = 32908]

47) If 1 is opposite to 2 and adjacent to 3 and 4 on a dice numbered 1 to 6, then which of the following statement is necessarily true?[Question ID = 8228]

1. 2 is adjacent to 6 [Option ID = 32909]
2. 3 is adjacent to 4 [Option ID = 32910]
3. 4 is opposite to 6 [Option ID = 32911]
4. 3 is opposite to 5 [Option ID = 32912]

48) Five girls are sitting in a row. Rashi is not adjacent to Sulekha or Abha. Anuradha is not adjacent to Sulekha. Rashi is adjacent to Monika. Monika is at the middle in the row. Then Anuradha is adjacent to whom out of the following?

[Question ID = 8229]

1. Rashi

    [Option ID = 32913]
2. Sulekha

    [Option ID = 32914]
3. Abha

    [Option ID = 32915]
4. cannot be determined

    [Option ID = 32916]

49) The pair of words that bear the same relationship to each other as the word Apostate:: Religion is:

[Question ID = 8230]

1. Teacher :: Education

    [Option ID = 32917]
2. Traitor :: Country

    [Option ID = 32918]
3. Potentate :: Kingdom

    [Option ID = 32919]
4. Jailer :: Law

    [Option ID = 32920]

50) In a certain code "what else can you do for me, Mr. Ajay" is written as "you Mr. what can Ajay else do me for". How will "anyone else who can do such favor to me" be written in that code?[Question ID = 8231]

1. can to who anyone me else do favor such [Option ID = 32921]

2. can favor anyone who me else do to such [Option ID = 32922]
3. can to anyone who me else do such favor [Option ID = 32923]
4. none of these [Option ID = 32924]

51) If the correlation coefficient is 0.8, the percentage of variation in the response variable explained by the variation in the explanatory variable is:
[Question ID = 8232]
1. 0.80% [Option ID = 32925]
2. 80% [Option ID = 32926]
3. 0.64% [Option ID = 32927]
4. 64% [Option ID = 32928]

52) The expected value of a discrete random variable:[Question ID = 8233]
1. is the outcome that is most likely to occur [Option ID = 32929]
2. can be found by determining the 50% value in the c.d.f [Option ID = 32930]
3. equals the population median [Option ID = 32931]
4. is computed as a weighted average of the possible outcome of that random variable [Option ID = 32932]

53) The following linear programming problem: $\min z = -2x_1 + 10x_2$ subject to $x_1 - x_2 \geq 0, -x_1 + 5x_2 \geq 5, x_1, x_2 \geq 0$ has:
[Question ID = 8234]
1. alternative solution

[Option ID = 32933]
2. unique solution

[Option ID = 32934]
3. unbounded solution

[Option ID = 32935]
4. none of these

[Option ID = 32936]

54) Out of the four alternatives given, choose the option which will improve the italicised part of the sentence "She wondered *if* the children were as lonely as she was"

[Question ID = 8235]
1. that if

[Option ID = 32937]
2. whether

[Option ID = 32938]
3. that

[Option ID = 32939]
4. no improvement

[Option ID = 32940]

55) The primary motivation for using boolean algebra to simplify logic expressions is:[Question ID = 8236]
1. To make it easier to understand the overall function of the circuit [Option ID = 32941]
2. To reduce the number of gates [Option ID = 32942]
3. To reduce the number of inputs required [Option ID = 32943]
4. All of these [Option ID = 32944]

56) The protocol that provides e-mail facility among different hosts is:[Question ID = 8237]
1. FTP [Option ID = 32945]
2. SMTP [Option ID = 32946]
3. TELNET [Option ID = 32947]
4. SNMP [Option ID = 32948]

57) What is the output of the following program?

main( )

{

int x=49;

for (;x;)

x++;

printf("%d\n",x);

}

[Question ID = 8238]
1. 49

[Option ID = 32949]
2. 98

[Option ID = 32950]
3. 0

[Option ID = 32951]
4. None of these

[Option ID = 32952]

