



20764

DV-003-003208

Seat No. _____

B. C. A. (Sem. II) (CBCS) Examination

April / May - 2015

Maths / Stat. Foundation of Comp. Sci.

(New Course)

Faculty Code : 003

Subject Code : 003208

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

1 M.C.Q's :

20

(1) $A \cap A' = \dots\dots\dots$ (A) ϕ (B) A (C) $\{\phi\}$

(D) None of these

(2) If $A = \{1, 2, 3, 4, 6, 9, 10\}$, $B = \{2, 6, 10\}$ then $A - B = \dots\dots\dots$ (A) $\{1, 3, 4, 9\}$ (B) $\{1, 2, 4, 9\}$ (C) $\{2, 6, 10\}$

(D) None of these

(3) If $A \subseteq B$ and $B \subseteq A$ then $A - B$.(A) C (B) $=$ (C) \neq

(D) None of these

(4) How many are subsets of a set $\{1, 2, 3\}$?

(A) 4

(B) 8

(C) 3

(D) 6

(5) If $A = \{a, b, c\}$, $C = \{1, 2, 3, 4\}$, how many elements are in $A \times C$?

(A) 7

(B) 24

(C) 12

(D) 20

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[Contd...

- (6) The slope of the line passing through the points (2, 2) and (4, 6) is _____
- (A) 4 (B) 3
(C) 2 (D) None of these
- (7) For two parallel lines which of the following condition is true ?
- (A) $m_1 \times m_2 = -1$ (B) $m_1 \neq m_2$
(C) $m_1 \times m_2 \neq -1$ (D) $m_1 = m_2$
- (8) The equation of line passing through origin having slope 3 is _____
- (A) $y = 3x + 8$ (B) $y = 8x + 3$
(C) $3x + 3y = 1$ (D) None of these
- (9) $\sqrt{3}, \sqrt{15}, \sqrt{75}, \sqrt{375}, \dots$ are in _____
- (A) GP (B) AP
(C) HP (D) None of these
- (10) For an A.P. $S_n = n(n+1)$. Find T_n .
- (A) n^2 (B) $2n$
(C) $3n$ (D) $5n$
- (11) Which term of the sequence $-1, -3, -5, \dots$ is -39 ?
- (A) 19 (B) 20
(C) 21 (D) 24
- (12) State the formula of an A.P.
- (A) $T_n = a - (n-1)d$ (B) $T_n = a(n+1)d$
(C) $T_n = (n+1)d$ (D) None of these



(13) If $A = \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 3 \\ 2 & -1 \end{bmatrix}$ then $A+B = \dots\dots\dots$

(A) $\begin{bmatrix} 3 & 6 \\ 6 & 4 \end{bmatrix}$

(B) $\begin{bmatrix} 3 & 6 \\ 6 & -4 \end{bmatrix}$

(C) $\begin{bmatrix} 1 & 0 \\ 2 & -6 \end{bmatrix}$

(D) None of these

(14) Unit matrix is denoted by

(A) U

(B) I

(C) O

(D) None of these

(15) If $A = \begin{bmatrix} x & y \\ a & b \end{bmatrix}$ then $2A = \dots\dots\dots$

(A) $\begin{bmatrix} x & y \\ 2a & 2b \end{bmatrix}$

(B) $\begin{bmatrix} 2x & 2y \\ a & b \end{bmatrix}$

(C) $\begin{bmatrix} 2x & 2y \\ 2a & 2b \end{bmatrix}$

(D) None of these

(16) If $A = \begin{bmatrix} 1 \\ 4 \\ 6 \end{bmatrix}$ then A' .

(A) [11]

(B) $\begin{bmatrix} 1 \\ 4 \\ 6 \end{bmatrix}$

(C) [14]

(D) None of these

(17) The square value of S.D. is called _____

(A) variance

(B) mean

(C) median

(D) none of these

- (18) A S.D. can be denoted as _____
- (A) Σ (B) σ
 (C) Δ (D) None of these
- (19) The mean of the observations 5, 7, 9, 11, 13 is _____
- (A) 45 (B) 5
 (C) 9 (D) None of these
- (20) The median of 15, 25, 5, 3, 40 is _____
- (A) 5 (B) 25
 (C) 4 (D) None of these

2 (a) Any three : 6

- 3 5 15 25 40
- (1) Explain : Power set
- (2) Write properties of union of sets.
- (3) If the distance between $(b, -5)$ and $(2, b)$ is 13.
 Find the value of b .
- (4) Find the co-ordinates of a point which divides the line joining the pts. $(1, -2)$ and $(4, 7)$ in the ratio 2 : 3.
- (5) Find Median
 4, 24, 15, 35, 55, 45
- (6) Explain : Range.

