CET (PG) – 2017

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 : 16

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. The set $A = \{x : |2x + 3| < 7\}$ is equal to the set :
   (A) $D = \{x : 0 < (x + 5) < 7\}$
   (B) $B = \{x : -3 < x < 7\}$
   (C) $E = \{x : -7 < x < 7\}$
   (D) $C = \{x : -13 < 2x < 4\}$

2. Let S be the set of all real numbers. A relation R has been defined on S by $aRb \Leftrightarrow |a - b| \leq 1$, then R is :
   (A) Symmetric and transitive but not reflexive
   (B) Reflexive and transitive but not symmetric
   (C) Reflexive and symmetric but not transitive
   (D) An equivalence relation

3. Two dice are thrown simultaneously. The probability of obtaining a total score of 5 is :
   (A) $\dfrac{1}{9}$
   (B) $\dfrac{1}{18}$
   (C) $\dfrac{1}{36}$
   (D) $\dfrac{1}{12}$

4. How many 3-digit numbers are there with all different odd digits ?
   (A) 16
   (B) 48
   (C) 54
   (D) 60

5. In how many ways can four students be chosen from a group of 12 students ?
   (A) 495
   (B) 595
   (C) 395
   (D) 295

6. If, for example, 15 is a 2-digit number that is divisible by the product of its digits 1 and 5, then the number of 2-digit numbers divisible by the product of digits is :
   (A) 8
   (B) 14
   (C) 13
   (D) 5

7. The value of $^{10}C_1 + {}^{10}C_2 + {}^{10}C_3 + {}^{10}C_4 + \ldots\ldots\ldots {}^{10}C_9$ is :
   (A) 2^{10}
   (B) 2^{11}
   (C) $2^{10} - 2$
   (D) $2^{10} - 1$

8. If r^{th} and $(r+1)^{th}$ terms is the expansion of $(p+q)^n$ are equal, then $\dfrac{(n+1)q}{r(p+q)}$ is :

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

9. The sum of N terms of $\dfrac{1}{(1 \times 2)} + \dfrac{1}{(2 \times 3)} + \dfrac{1}{(3 \times 4)} + \dfrac{1}{(4 \times 5)} \cdots\cdots$ is :

(A) $\dfrac{(N+1)}{N}$
(B) $\dfrac{N}{(N+1)}$
(C) $\dfrac{N}{(2N+1)}$
(D) $\dfrac{(2N+1)}{N}$

10. The sum of infinite Geometric Progression (GP) : $8, -4, 2, -1, \ldots.$ is :

(A) $\dfrac{16}{3}$
(B) $\dfrac{8}{3}$
(C) 8
(D) 5

11. If $i = \sqrt{-1}$ then $\dfrac{(3+i)}{(5+5i)}$ is same as :

(A) $\dfrac{(2-i)}{5}$
(B) $3 - i$
(C) $5 - 5i$
(D) $\dfrac{(2+i)}{5}$

12. If $i = \sqrt{-1}$ then $(1+i)^{10} =$:

(A) 1
(B) i
(C) 32
(D) $32i$

13. If α and β are the roots of the equation $x^2 - px + q = 0$, then $\alpha^2 + \beta^2$ is :

(A) $p^2 + 2q$
(B) $p + 2q$
(C) $p^2 - 2q$
(D) $p - 2q$

14. What are the values of K for which the equation $x^2 + Kx + 1 = 0$ has no real roots ?

(A) $-2 \le K \le 2$
(B) $-2 < K < 2$
(C) $2 < K < -2$
(D) $2 \le K \le -2$

15. $x^3 + \sin(x)$ is :

(A) Constant function
(B) Odd function
(C) Even function
(D) Periodic function

16. If x and y are integers that satisfy the congruence $3x = 5$ (mod 11) and $2y = 7$ (mod 11), then $x + y$ is congruent modulo 11 to which of the following ?

(A) 1
(B) 3
(C) 5
(D) 7

17. Let S, T, and U be nonempty sets, and let $f : S \to T$ and $g : T \to U$ be functions such that the function $g \circ f : S \to U$ is one-to-one (injective). Which of the following must be true ?

