OCET 2011

Sr. No. :

Question Booklet Series : A

Important : Please consult your Admit Card / Roll No. Slip before filling your Roll Number on the Test Booklet and Answer Sheet.

Roll No.   *In Figures*   *In Words*

O.M.R. Answer Sheet Serial No.

Signature of the Candidate :

Subject : M.C.A. (MASTER OF COMPUTER APPLICATIONS)

Time : 90 minutes   **Number of Questions : 75**   **Maximum Marks : 75**

DO NOT OPEN THE SEAL ON THE BOOKLET UNTIL ASKED TO DO SO

INSTRUCTIONS

1. Write your Roll No. on the Question Booklet and also on the OMR Answer Sheet in the space provided and nowhere else.
2. Enter the Subject and Series Code of Question Booklet on the OMR Answer Sheet. Darken the corresponding bubbles with **Black Ball Point / Black Gel pen.**
3. Do not make any identification mark on the Answer Sheet or Question Booklet.
4. To open the Question Booklet remove the paper seal (s) gently when asked to do so.
5. Please check that this Question Booklet contains **75** questions. In case of any discrepancy, inform the Assistant Superintendent within 10 minutes of the start of test.
6. Each question has four alternative answers (A, B, C, D) of which only one is correct. For each question, darken only one bubble (A or B or C or D), whichever you think is the correct answer, on the Answer Sheet with **Black Ball Point / Black Gel pen.**
7. If you do not want to answer a question, leave all the bubbles corresponding to that question blank in the Answer Sheet. No marks will be deducted in such cases.
8. Darken the bubbles in the OMR Answer Sheet according to the Serial No. of the questions given in the Question Booklet.
9. Negative marking will be adopted for evaluation i.e., 1/4th of the marks of the question will be deducted for each wrong answer. A wrong answer means incorrect answer or wrong filling of bubble.
10. For calculations, use of simple log tables is permitted. Borrowing of log tables and any other material is not allowed.
11. For rough work only the sheets marked "Rough Work" at the end of the Question Booklet be used.
12. The Answer Sheet is designed for **computer evaluation**. Therefore, if you do not follow the instructions given on the Answer Sheet, it may make evaluation by the computer difficult. **Any resultant loss to the candidate on the above account, i.e., not following the instructions completely, shall be of the candidate only.**
13. After the test, hand over the Question Booklet and the Answer Sheet to the Assistant Superintendent on duty.
14. In no case the Answer Sheet, the Question Booklet, or its part or any material copied/ noted from this Booklet is to be taken out of the examination hall. Any candidate found doing so would be expelled from the examination.
15. A candidate who creates disturbance of any kind or changes his/her seat or is found in possession of any paper possibly of any assistance or found giving or receiving assistance or found using any other unfair means during the examination will be expelled from the examination by the Centre Superintendent / Observer whose decision shall be final.
16. **Telecommunication equipment such as pager, cellular phone, wireless, scanner, etc., is not permitted inside the examination hall. Use of calculators is not allowed.**

1. In a programming language in which operations are associated right-to-left instead of left-to-right (i.e., a + b + c = a + (b + c)), the value of the following expression is :

    7– (16/(3+1)*2) – 4

    (A) –1   (B) 1
    (C) 7   (D) 9

2. The process of copying files to a CD is known as :

    (A) burning   (B) zipping
    (C) digitizing   (D) ripping

3. The term _____ refers to a combination of text, graphics, animation, video, music, voice, and sound effects used to communicate a message.

    (A) multitasking   (B) hyperlinking
    (C) multicasting   (D) multimedia

4. A (n)_____ port is faster and more flexible than a traditional serial or parallel port.

    (A) peripheral   (B) USB
    (C) monitor   (D) server

5. _____ is new technology currently available in India. It uses high bandwidth connections to communicate multimedia over wireless networks.

    (A) 4GL   (B) PDA
    (C) 3G   (D) Wi-Fi

6. WWW means :

    (A) World Wide Web   (B) World Wide Wonder
    (C) World Wide Wizard   (D) Wide World Web

7. What is the technological advancement that made it possible for computers to become as small as they are today ?

    (A) Repeater   (B) Vacuum tube
    (C) Transistor   (D) Silicon chip

8. The term, _____, refers to the amount of information transmitted through a communication medium in a given amount of time.