58) Which statements hold true in the context of primal-dual linear programming problems?[Question ID = 8239]
1. Shadow prices of resources in the primal are optimal values of the dual variables [Option ID = 32953]
2. The optimal values of the objective functions of primal and dual are the same [Option ID = 32954]
3. If the primal problem has unbounded solution, the dual problem would have infeasibility [Option ID = 32955]
4. All of these [Option ID = 32956]

59)
The point $(x, 3)$ satisfies the inequality $-5x - 2y \leq 13$. The smallest possible value of x is:

[Question ID = 8240]

1. -1.4

   [Option ID = 32957]
2. 0

   [Option ID = 32958]
3. -3.8

   [Option ID = 32959]
4. 3.8

   [Option ID = 32960]

60) The reliability of a component is estimated by a procedure known as:[Question ID = 8241]
1. life testing [Option ID = 32961]
2. hazard rate [Option ID = 32962]
3. mean time before failure [Option ID = 32963]
4. mean time between failures [Option ID = 32964]

61) At an automatic car wash, cars arrive randomly at a rate of 7 cars every 30 minutes. The car wash takes exactly 4 minutes. On average, what would be the length of the line?[Question ID = 8242]
1. 6.53 [Option ID = 32965]
2. 7.467 [Option ID = 32966]
3. 0.467 [Option ID = 32967]
4. 8.171 [Option ID = 32968]

62) In ABC inventory classification system, class A items may:[Question ID = 8243]
1. require higher safety stock [Option ID = 32969]
2. require frequent deliveries [Option ID = 32970]
3. require a periodic inventory system [Option ID = 32971]
4. require batch updating of inventory records [Option ID = 32972]

63) Normally, a reliability index could be denoted by:[Question ID = 8244]
1. MTBF (mean time between faults) [Option ID = 32973]
2. MTTF (mean time to failures) [Option ID = 32974]
3. MTTR (mean time to repairs) [Option ID = 32975]
4. All of these [Option ID = 32976]

64) Mean lifetime is given by the area:[Question ID = 8245]
1. below the reliability function R(t) [Option ID = 32977]
2. above the reliability function R(t) [Option ID = 32978]
3. does not relate to the reliability function R(t) [Option ID = 32979]
4. none of these [Option ID = 32980]

65) The exact value of $\lim\limits_{x \to 0} \frac{\sqrt{3+x}-\sqrt{3}}{x}$ is:

[Question ID = 8246]
1. $\sqrt{3}$

   [Option ID = 32981]
2. 0

   [Option ID = 32982]
3. $\frac{1}{2\sqrt{3}}$

   [Option ID = 32983]
4. the limit does not exit

   [Option ID = 32984]

66) For what values of x does the series $1 + 2^x + 3^x + \cdots + n^x + \cdots$ converges?

[Question ID = 8247]
1. No values of x

   [Option ID = 32985]
2. $x < -1$

   [Option ID = 32986]
3. $x \geq -1$

   [Option ID = 32987]
4. $x > -1$

   [Option ID = 32988]

67) If $f''(x) - f'(x) - 2f(x) = 0, f'(0) = -2, f(0) = 2,$ then

[Question ID = 8248]
1. 1

   [Option ID = 32989]
2. 0

   [Option ID = 32990]
3. $2e^{-1}$

   [Option ID = 32991]
4. e^{-2}

   [Option ID = 32992]

68) If $y = x \sin x$ be one of the solution of an nth order linear differential equation with constant coefficients, then the least possible value of n is:

[Question ID = 8249]
1. 1

   [Option ID = 32993]

2. 2

[Option ID = 32994]

3. 3

[Option ID = 32995]

4. 4

[Option ID = 32996]

69) For what values of x does the series $\sum_{n=1}^{\infty} \frac{(x-1)^n}{n}$ converges?