(b) Any three : 9

- (1) If $U = \{x | x \in N, x \leq 11\}$, $A = \{1, 3, 7, 10, 11\}$,
 $B = \{2, 3, 4, 6, 9, 10\}$ then verify that
 $(A \cup B)' = A' \cap B'$.
- (2) If $A = \{1, 0\}$, then find A^2 .
- (3) Find the equation of the st. line parallel to $2x - 3y - 5 = 0$ and passing through $(4, 5)$.



- (4) The co-ordinates of two points A and B are $(-1, 2)$ and $(2, -1)$. Find the equation.
- (5) Explain : Merits of Mean.
- (6) Obtain the value of Q_1 .

$x:$	2	3	4	5	6	7	8	9	10	11
$y:$	3	6	9	18	20	14	10	10	7	2

(c) Any two :

10

(1) If $A = \{x \mid x^2 - 5x + 6 = 0, x \in N\}$, $B = \{y \mid y^2 - 4 = 0, y \in z\}$,

$C = \{z \mid z^2 - 9z + 14 = 0, z \in N\}$, Find $(A \times B) \cup (A \times C)$.

- (2) Obtain equation of line passing through at Pt. (x_1, y_1) having slope m .
- (3) Obtain the value of S.D..

<i>Class:</i>	60–	65–	70–	75–	80–	85–	90–
	64	69	74	79	84	89	94
<i>Freq.</i>	5	7	10	8	5	3	2

- (4) Obtain the value of Mode

<i>Class:</i>	200–	300–	400–	500–	600–	700–	800–
	299	399	499	599	699	799	899
<i>Freq.</i>	3	61	118	139	126	51	2

- (5) Find mean :

<i>Class:</i>	10–	18–	30–	40–	54–	80–
	18	30	40	54	80	110
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- (1) Define : G.P.
 (2) Obtain the sum up to n terms : $2+4+6+8+\dots$
 (3) The 6th term of cm. A.P. is 121. Find the sum of its first 11 terms.
 (4) Explain : Adjoint matrix.

(5) If $A = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$. Find A^2

(6) If $A = \begin{bmatrix} 2 & 5 \\ 3 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 2 \\ 1 & 1 \end{bmatrix}$ then prove that
 $(A+B)' = A'+B'$.

(b) Any three :

(1) $T_5 = 32, T_{10} = 1024$ are in G.P. find T_8 .

(2) Prove that $S_n = \frac{a(r^n - 1)}{r - 1}$.

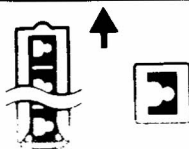
(3) Find the sum of n terms
 $0.3 + 0.33 + 0.333 + \dots$

(4) If $x = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 3 & 1 \\ 0 & 0 & 1 \end{bmatrix}$, $y = \begin{bmatrix} 1 & 0 & 0 \\ 2 & 2 & 0 \\ 1 & 1 & 3 \end{bmatrix}$ then find $x(x+y)$.

(5) If $A = \begin{bmatrix} 3 & 2 \\ 1 & 1 \end{bmatrix}$ find A^{-1} .

(6) If $A = [2 \ 1 \ 3]$, $B = \begin{bmatrix} 3 & 1 & 0 \\ 2 & 0 & 5 \\ 5 & 2 & 0 \end{bmatrix}$ and $C' = [3 \ 2 \ 5]$,

find ABC .



(1) Prove that $S_n = \frac{n}{2}(2a + (n-1)d)$.

(2) The sum of three consecutive terms is 26 and its product is 216. Find the terms. *K.P.*

(3) If $A = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$ prove that $A^3 = 4A$.

(4) If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ then prove that $A^2 - 4A - 5I_3 = O_3$.

(5) If $3A - B = \begin{bmatrix} 17 & 19 \\ 12 & 8 \end{bmatrix}$ and $2A - B = \begin{bmatrix} 8 & 11 \\ 8 & 7 \end{bmatrix}$

find $4A - 3B$.

18 June