    (A) dots per inch   (B) bit depth
    (C) bandwidth   (D) broadband

9. Programs such as Internet Explorer that serve as navigable windows into the Web are called :

    (A) Hypertext   (B) Networks
    (C) Internet   (D) Web browsers

10. Organizations use _____ to deny network access to outsiders and to restrict employees' access to sensitive data such as payroll or personnel records.

    (A) drywalls   (B) seawalls
    (C) headwalls   (D) firewalls

11. The circuitry in the system unit usually is part of, or is connected to, a circuit board called the _____ .

(A) billboard   (B) soundboard

(C) motherboard   (D) snowboard

12. Known as "The first computer programmer" :

(A) J. M. Jacquard   (B) Charles Babbage

(C) Ada Lovelace   (D) Grace Hopper

13. In *Windows* NT, NT stands for New Technology. What does XP in *Windows* XP stand for ?

(A) *eXtra Powerful*   (B) *eXtra Professional*

(C) *eXPerience*   (D) X = to cross out P = piracy

14. This technology is used to measure and analyze human body characteristics for authentication purposes :

(A) Foot-printing   (B) Biometrics

(C) Optical Character Recognition   (D) Ergonomics

15. Disk Defragmenter :

(A) Regroups fragmented sectors on a hard drive

(B) Regroups pieces of files together on a hard drive

(C) Compresses fragmented files

(D) All of the above

16. A relation can be defined by giving the ordered pairs of elements for which the relation holds. If the relation R over {a, b, c} is given by :

R = {(a, a), (a, b), (b, a), (b, b), (c, c)}, which of the following properties does R have ?

I. Symmetry   II. Antisymmetry   III. Reflexivity   IV. Transitivity

(A) II and III only   (B) II and IV only

(C) I, III and IV   (D) II, III and IV

17. Let P and Q denote positive integers. Suppose a function F is defined recursively as :

$$F(P,Q)=\begin{cases} 0 & \text{if } P \leq Q \\ P*F(P-Q, Q+Q^2) & \text{if } Q \leq P. \end{cases}$$

Value of F(8, 3) is :

(A) 100   (B) 81

(C) 50   (D) 9

18. **How many distinct values can be represented in 17 bits ?**

   (A) $2^{(17-1)}+1$ (B) $2^{(17-1)}$

   (C) 2^{17} (D) $2^{17}-1$

19. **Let A = {1, 2, 3, 4}. The cardinality of the relation $R = \{(a,b) \mid a \text{ divides } b\}$ over A is :**

   (A) 10   (B) 9

   (C) 8   (D) 7

20. **If a fair coin is tossed four times, what is the probability that 2 heads and 2 tails will result ?**

   (A) 3/8   (B) 1/6

   (C) 1/2   (D) 5/8

21. **Let the function $f(x) = x^2$ from the set of integers to the set of integers. Then :**

   (A) f is one-one and onto   (B) f is one-one but not onto

   (C) f is not one-one but onto   (D) f is neither one-one nor onto

22. **The value of P and Q for which the identity $f(x+1) - f(x) = 8x + 3$ is satisfied, where $f(x) = Px^2 + Qx + R$, are :**

   (A) P = 2, Q = 1   (B) P = 4, Q = –1

   (C) P = –1, Q = 4   (D) P = –1, Q = 1

23. **Let $f\left(x+\dfrac{1}{x}\right) = x^2 + 1/x^2 \ (x \neq 0)$, then $f(x) = $**

   (A) x^2 (B) $x^2 - 1$

   (C) $x^2 - 2$ (D) $x^2 + 2$

24. **The range of the function $f(x) = 1/(2 - \cos 3x) = $**

   (A) $\left(\dfrac{1}{3}, 1\right)$ (B) $\left[\dfrac{1}{3}, 1\right]$

   (C) $\left[\dfrac{1}{3}, 1\right)$ (D) $\left(\dfrac{1}{3}, 1\right]$

25. **Let $f(2) = 4$ and $f'(2) = 1$. Then $\lim\limits_{x \to 2} \dfrac{xf(2) - 2f(x)}{x - 2}$ is given by :**