[Question ID = 8250]

1. No values of x

[Option ID = 32997]

2. $0 < x < 2$

[Option ID = 32998]

3. $0 \le x < 2$

[Option ID = 32999]

4. $-1 < x$

[Option ID = 33000]

70) If y^a is an integrating factor of the differential equation $2xy\,dx - (3x^2 - y^2)dy = 0$, then the value of a is:

[Question ID = 8251]

1. -4

[Option ID = 33001]

2. 4

[Option ID = 33002]

3. -1

[Option ID = 33003]

4. 1

[Option ID = 33004]

71) The maximum value of the function $f(x) = |\sin x - \frac{1}{2}|$ is:

[Question ID = 8252]

1. 1

[Option ID = 33005]

2. 1/2

[Option ID = 33006]

3. 3/2

[Option ID = 33007]

4. -1/2

[Option ID = 33008]

72) If c is the number that satisfies the conclusion of the Mean Value Theorem for the function $f(x) = x^3 - 2x^2$ on the interval $0 \le x \le 2$, then c is equal to

[Question ID = 8253]

1. 0

[Option ID = 33009]

2. 1/2

[Option ID = 33010]

3. 4

[Option ID = 33011]

4. 4/3

[Option ID = 33012]

73) Which of the following functions are NOT everywhere continuous?

[Question ID = 8254]

1. $f(x) = \frac{x^2 - 4}{x + 2}$

[Option ID = 33013]

2. $f(x) = (x + 3)^4$

[Option ID = 33014]

3. $f(x) = 1066$

[Option ID = 33015]

4. None of these

[Option ID = 33016]

74) Classify the following differential equation:

$x^3 \frac{d^3y}{dx^3} - \left(\frac{dy}{dx}\right)^4 + y = 0$

[Question ID = 8255]

1. 3rd-order, linear

[Option ID = 33017]

2. 3rd-order, non-linear

[Option ID = 33018]

3. 4th-order, linear

[Option ID = 33019]

4. 4th-order, non-linear

[Option ID = 33020]

75) Given below are one statement and two conclusions.

Statement: The serious accident in which a person was run down by a car yesterday had again focused attention on the most unsatisfactory state of roads.

Conclusion I: The accident that occurred was fatal.

Conclusion II: Several accidents have so far taken place because of unsatisfactory state of roads.

Choose the *correct* answer from the options given below:

[Question ID = 8256]

1. Only conclusion I follows

[Option ID = 33021]

2. Only conclusion II follows

[Option ID = 33022]

3. Either conclusion I or II follows

[Option ID = 33023]

4. Both conclusions I amd II follows

[Option ID = 33024]

76) Given below are one statement and two conclusions.

Statement: The distance of 900 km by road between Bombay and Zafra will be reduced to 280 km by sea.

This will lead to a saving of Rs. 7.92 crores per annum on fuel.

Conclusion I: Transportation by sea is cheaper than that by road.

Conclusion II: Fuel must be saved to the greatest extent.

Choose the correct answer from the options given below:

[Question ID = 8257]

1. Only conclusion I follows

[Option ID = 33025]

2. Only conclusion II follows

[Option ID = 33026]

3. Either conclusion I or II follows

[Option ID = 33027]

4. Both conclusions I and II follows

[Option ID = 33028]

77) Nine professors – G, H, I, J, K, L, M, N and O are to appear on a series of three panels. Each panel will consist of three professors and each professor will appear exactly once. The panel must be arranged according to the following conditions:

(i) I and N must be on the same panel

(ii) K and L must be on the same panel

(iii) O and J cannot be on the same panel

(iv) M must appear on the second panel

(v) Either J or M or both must appear on the panel with H

If J and K appear on the 3rd panel, which of the following professors must appear on 2nd?

[Question ID = 8258]

1. G

[Option ID = 33029]

2. H

[Option ID = 33030]

3. I

[Option ID = 33031]

4. L

[Option ID = 33032]

78) Nine professors – G, H, I, J, K, L, M, N and O are to appear on a series of three panels. Each panel will consist of three professors and each professor will appear exactly once. The panel must be arranged according to the following conditions:

(i) I and N must be on the same panel

(ii) K and L must be on the same panel

(iii) O and J cannot be on the same panel

(iv) M must appear on the second panel

(v) Either J or M or both must appear on the panel with H

The 3rd panel could consist of all the following except:

[Question ID = 8259]

1. K, L, O

[Option ID = 33033]

2. K, L, J

[Option ID = 33034]

3. G, J, I

[Option ID = 33035]

4. G, H, J

[Option ID = 33036]