(A) f is one-to-one
(B) f is onto
(C) g is one-to-one
(D) g is onto

18. The domain of the function $f(x) = \sqrt{\cos x}$ is :

(A) $\left[\dfrac{3\pi}{2}, 2\pi \right]$
(B) $\left[0, \dfrac{\pi}{2} \right]$
(C) $\left[-\dfrac{\pi}{2}, \dfrac{\pi}{2} \right] \cup [\pi, 2\pi]$
(D) $\left[0, \dfrac{\pi}{2} \right] \cup \left[\dfrac{3\pi}{2}, 2\pi \right]$

19. $\displaystyle\int_0^{\pi/2} \cos^3(x)\, dx =$

(A) $\dfrac{3}{2}$
(B) $\dfrac{2}{3}$
(C) $\dfrac{8}{9}$
(D) $\dfrac{8}{13}$

20. The value of $\displaystyle\int_0^4 |x - 1|\, dx$ is equal to :

(A) 5
(B) 8
(C) 4
(D) 6

21. $\lim\limits_{x \to 0} \dfrac{\cos(3x) - 1}{x^2}$ is :

(A) $\dfrac{9}{2}$

(B) $\dfrac{3}{2}$

(C) $-\dfrac{3}{2}$

(D) $-\dfrac{9}{2}$

22. What is the 19th derivative of $\dfrac{x-1}{e^x}$?

(A) $(18-x)e^{-x}$

(B) $(19-x)e^{-x}$

(C) $(20-x)e^{-x}$

(D) $(x-20)e^{-x}$

23. If $f : R \to R$ is defined by $f(x) = 2x + 3$, then $f^{-1}(x)$:

(A) is given by $\dfrac{x-3}{2}$

(B) is given by $\dfrac{1}{2x+3}$

(C) does not exist because f is not injective

(D) does not exist because f is not surjective

24. If $x + y \le 2$, $x \ge 0$, $y \ge 0$, then the point at which maximum value if $3x + 2y$ is attained, will be :

(A) $(0, 2)$

(B) $(0, 0)$

(C) $(2, 0)$

(D) $\left(\dfrac{1}{2}, \dfrac{1}{2}\right)$

25. The solution of the differential equation $\dfrac{dy}{dx} = e^{x-y} + x^2 e^{-y}$ is :

(A) $e^y = e^x + \dfrac{x^3}{3} + C$

(B) $e^y - e^x = C$

(C) $x - e^x = C$

(D) $e^y + e^x + \dfrac{x^3}{3} + C = 0$

where C is constant.

26. The value of the determinant $\begin{vmatrix} \cos\theta & 0 & \sin\theta \\ 0 & 1 & 0 \\ -\sin\theta & 0 & \cos\theta \end{vmatrix}$ is :

(A) 0

(B) −1

(C) 1

(D) 2

27. Rank of a non-singular square matrix of order N is :

(A) N

(B) 0

(C) N − 1

(D) 1

28. The value of K for which the lines $2x + y - 1 = 0$, $4x + 3y - 3 = 0$ and $3x + Ky - 2 = 0$, are concurrent is :

(A) −2

(B) 3

(C) 2

(D) −3

29. If A is 3 × 4 matrix and B is a matrix such that $A^T B$ and BA^T are both defined, then B is of the type :

(A) 4 × 4

(B) 3 × 4

(C) 4 × 3

(D) 3 × 3

30. The inverse of the matrix $A = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 4 \end{bmatrix}$ is :

(A) $\dfrac{1}{24}\begin{bmatrix} 2 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 4 \end{bmatrix}$

(B) $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 4 \end{bmatrix}$

(C) $\dfrac{1}{24}\begin{bmatrix} 24 & 0 & 0 \\ 0 & 24 & 0 \\ 0 & 0 & 24 \end{bmatrix}$

(D) $\begin{bmatrix} \frac{1}{2} & 0 & 0 \\ 0 & \frac{1}{3} & 0 \\ 0 & 0 & \frac{1}{4} \end{bmatrix}$