   (A) 2   (B) –2

   (C) –4   (D) 3

26. **Let $f(x) = \begin{vmatrix} x^3 & \sin x & \cos x \\ 6 & -1 & 0 \\ p & p^2 & p^3 \end{vmatrix}$, where p is constan t. Then $f'''(0) = $**

   (A) P   (B) $P + P^2$

   (C) $p + p^3$ (D) Independent of p

27. If the curves $y^2 = 16x$ and $9x^2 + by^2 = 16$ cut each other at right angles, then the value of b is :

(A)   2   (B)   4
(C)   9/2   (D)   7/2

28. If $f(x) = x^5 - 20x^3 + 240x$, then $f(x)$ satisfies which of the following ?

(A)   It is monotonically decreasing only in $(0, \infty)$
(B)   It is monotonically decreasing every where
(C)   It is monotonically increasing every where
(D)   It is monotonically increasing only in $(-\infty, 0)$

29. If $f(x) = \dfrac{x^2 - 1}{x^2 + 1}$ for every real number x, then the minimum value of f :

(A)   does not exist because f is bounded   (B)   is not attained even though f is bounded
(C)   is equal to 1   (D)   is equal to -1

30. If f be the quadratic function defined on [a, b] by $f(x) = \alpha x^2 + \beta x + \gamma, \alpha \neq 0$, then the real 'c' guaranteed by the Langrange's mean value theorem is equal to :

(A) $\dfrac{1}{2}(a + b)$ (B) $\sqrt{(ab)}$

(C) $2\, ab/(a+b)$ (D) $(a/b + b/a)$

31. The value of $\displaystyle\int_a^b \dfrac{|x|}{x}\, dx,\ a < b$ is :

(A) $b - a$ (B) $a - b$
(C) $b + a$ (D) $|b| - |a|$

32. $\displaystyle\int_1^5 \dfrac{\sqrt{x}}{\sqrt{(6-x)} + \sqrt{x}}\, dx =$

(A)   1   (B)   3/2
(C)   2   (D)   5/2

33. Given two vectors :

$\vec{a} = 2\hat{i} - 3\hat{j} + 6\hat{k},\ \vec{b} = -2\hat{i} + 2\hat{j} - \hat{k}$ and $\lambda = \dfrac{\text{the projection of } \vec{a} \text{ on } \vec{b}}{\text{the projection of } \vec{b} \text{ on } \vec{a}}$,

then the value of λ is :

(A)   3/7   (B)   7/3
(C)   2/7   (D)   7/2

34. $\vec{a}, \vec{b}, \vec{c}$ are three non-zero vectors, such that $\vec{a} + \vec{b} + \vec{c} = \vec{0}$ then the value of $\vec{a} \cdot \vec{b} + \vec{b} \cdot \vec{c} + \vec{c} \cdot \vec{a}$ is :

(A)   Less than zero   (B)   Equal to zero
(C)   Greater than zero   (D)   3

35. If $\log_{10} 3 = 0.477$, the number of digits in 3^{40} is :
(A) 18
(B) 19
(C) 20
(D) 21

36. If the roots of the equation $ax^2 + bx + c = 0$ are real and of the form $\alpha/(\alpha - 1)$ and $(\alpha + 1)/\alpha$ then the value of $(a + b + c)^2$ is :
(A) $b^2 - 4ac$
(B) $b^2 - 2ac$
(C) $2b^2 - ac$
(D) $b^2 - 3ac$

37. If $a^2 + b^2 + c^2 = 1$, then $ab + bc + ca$ lies in the interval :
(A) $\left[\dfrac{1}{2}, 2\right]$
(B) $[-1, 2]$
(C) $\left[-\dfrac{1}{2}, 1\right]$
(D) $\left[1, \dfrac{1}{2}\right]$

38. The sum of first n terms of the series $\dfrac{1}{2} + \dfrac{3}{4} + \dfrac{7}{8} + \dfrac{15}{16} + \ldots$ is equal to :
(A) $2^n - n - 1$
(B) $1 - 2^{-n}$
(C) $n + 2^{-n} - 1$
(D) $2^n - 1$

39. In a geometric progression, $(p + q)$th term is m and $(p - q)$th term is n, then pth term is :
(A) m/n
(B) $\sqrt{mn}$
(C) $\sqrt{m/n}$
(D) $\sqrt{n/m}$

