CET (PG)-2018

Sr. No. : 110067

Booklet Series Code : A

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

(In Figures) *(In Words)*

Roll No. | | | | | | | .....

O.M.R. Answer Sheet Serial No. | | | | | | |

Signature of the Candidate : .....

Subject : M.C.A. (Master of Computer Applications)

Time : 90 minutes] **[Maximum Marks : 75**

No. of Questions : 75] **[Total No. of Printed Pages : 15**

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 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 calculator is not allowed.**

1. **What is the 94th term of the following sequence ?**

1, 1, 2, 2, 2, 2, 3, 3, 3, 3, 3, 3, 4, 4, 4, 4, 4, 4, 4, 4,....

(A) 8 (B) 9
(C) 10 (D) 11

2. **Find the wrong term/element of the series given below, i.e., the term/element that does not conform to the rule used in writing the series :**

2, 5, 11, 23, 47, 96, 191, 383

(A) 191 (B) 23
(C) 96 (D) 47

3. **How many digits are there in 3^{16} when it is expressed in the decimal form ?**

(A) Three (B) Six
(C) Seven (D) Eight

4. **If MCA14 and MCA15 are five digit numbers such that their sum = 157229, then M +C+A would be :**

(A) 15 (B) 21
(C) 25 (D) 72

5. **If the product of three consecutive positive integers is equal to their sum, then what would be the sum of their squares ?**

(A) 9 (B) 14
(C) 16 (D) 24

6. **If $P+\frac{1}{Q}=1$ and $Q+\frac{1}{R}=1$, then what is PQR ?**

(A) –1 (B) 2
(C) –2 (D) Cannot be calculated

7. **If $42 \rightarrow 26,\ 71 \rightarrow 78,\ 33 \rightarrow 16$, then $62 \rightarrow$**

(A) 68 (B) 54
(C) 38 (D) 39

8. **The dimensions of a floor are 18×24. What is the smallest number of identical square tiles that will pave the entire floor without the need to break any tile ?**

(A) 6 (B) 24
(C) 8 (D) 12

9. **If R is on the right of L and L is on the left of K, then what can you say about the following statements ?**

X : K is on the right of L

Y : K is on the right of R

(A) Only X is valid (B) Only Y is valid

(C) Both X and Y are valid (D) Neither X nor Y is valid

10. **A woman starts shopping with Rs. P and Q Paise, spends Rs. 3.50 and is left with Rs. 2Q and 2P Paise. The amount she started with is :**

(A) Rs. 48.24 (B) Rs. 28.64

(C) Rs. 32.14 (D) Rs. 23.42

11. **The symmetric difference of sets A= {1, 2, 3, 4, 5, 6, 7, 8} and B={1, 3, 5, 6, 7, 8, 9} is :**

(A) {1, 3, 5, 6, 7, 8} (B) {2, 4, 9}

(C) {2, 4} (D) {1, 2, 3, 4, 5, 6, 7, 8, 9}

12. **Let $M = \{(a_1, a_2, a_3) : a_1 \in \{1, 2, 3, 4\}, a_1 + a_2 + a_3 = 6\}$. Then the number of elements in M is :**

(A) 8 (B) 9

(C) 10 (D) 12

13. **How many 5-digit telephone numbers can be constructed using the digits 0-9 if each number starts with 67 and no digit appears more than once ?**

(A) 60 (B) 120

(C) 248 (D) 336

14. **The number of words that can be formed by permuting the letters of 'MATHEMATICS' is :**

(A) 5040 (B) 11!

(C) 8! (D) 4989600

15. **The coefficient of x^5 in the expansion of $(x+3)^8$, is given by :**

(A) 504 (B) 1512

(C) 168 (D) 1008

16. **If A and B are two arbitrary events and P(X) means probability of an event X, then :**

(A) $P(A \cap B) = P(A)P(B)$ (B) $P(A \cup B) = P(A) + P(B)$

(C) $P(A \cup B) \leq P(A) + P(B)$ (D) $P(A|B) = P(A \cap B) + P(B)$

17. If E and F are events such that $P(E)=\frac{1}{4}, P(F)=\frac{1}{2}$ and $P(E \text{ and } F)=\frac{1}{8}$, then P(not E and not F) equals :

(A) $\frac{7}{8}$ (B) $\frac{5}{8}$

(C) $\frac{3}{8}$ (D) $\frac{1}{8}$

18. The probability that a ticketless traveller is caught during a trip is 0.1. If the traveller makes 4 trips, the probability that he/she will be caught during at least one of the trips is :

(A) $1-(0.9)^4$ (B) $(1-0.9)^4$

(C) $1-(1-0.9)^4$ (D) $(0.9)^4$

19. The unit digit of 2^{100} is :

(A) 2 (B) 4

(C) 6 (D) 8

20. The number $\sqrt{2}e^{i\pi}$ is :

(A) a rational number (B) a transcendental number

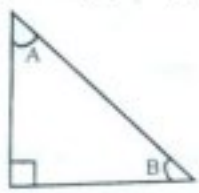
(C) an irrational number (D) an imaginary number