31. The distance of the point $P(a, b, c)$ from the x-axis is :

(A) $\sqrt{a^2 + b^2}$

(B) $\sqrt{b^2 + c^2}$

(C) a

(D) $\sqrt{a^2 + c^2}$

32. If $\sin\theta + \cos\theta = p$ and $\tan\theta + \cot\theta = q$, then $q(p^2 - 1) =$

(A) $\dfrac{1}{2}$

(B) 2

(C) 1

(D) 3

33. $\dfrac{\sin 70^\circ + \cos 40^\circ}{\cos 70^\circ + \sin 40^\circ} =$

(A) $\dfrac{1}{\sqrt{3}}$

(B) $\sqrt{3}$

(C) $\dfrac{1}{2}$

(D) 1

34. The equation of the circle passing through $(2, 0)$ and $(0, 4)$ and having the minimum radius is :

(A) $x^2 + y^2 = 20$

(B) $x^2 + y^2 - 2x - 4y = 0$

(C) $x^2 + y^2 = 4$

(D) $x^2 + y^2 = 16$

35. The point $(3, 4)$ is the focus and $2x - 3y + 5 = 0$ is the directrix of a parabola. Its Latus rectum is :

(A) $\dfrac{2}{\sqrt{13}}$

(B) $\dfrac{4}{\sqrt{13}}$

(C) $\dfrac{1}{\sqrt{13}}$

(D) $\dfrac{3}{\sqrt{13}}$

36. If $\vec{a}, \vec{b}, \vec{c}$ are unit vectors such that $\vec{a} + \vec{b} + \vec{c} = 0$, then angle between $\vec{a}$ and $\vec{b}$ is:

(A) $\dfrac{\pi}{3}$

(B) $\dfrac{2\pi}{3}$

(C) $\dfrac{\pi}{4}$

(D) $\dfrac{\pi}{2}$

37. If A and B are two events such that $P(A \cup B) + P(A \cap B) = \dfrac{7}{8}$ and $P(A) = 2P(B)$, then $P(A) =$

(A) $\dfrac{7}{12}$

(B) $\dfrac{7}{24}$

(C) $\dfrac{5}{12}$

(D) $\dfrac{17}{24}$

38. If $\dfrac{1}{(3-5x)(2+3x)} = \dfrac{A}{(3-5x)} + \dfrac{B}{(2+3x)}$, then A : B is :

(A) $3 : 5$

(B) $3 : 2$

(C) $2 : 3$

(D) $5 : 3$

39. The arithmetic mean of the five numbers 10, 8, 5, a and b is 6 and their variance is 6·80. Then the value of $a \times b =$

(A) 16

(B) 10

(C) 12

(D) 14

40. If the median of the data 6, 7, $x-2$, x, 18, 21 written in ascending order is 16, then $x =$

(A) 15

(B) 16

(C) 17

(D) 18

41. ICT means :
    (A) Information and Collaborative Technology
    (B) Information and Communicable Technology
    (C) Information and Communication Technology
    (D) Internal Communication Theory

42. In Computer Networking, the "http" you type at the beginning of any web-site's address is an acronym for :
    (A) Hyper Text Transfer Protocol   (B) Hyper Transfer Text Protocol
    (C) Hyper Technical Transfer Protocol (D) Hyper Text Technical Protocol

43. Which of the following is the next step in the evolution of the Internet and Web applications ?
    (A) Web 1·0   (B) Web 2·0
    (C) Web 3·0   (D) Web 4·0

44. Who among the following is the principal force behind the development of Linux Operating System ?
    (A) Tim Berners-Lee   (B) Linus Torvalds
    (C) Bill Gates   (D) Litms Torrent

45. The Brain of a computer is its :
    (A) CPU   (B) CD
    (C) Floppy disc   (D) Clock

46. In MS-WORD, the process of combining static information in a publication together with variable information in a data source to create one merged publication is called :
    (A) Merging   (B) Data sourcing
    (C) Mail merge   (D) Consolidation

47. With regard to e-Mail, what does bcc : mean ?
    (A) Blind Carbon Copy   (B) Blind Computer Communication
    (C) Blind Communication Channel   (D) Blind Computer Copy

48. What is WiFi ?
    (A) Wireless Fixture   (B) Wireless Friction
    (C) Wireless Fidelity   (D) Wired Fidelity

49. Which of the following application software are in correct order with respect to .doc, .xls, . mdb, and .ppt file extensions ?
   (A) MS Word, MS Excel, MS PowerPoint, MS Access
   (B) MS Excel, MS PowerPoint, MS Access, MS Outlook Express
   (C) MS Word, MS Excel, MS Access, MS PowerPoint
   (D) MS Document, MS Excel, MS PowerPoint, MS Access

50. 1 Terabyte = ... Bytes.
   (A) 2^{20}
   (B) 2^{30}
   (C) 2^{40}
   (D) 2^{50}

51. A 21 inches computer monitor implies that :
   (A) The screen is 21 inches wide
   (B) The screen is 21 inches high
   (C) A circle of 21 inches diameter is available for display
   (D) The diagonal across the screen is 21 inches

52. Consider the following EXCEL table :

	A	B	C
1	10	16	
2	20		
3	8		
4	12		
5	0		

The equation in cell B2 is : "= A2 + B1". This equation is then copied and pasted to cells, B3, B4 and B5. What should be the value in B5 ?
   (A) 36
   (B) 24
   (C) 44
   (D) 56