40. The remainder when 5^{99} is divided by 13 is :
(A) 6
(B) 8
(C) 9
(D) 10

41. A polygon has 44 diagonals, then the number of its sides are :
(A) 11
(B) 7
(C) 8
(D) 10

42. A five digit number divisible by 3 is to be formed using the numbers 0, 1, 2, 3, 4 and 5 without repetitions. The total number of ways this can be done is :
(A) 216
(B) 600
(C) 240
(D) 3125

43. If $A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$, then $A^{-1} =$
(A) A
(B) A^2
(C) A^3
(D) A^4

44. The equations :

$2x - 3y + 6z = 4, 5x + 7y - 14z = 1, 3x + 2y - 4z = 0$, have

(A) Unique solution   (B) No solution

(C) Infinitely many solutions   (D) Exactly two solutions

45. If $\begin{vmatrix} x & x+y & x+y+z \\ 2x & 3x+2y & 4x+3y+2z \\ 3x & 6x+3y & 10x+6y+3z \end{vmatrix} = 64,$ then the real value of x is :

(A) 2   (B) 3

(C) 4   (D) 6

46. The standard deviation of first n natural numbers is :

(A) $\dfrac{n(n+1)(2n+1)}{6}$ (B) $\dfrac{n^2-1}{12}$

(C) $\sqrt{\dfrac{n^2-1}{12}}$ (D) $\dfrac{n(n+1)}{2}$

47. The arithmetic mean of 9 observations is 100 and that of 6 observations is 80, then the combined mean of all the 15 observations will be :

(A) 100   (B) 80

(C) 90   (D) 92

48. The foot of the perpendicular from (0, 2, 3) to the line $\dfrac{x+3}{5} = \dfrac{y-1}{2} = \dfrac{z+4}{3}$ is :

(A) $(-2, 3, 4)$ (B) $(2, -1, 3)$

(C) $(2, 3, -1)$ (D) $(3, 2, -1)$

49. The angle between the lines $x = 1, y = 2$ and $y = -1, z = 0$ is :

(A) $90°$ (B) $30°$

(C) $60°$ (D) $0°$

50. If $\sin x + \sin^2 x = 1$, then $\cos^{12} x + 3\cos^{10} x + 3\cos^8 x + \cos^6 x =$

(A) 1   (B) 2

(C) 3   (D) 0

51. The solution of the equation $\cos^2\theta + \sin\theta + 1 = 0$, lies in the interval :

(A) $(-\pi/4, \pi/4)$ (B) $(\pi/4, 3\pi/4)$

(C) $(3\pi/4, 5\pi/4)$ (D) $(5\pi/4, 7\pi/4)$

52. If the angles of the triangle are in the ratio 1 : 2 : 3, then the corresponding sides are in the ratio :

(A) $2 : 3 : 1$ (B) $\sqrt{3} : 2 : 1$

(C) $2 : \sqrt{3} : 1$ (D) $1 : \sqrt{3} : 2$

53. **For any complex number z, the solution of the equation :**

$$|z+1| = z + 2 + 2i, i = \sqrt{-1} \text{ is :}$$

(A) $\frac{1}{2}(3+4i)$ (B) $\frac{1}{2}(1+6i)$

(C) $\frac{1}{2}(3-4i)$ (D) $\frac{1}{2}(1-4i)$

54. **If the coordinates at one end of a diameter of the circle $x^2 + y^2 - 8x - 4y + c = 0$ are (–3, 2), then the coordinates at the other end are :**

(A)   (5, 3)   (B)   (6, 2)
(C)   (1, –8)   (D)   (11, 2)

55. **Vertices of a quadrilateral ABCD are A (0, 0), B (3, 4), C (7, 7) and D (4, 3). Then quadrilateral ABCD is :**

(A)   Rhombus   (B)   Rectangle
(C)   Square   (D)   Triangle

56. **Two pipes A and B can fill a tank in 20 and 30 minutes, respectively. If both the pipes are used together, then how long will it take to fill the tank ?**

(A)   12 minutes   (B)   15 minutes
(C)   25 minutes   (D)   50 minutes

57. **A library has an average of 510 visitors on Sundays and 240 on other days. The average number of visitors per day in a month of 30 days beginning with a Sunday is :**