21. The number of positive divisors of 50000 is :

(A) 20 (B) 30

(C) 40 (D) 50

22. With reference to the right-angled triangle shown, what is the value of sin(A)cos(B) + cos(A)sin(B) ?



(A) $-\frac{1}{2}$ (B) 1

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

23. cos(4x) equals :

(A) $1-8\sin^2(x)\cos^2(x)$ (B) $1-8\sin^3(x)\cos^3(x)$

(C) $32\cos^4(x)-18\cos^2(x)-1$ (D) $1-8\sin^4(x)\cos^4(x)$

24. If $P = \sin^2 x + \cos^4 x$, then for all real x :

(A) $\frac{3}{4} \le P \le \frac{13}{16}$ (B) $\frac{3}{4} \le P \le 1$

(C) $\frac{13}{16} \le P \le 1$ (D) $1 \le P \le 2$

25. If f(x) is a real valued function such that :
$2f(x) + 3f(-x) = 15 - 4x$ for every $x \in \Re$, then f(2) is :

(A) −15 (B) 22

(C) 11 (D) 15

26. If x is real then the least value of the expression $\frac{x^2 - 6x + 5}{x^2 + 2x + 1}$ is :

(A) $-\frac{1}{3}$ (B) $-\frac{1}{6}$

(C) $-\frac{1}{9}$ (D) $-\frac{1}{12}$

27. $\lim_{n \to \infty} \left(1 - \frac{1}{n^2}\right)^n$ equals :

(A) 1 (B) $e^{-\frac{1}{2}}$

(C) e^{-2} (D) e^{-1}

28. Let $f : \Re \to \Re$ be defined by $f(x) = \begin{cases} \frac{\sin x}{x} & \text{if } x \neq 0 \\ 1 & \text{if } x = 0 \end{cases}$

Then

(A) f is not continuous (B) f is continuous but not differentiable

(C) f is differentiable (D) f is not bounded

29. What is the area of the triangle bounded by the lines $y = 2x$, $y = -2x$ and $y = 6$?

(A) 36 (B) 18

(C) 12 (D) 24

30. The value of P for which the points (P, −1), (2, 1) and (4, 5) are collinear, is :

(A) 0 (B) 1

(C) 2 (D) 3

31. A point on the x-axis, which is equidistant from the points (7, 6) and (3, 4) is given by :

(A) $\left(\frac{11}{2}, 0\right)$ (B) $\left(\frac{13}{2}, 0\right)$

(C) $\left(\frac{15}{2}, 0\right)$ (D) $\left(\frac{15}{4}, 0\right)$

32. The angle between the x-axis and the line joining the points (3, –1) and (4, –2), is given by :

(A) 45° (B) 135°

(C) 225° (D) 90°

33. What can you say about the following two statements ?

S_1 : The relation f defined by $f(x) = \begin{cases} x^2 & , \ 0 \le x \le 3 \\ 3x & , \ 3 \le x \le 10 \end{cases}$ is a function.

S_2 : The relation g defined by $g(x) = \begin{cases} x^2 & , \ 0 \le x \le 2 \\ 3x & , \ 2 \le x \le 10 \end{cases}$ is a function.

(A) Only S_1 is true (B) Only S_2 is true

(C) Both S_1 and S_2 are true (D) Neither S_1 nor S_2 is true

34. Three vertices of a parallelogram ABCD are A(3, –1, 2), B(1, 2, –4) and C(–1, 1, 2). Find the coordinates of the fourth vertex.

(A) (2, – 2, 8) (B) (– 2, 1, 8)

(C) (1, – 2, –8) (D) (1, – 2, 8)

35. The mid-point of the arc of a semicircle is connected by two straight lines to the ends of the diameter as shown. What is the ratio of the shaded area to the area of the triangle ?

(A) $\frac{\pi}{2} - 1$ (B) $\frac{\pi - 1}{2}$

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

36. A function $g : \Re \to \Re$ is such that $g(0) = 0$ and $\left| \frac{d}{dx} g(x) \right| \le 5$ for all x. We can conclude that g(1) is in :

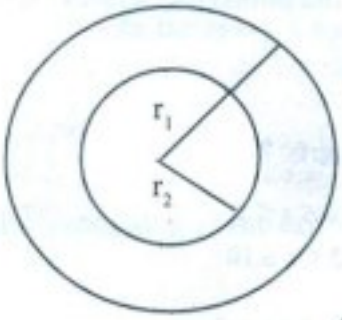
(A) (5, 6) (B) [– 5, 5]