79) If PUNCTUAL can be written as 47819765, how can LUNA be written in that code?[Question ID = 8260]
1. 7586 [Option ID = 33037]
2. 5678 [Option ID = 33038]
3. 5786 [Option ID = 33039]
4. 5867 [Option ID = 33040]

80) If REASON is coded as 5 and BELIEVED as 7, then what is the code for GOVERNMENT?[Question ID = 8261]
1. 10 [Option ID = 33041]
2. 9 [Option ID = 33042]
3. 8 [Option ID = 33043]
4. 6 [Option ID = 33044]

81) The Synonym of IMPETUOUS is:[Question ID = 8262]
1. Violent [Option ID = 33045]
2. Resourceful [Option ID = 33046]
3. Pleasing [Option ID = 33047]
4. Rash [Option ID = 33048]

82) The Synonym of PLACID is:[Question ID = 8263]
1. Vital [Option ID = 33049]
2. Calm [Option ID = 33050]
3. Neglect [Option ID = 33051]
4. Ignore [Option ID = 33052]

83) The pair of words that bear the same relationship to each other as the words of the given pair SOUND :: CACOPHONY is:[Question ID = 8264]
1. Speech :: Oration [Option ID = 33053]
2. Touch :: Massage [Option ID = 33054]
3. Smell :: Stench [Option ID = 33055]
4. Taste :: Style [Option ID = 33056]

84) Among the six persons A,B,C,D,E and F each have different weight.

A is heavier than 3 persons, C is lighter than E. D is lighter than only B. C is not the lightest. The second heaviest person is of 66 kg and the second lightest person is of 32 kg. After arranging the persons in ascending order of their weights find the person in fourth position?

[Question ID = 8265]
1. A

[Option ID = 33057]
2. C

[Option ID = 33058]
3. E

[Option ID = 33059]
4. D

[Option ID = 33060]

85) Among the six persons A,B,C,D,E and F each have different weight. A is heavier than 3 persons, C is lighter than E. D is lighter than only B. C is not the lightest. The second heaviest person is of 66 kg and the second lightest person is of 32 kg. Who among the person weigh 32 kg?

[Question ID = 8266]
1. F

[Option ID = 33061]
2. C

[Option ID = 33062]
3. A

[Option ID = 33063]
4. D

[Option ID = 33064]

86) Degeneracy occurs in linear programming problem when:[Question ID = 8267]
1. Basic variables are positive but some of non-basic variables have negative values [Option ID = 33065]
2. The basic matrix is singular [Option ID = 33066]
3. Some of basic variables have zero values [Option ID = 33067]
4. Some of non-basic variables have zero values [Option ID = 33068]

87) If an artificial variable is present in the basic variable column of an optimal simplex table, then the solution is:[Question ID = 8268]
1. infeasible [Option ID = 33069]
2. bounded [Option ID = 33070]
3. feasible [Option ID = 33071]
4. none of these [Option ID = 33072]

88) Consider a system $Ax = b$ of m linear equations in n variables $(n \geq m)$. Which of the following statements is TRUE?

[Question ID = 8269]
1. A basic solution is obtained by setting $(n - m)$ variables equal to zero and solving for the values of the remaining m variables

[Option ID = 33073]
2. A basic solution is obtained by setting m variables equal to zero and solving for the values of the remaining $(n - m)$ variables

[Option ID = 33074]
3. Number of basic variables should be greater than or equal to number of non-basic variables

[Option ID = 33075]
4. All basic variables should be positive

[Option ID = 33076]

89) A queuing system has an arrival rate of 5 customers per hour and a service rate of 8 customers per hour. What is the utilizati... (ρ) of the

system?[Question ID = 8270]
1. 0.625 [Option ID = 33077]
2. 1.6 [Option ID = 33078]
3. 4 [Option ID = 33079]
4. 0.5 [Option ID = 33080]

90) The dual price for a constraint that compares resources used (LHS) with funds available (RHS) is 6. This means that:[Question ID = 8271]
1. The cost of additional resources is 6 [Option ID = 33081]
2. No more funds are needed [Option ID = 33082]
3. The objective was to minimize [Option ID = 33083]
4. If more resources can be obtained at a cost less than 6, some should be [Option ID = 33084]

91) Which of the following statements is FALSE for a queuing system?