(A)   250   (B)   276
(C)   280   (D)   285

58. **A number is increased consecutively two times by 20% each. The original number is actually increased by :**

(A)   40%   (B)   42%
(C)   44%   (D)   20%

59. **If A is B's mother, C is A's father, and D is A's husband. Then how are C and D related ?**

(A)   C is D's father-in-law   (B)   C is D's brother-in-law
(C)   C is D's uncle   (D)   C is D's brother

60. **If in a code 6145 stands for FADE, and 9451 stands for IDEA, what does 8978 stand for ?**

(A)   SIGH   (B)   HIGH
(C)   BITE   (D)   KITE

61. **Mr. M is taller than Mr. K, who is shorter than Mr. R. If Mr. N is taller than Mr. R but shorter than Mr. M, then who among these is the shortest ?**

(A)   K   (B)   M
(C)   R   (D)   N

Questions 62–65.

Nine individuals – Z, Y, X, W, V, U, T, S and R - are the only candidates, who can serve on three committees – A, B and C, and each candidate should serve on exactly one of the committees.

Committee A should consist of exactly one member more than committee B.

It is possible that there are no members of committee C.

Among Z, Y and X none can serve on committee A.

Among W, V and U none can serve on committee B.

Among T, S and R none can serve on committee C.

62. In case T and Z are the individuals serving on committee B, how many of the nine individuals should serve on committee C ?

    (A)   3
    (B)   4
    (C)   5
    (D)   6
    (E)   7

63. Of the nine individuals, the largest number that can serve together on committee C is :

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

64. In case R is the only individual serving on committee B, which among the following should serve on committee A ?

    (A)   V and U   (B)   V and T

    (C)   U and S   (D)   T and S

65. In case T, S and X are the only individuals serving on committee B, the total membership of committee C should be :

    (A)   Z and Y   (B)   Z and W

    (C)   Y and V   (D)   Y and U

Questions 66–68.

<u>Directions</u> : Each of the following questions consists of a pair of capitalized words followed by four choices lettered A to D. The capitalized words bear some meaningful relationship to each other. Choose the lettered pair of words whose relationship is most similar to that expressed by the capitalized pair.

66. **JUDGE : IMPARTIAL ::**

    (A)   acrobat : limber   (B)   dignitary : proud

    (C)   prisoner : repentant   (D)   politician : liberal

67. WORKER : UNEMPLOYED ::

   (A)   Purchase : Unnecessary   (B)   Crop : Barren

   (C)   Effluence : Confidence   (D)   Exile : Country

68. PROTAGONIST : CHARACTER ::

   (A)   brush : applicator   (B)   lawmaker : government

   (C)   costume : gala   (D)   novice : competitor

Questions : 69–71.

<u>**Directions**</u> **: For each word in capital letters, select the word or phrase among the four choices that is most nearly opposite in meaning to the word.**

69. QUALM :

   (A)   pleasant fragrance   (B)   loud noise

   (C)   confident attitude   (D)   stable condition

70. AFFILATE :

   (A)   Honor   (B)   Cut away

   (C)   Associate oneself   (D)   Peaceful

71. MERITORIOUS :

   (A)   uneven   (B)   stationary

   (C)   narrow-minded   (D)   un-praiseworthy

Questions : 72–73.

<u>**Directions**</u> **: For each word in capital letters, select the word or phrase among the four choices that is nearest in meaning to the word.**

72. OBSCURE :

   (A)   Outspoken   (B)   Conclusion

   (C)   Hidden   (D)   Display

73. SCAFFOLD :

   (A)   platform   (B)   table

   (C)   prop   (D)   curtain

Directions : Question 74 consists of a sentence in which one word has been underlined. From the four choices given, you should choose the one choice, which could be substituted for the underlined word without changing the meaning of the sentence.

74. The <u>frown</u> on man's face showed that he was displeased.

   (A)   Look of fear   (B)   Look of anger

   (C)   Look of delight   (D)   Look of surprise

75. Considering the way and the speed with which the issue is being sought to be resolved by the government, it is amply clear that it is _____ several important details crucial to the nature of the murder case.

   (A)   Examining   (B)   Overlooking

   (C)   Focusing on   (D)   Negating

ROUGH WORK