(C) $(-\infty, -5) \cup (5, \infty)$ (D) [– 4, 4]

37. **A circle drawn in the x-y coordinate plane passes through the origin and has chords of lengths 8 units and 7 units on the x and y axes, respectively. The coordinates of its centre are :**

(A) (8, 7)
(B) (–8, 7)
(C) (–4, 3.5)
(D) (4, 3.5)

38. **In the figure given below, the areas of the inner circle and the shaded ring are equal. The radii r_1 and r_2 are related by :**



(A) $r_1 = r_2$
(B) $r_1 = r_2\sqrt{2}$
(C) $r_1 = r_2\sqrt{3}$
(D) $r_1 = 2r_2$

39. **If square matrix A is skew-symmetric matrix, then A^T, the transpose of A, is equal to :**

(A) Diagonal matrix
(B) A
(C) Zero matrix
(D) –A

40. **If A is an invertible matrix whose inverse is the matrix $\begin{bmatrix} 3 & 4 \\ 5 & 6 \end{bmatrix}$, then A is the matrix :**

(A) $\begin{bmatrix} 6 & -4 \\ -5 & 3 \end{bmatrix}$
(B) $\begin{bmatrix} 1/3 & 4 \\ 5 & 1/6 \end{bmatrix}$
(C) $\begin{bmatrix} -3 & 2 \\ 5/2 & -3/2 \end{bmatrix}$
(D) $\begin{bmatrix} 1/3 & 1/4 \\ 1/5 & 1/6 \end{bmatrix}$

41. **Let $M = \begin{bmatrix} 1 & 1 & 0 \\ -1 & 1 & 2 \\ 2 & 2 & 0 \\ -1 & 0 & 1 \end{bmatrix}$. Then the rank of M is equal to :**

(A) 3
(B) 4
(C) 2
(D) 1

42. If $\omega(\neq 1)$ is a cube root of unity, and $(1+\omega)^7 = A + B\omega$. Then (A, B) equals :

(A) (1, 1) (B) (1, 0)
(C) (–1, 1) (D) (0, 1)

43. If $z_1 = 2 - i, z_2 = 1 + i$, and $i = \sqrt{-1}$, then $\left|\frac{z_1 + z_2 + 1}{z_1 - z_2 + 1}\right|$ equals :

(A) 2 (B) 3
(C) $\sqrt{2}$ (D) $\sqrt{3}$

44. The multiplicative inverse of the complex number $4 - 3i$, where $i = \sqrt{-1}$, is :

(A) $\frac{4}{25} + \frac{3}{25}i$ (B) $\frac{4}{25} - \frac{3}{25}i$
(C) $\frac{4}{5} + \frac{3}{5}i$ (D) $\frac{4}{5} - \frac{3}{5}i$

45. The variance for the data : 6, 7, 10, 12, 13, 4, 8 and 12 is :

(A) 9 (B) 9.25
(C) 8 (D) 8.25

46. In an arithmetic progression, the first term is 2 and the sum of the first five terms is one-fourth of the next five terms, then 20^{th} term is equal to :

(A) –25 (B) 25
(C) 112 (D) –112

47. The 5^{th}, 8^{th}, and 11th terms of a geometric progression are P, Q and R respectively. Then :

(A) $Q^2 = PR$ (B) $R^2 = PQ$
(C) $P^2 = QR$ (D) $Q = \frac{P+R}{2}$

48. The sum to 'n' terms of the series $\frac{1}{1\times 2} + \frac{1}{2\times 3} + \frac{1}{3\times 4} + \frac{1}{4\times 5} + \ldots\ldots$ is :

(A) $\frac{1}{n+2}$ (B) $\frac{1}{n+1}$
(C) $\frac{n}{n+2}$ (D) $\frac{n}{n+1}$

49. $\int \frac{\sin^2 x - \cos^2 x}{\sin^2 x \cos^2 x} dx$ is equal to : (where C is a constant of integration) :

(A) $\tan(x) + \cot(x) + C$ (B) $\tan(x) + \text{cosec}(x) + C$

(C) $-\tan(x) + \cot(x) + C$ (D) $\tan(x) + \sec(x) + C$

50. Which of the following differential equations has $y = C_1 e^x + C_2 e^{-x}$ as the general solution ? (C_1 and C_2 are constants)

(A) $\frac{d^2y}{dx^2} + y = 0$ (B) $\frac{d^2y}{dx^2} - y = 0$

(C) $\frac{d^2y}{dx^2} + 1 = 0$ (D) $\frac{d^2y}{dx^2} - 1 = 0$

51. Find out the correct meaning of the idiomatic expression : '*To cry wolf*' among the given options :

(A) To give false alarm (B) To run away from work without permission

(C) To turn pale (D) To listen eagerly

52. Select the correct verb :

Besides his parents, he _____ also present at the function.