[Question ID = 8272]
1. If the number arriving is having a Poisson distribution, the inter-arrival time has an exponential distribution

[Option ID = 33085]
2. If the service time has an exponential distribution, the number of customers served has a Poisson distribution

[Option ID = 33086]
3. If the service time has a normal distribution, the number of customer served has Poisson distribution

[Option ID = 33087]
4. Finding system performance parameters is meaningless if the utilization factor (ρ) is greater than 1

[Option ID = 33088]

92) Suppose that the economic order quantity for an inventory problem was first calculated to be Q^*. Then it is found out that the ordering cost would be lower than anticipated. Without recalculating the economic order quantity, what can you say about the relationship between the new Q^* ($=Q^*_{new}$) and the original Q^*?

[Question ID = 8273]
1. $Q^* = Q^*_{new}$

[Option ID = 33089]
2. $Q^* < Q^*_{new}$

[Option ID = 33090]
3. $Q^* > Q^*_{new}$

[Option ID = 33091]
4. inconclusive without knowing how much the ordering cost decreased

[Option ID = 33092]

93) The numbers x and y satisfy the following inequalities: $2x + 3y \leq 23, x + 2 \leq 3y, 3y + 1 \leq 4x$. The largest possible value of x is:

[Question ID = 8274]
1. 6

[Option ID = 33093]
2. 7

[Option ID = 33094]
3. 8

[Option ID = 33095]
4. 0.9

[Option ID = 33096]

94) Which of the following is (are) assumption (s) of EOQ Model?

[Question ID = 8275]
1. Repetitive Ordering

[Option ID = 33097]
2. Constant Demand

[Option ID = 33098]
3. Constant Lead Time

[Option ID = 33099]
4. All of these

[Option ID = 33100]

95) Braneast Airlines uses 500 taillights per year. Each time an order for taillights is placed, an ordering cost of $5 is incurred. Each light costs 40¢, and the holding cost is 8¢/light/year. Assume that demand occurs at a constant rate and shortages are not allowed. What is the EOQ?[Question ID = 8276]
1. 230 [Option ID = 33101]
2. 250 [Option ID = 33102]
3. 210 [Option ID = 33103]
4. 350 [Option ID = 33104]

96) A system consists of four components connected in series and are exponentially distributed with failure rates $\lambda_1 = 0.002$ hrs, $\lambda_2 = 0.002$ hrs, $\lambda_3 = 0.001$ hrs, and $\lambda_4 = 0.003$ hrs, respectively. The hazard function is:[Question ID = 8277]
1. 0.008 [Option ID = 33105]
2. 0.002 [Option ID = 33106]
3. 0.001 [Option ID = 33107]
4. 0.003 [Option ID = 33108]

97) The reliability of a complex system can best be improved by:[Question ID = 8278]
1. Selecting system components objectively [Option ID = 33109]
2. Multiple system testing (> 15 systems) [Option ID = 33110]
3. Well designed and executed preventive maintenance system [Option ID = 33111]
4. Including redundant concepts in design [Option ID = 33112]

98) The power of x which has the greatest coefficient in the expansion of $\left(1 + \frac{1}{2}x\right)^{10}$ is:

[Question ID = 8279]

1. x^2

   [Option ID = 33113]
2. x^3

   [Option ID = 33114]
3. x^5

   [Option ID = 33115]
4. x^{10}

   [Option ID = 33116]

99) Matrix multiplication is:[Question ID = 8280]
1. commutative and not associative [Option ID = 33117]
2. commutative and associative [Option ID = 33118]
3. associative and not commutative [Option ID = 33119]
4. neither commutative nor associative [Option ID = 33120]

100) Consider the constraints for a linear programming problem: 7a + 3b ≤ 24, a + 2b ≤ 6 and b ≤ 6. Given a, b ≥ 0, the number of vertex points in the convex feasibile region are:

[Question ID = 8281]
1. 2

   [Option ID = 33121]
2. 4

   [Option ID = 33122]
3. 6

   [Option ID = 33123]
4. No feasible region

   [Option ID = 33124]