53. A .... is a utility that reorganizes the files and unused space on a computer's hard disk so the operating system can access data more quickly and programs can run faster.
   (A) File compression utility
   (B) Disk defragmenter
   (C) Disk scanner
   (D) File viewer

54. Printer resolution is measured by the number of .... a printer can output.
   (A) Characters per page (cpp)
   (B) Pixels per segment (pps)
   (C) Dots per inch (dpi)
   (D) Bits per centimeter (bpc)

55. Given a bit rate of b bits/second, the time required to send 16 bits is :
   (A) $16 \times b$ seconds
   (B) $16/b$ seconds
   (C) 16^b seconds
   (D) b^{16} seconds

56. Find the next number in the series : 4, 9, 25, 49, ...

(A) 64

(B) 81

(C) 121

(D) 123

57. Find the odd man out.

396, 462, 572, 427, 671, 264 :

(A) 671

(B) 462

(C) 427

(D) 264

58. In a certain language, 'PROBLEM' is written as 'MPERLOB'. How will 'NUMBERS' be written in that code ?

(A) SNUREMB

(B) SNRUBME

(C) SNRUEMB

(D) SNRUMEB

59. The number 3 divides 'a' with a result of 'b' and a remainder of 2. The number 3 divides 'b' with a result of 2 and a remainder of 1. What is the value of 'a' ?

(A) 13

(B) 17

(C) 21

(D) 23

60. The age of the two persons differ by 20 years. If 5 year ago, the older one was 5 times as old as the younger one, then their present ages, in year are :

(A) 25, 5

(B) 30, 10

(C) 35, 15

(D) 50, 30

61. In a Computer Science (CS) examination, the average for the entire class was 80 marks. If 10% of the students scored 95 marks and 20% scored 90 marks, then what were the average marks of the remaining students of the class ?

(A) 65
(B) 70
(C) 75
(D) 60

62. In a purse containing only Rs. 100, Rs. 500 and Rs. 2,000 denomination notes, all but 15 are Rs. 100 notes, all but 13 are Rs. 500 notes and all but 12 are Rs. 2,000 notes. How many are Rs. 500 notes ?

(A) 13
(B) 7
(C) 25
(D) 20

63. There are a certain number of swans swimming in a lake. There are two swans in front of swan, two behind one and one between two. What is the smallest number of swans that could swim in that formation ?

(A) 5
(B) 3
(C) 8
(D) 2

64. On the basis of two statements given below, a conclusion has been drawn.

(i) Every women wants to look and feel younger than she is.
(ii) Women are generally reluctant to disclose their age.

Conclusion : Every woman is older than she says she is.

Mark the conclusions as :

(A) Statement (i) supports the conclusion.
(B) Statement (ii) supports the conclusion.
(C) Both statements (i) and (ii) read together support the conclusion.
(D) Neither (i) nor (ii) supports the conclusion.

65. Choose the correct alternative from the given ones which will complete the letter series.

NBM, KEP, HHS, ?, BNY :

(A) EJW
(B) EKU
(C) EKV
(D) FLV

Direction (Question Nos. 66–70) :

In the following questions, sentences are given with blanks to be filled in with appropriate words. Four alternatives are suggested for each question. Choose the correct alternative out of the four.

66. How long .... English ?

    (A) do you learn   (B) are you learning

    (C) have you been learning   (D) you learn

67. The doctor gave me a .... for some medicine yesterday.

    (A) note   (B) receipt

    (C) prescription   (D) recipe

68. You won't be allowed into the Club .... you wear a suit and tie.

    (A) if   (B) unless

    (C) whether   (D) apart

69. The workers left early and .... home.

    (A) gone   (B) went

    (C) have dinner   (D) drives

70. He is always true .... his word.

    (A) with   (B) of

    (C) for   (D) to

71. The antonym for the word 'adversity' is :

(A) Scarcity   (B) Deficiency

(C) Catastrophe   (D) Prosperity

72. Choose the option closest in meaning to the word 'ancestor' :

(A) Old   (B) Forefather

(C) Past   (D) Dead

73. Which of the following idioms means "to break an uncomfortable silence" ?

(A) Break down   (B) Break away

(C) Break the record   (D) Break the ice

74. Find the correctly spelt word.

(A) Servent   (B) Sarvent

(C) Servant   (D) Sarvant

75. Consider the following two statements :

(i) He dies from a wound.

(ii) He died of cancer.

What can you say about these two statements ?

(A) Only (i) is correct.

(B) Only (ii) is correct.

(C) Both (i) and (ii) are correct.

(D) Neither (i) nor (ii) is correct.