(A) is (B) was

(C) has (D) has been

53. Identify the correct preposition :

The thunder was accompanied _____ a heavy rain.

(A) from (B) by

(C) up (D) through

54. Give one word substitute :

A well experienced person.

(A) Wise man (B) Intelligent

(C) Old man (D) Veteran

55. Fill in the blank with suitable word :

Barking dogs _____ bite.

(A) regularly (B) rarely

(C) seldom (D) frequently

56. **Identify the indirect speech for the sentence :**

The teacher said to me, "Be regular and learn your lesson daily".

(A) The teacher told me that to be regular and learn my lesson daily.

(B) The teacher said to me regular and learn my lesson daily.

(C) The teacher advised me to be regular and learn my lesson daily.

(D) The teacher request me to be regular and learn my lesson daily.

57. **Identify the synonym of the given word :**

Zest

(A) Pleasure (B) Distaste

(C) Flop (D) Encircles

58. **Fill in the blank with suitable conjunction :**

He will never pass _____ hard he may try.

(A) However (B) Whatever

(C) Never (D) Whenever

59. **Fill in the blanks with the most appropriate word :**

Stating that the ATM operations are _____ losses, the nation's largest bank, the State Bank plans to _____ the management of some of its ATM's.

(A) generating, resource (B) generating, close

(C) incurring, outsource (D) reporting, tighten

60. **Identify the antonym of the given word :**

Embellish

(A) Sacrifice (B) Disfigure

(C) Forfeit (D) Indict

61. **If a magnetic disc has 100 cylinders, each containing 10 tracks of 10 sectors, and each sector can contain 128 bytes, what is the maximum capacity of the disk in bytes ?**

(A) 128,000 (B) 12,800,000

(C) 12,800 (D) 1,280,000

62. **What characteristic of RAM memory makes it not suitable for permanent storage ?**

(A) too slow (B) unreliable

(C) it is volatile (D) too bulky

63. **The binary representation of 15 is :**

(A) 01010 (B) 01111

(C) 10011 (D) 00101

64. **Cache memory refers to :**

(A) cheap memory that can be plugged into the mother board to expand main memory

(B) fast memory present on the processor chip that is used to store recently accessed data

(C) a reserved portion of main memory used to save important data

(D) a special area of memory on the chip that is used to save frequently used constants

65. **Which of the following programming languages has an instruction set closest to the closest to the machine language of a computer ?**

(A) BASIC Programming Language (B) Fortran Programming Language

(C) Assembly Language (D) C++ Programming Language

66. **The kind of interface with icons and menu bars for user to point at with mouse instead of entering commands for operating system to perform certain tasks is called :**

(A) GUI (B) Command line interface

(C) User friendly programming (D) ASCII

67. **A _____ is a web site like any other, but it is intended to offer personal opinions of people on their hobbies, interests, commentaries, photo, etc.**

(A) Protocol (B) Blog

(C) Webpage (D) Journals

68. **_____ is distributed computing over a network, and involves a large number of computers connected via real-time communication network such as the Internet.**

(A) Cloud Computing (B) Thin Client Computing

(C) Fat Client Computing (D) Dumb terminal Computing

69. **_____ protocol defines how messages are formatted and transmitted, and what actions Web servers and browsers should take in response to various commands.**

(A) FTP (B) TCP/IP

(C) HTTP (D) SMTP

70. **The process of copying files to a CD-ROM is known as :**

(A) Burning (B) Zipping

(C) Digitizing (D) Ripping

71. **Microsoft introduced the taskbar in Windows 95 in 1995 and the feature has been a defining aspect of Microsoft Windows and many other operating systems and desktop environments since. Task bar in Windows can be placed at _____.**

(A) Bottom edge of your screen only
(B) Top edge of your screen only
(C) Bottom edge or Top edge of your screen only
(D) Any edge of your screen

For the next TWO questions, consider the following worksheet :

	A	B	C	D
1	**No.**	**Test 1**	**Test 2**	**Total**
2	1	80	60	140
3	2	70	50	120
4	3	40	30	70
5	4	30	32	62
6	5	85	85	170
7	6	65	80	145
8	7	72	96	168
9	8	25	32	57
10	9	90	78	168
11	10	25	40	65

i) - -- -- --

72. **The formula = IF (B10 + C10 > 100, IF (D10 > 100, "A", "B"), "C") in cell D12 will result in :**

(A) A (B) B
(C) C (D) AC

73. **The formula = SUMIF(B2:B11, "<50", D2:D11) in cell D13 will result in :**

(A) 120 (B) 254
(C) 90 (D) 244

74. **The acronym "DVD" stands for :**

(A) Dynamic viewable disc (B) Decompressed video disk
(C) Digital versatile disc (D) Digital video drive

75. **WAV file format is associated with what type of files ?**

(A) Video (B) Sound
(C) Image (D) Word Document