

Roll No.-----

<b>Paper Code</b>		
<b>4</b>	<b>4</b>	<b>4</b>
(To be filled in the OMR Sheet)		

प्रश्नपुस्तिका क्रमांक  
Question Booklet No.

O.M.R. Serial No.

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प्रश्नपुस्तिका सीरीज  
Question Booklet Series  
**C**

**BBA (First Semester) Examination, February/March-2022**

**BBA-102(N)**

**Business Mathematics**

(for Ex & B.P. Students)

**Time : 1:30 Hours**

**Maximum Marks-100**

जब तक कहा न जाय, इस प्रश्नपुस्तिका को न खोलें

- निर्देश : -
1. परीक्षार्थी अपने अनुक्रमांक, विषय एवं प्रश्नपुस्तिका की सीरीज का विवरण यथास्थान सही- सही भरें, अन्यथा मूल्यांकन में किसी भी प्रकार की विसंगति की दशा में उसकी जिम्मेदारी स्वयं परीक्षार्थी की होगी।
  2. इस प्रश्नपुस्तिका में 100 प्रश्न हैं, जिनमें से केवल 75 प्रश्नों के उत्तर परीक्षार्थियों द्वारा दिये जाने हैं। प्रत्येक प्रश्न के चार वैकल्पिक उत्तर प्रश्न के नीचे दिये गये हैं। इन चारों में से केवल एक ही उत्तर सही है। जिस उत्तर को आप सही या सबसे उचित समझते हैं, अपने उत्तर पत्रक (O.M.R. ANSWER SHEET) में उसके अक्षर वाले वृत्त को काले या नीले बाल प्वाइंट पेन से पूरा भर दें। यदि किसी परीक्षार्थी द्वारा निर्धारित प्रश्नों से अधिक प्रश्नों के उत्तर दिये जाते हैं तो उसके द्वारा हल किये गये प्रथमतः यथा निर्दिष्ट प्रश्नोत्तरों का ही मूल्यांकन किया जायेगा।
  3. प्रत्येक प्रश्न के अंक समान हैं। आप के जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
  4. सभी उत्तर केवल ओ०एम०आर० उत्तर पत्रक (O.M.R. ANSWER SHEET) पर ही दिये जाने हैं। उत्तर पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
  5. ओ०एम०आर० उत्तर पत्रक (O.M.R. ANSWER SHEET) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाय।
  6. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी प्रश्नपुस्तिका बुकलेट एवं ओ०एम०आर० शीट पृथक-पृथक उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें।
  7. निगेटिव मार्किंग नहीं है।

महत्वपूर्ण : - प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्ष निरीक्षक को दिखाकर उसी सीरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।

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## **Rough Work / रफ कार्य**

**(For Q. No.1 & 2) :** Find the integral of the following functions.

1.  $\int \frac{2}{\sqrt{x}} dx$
- (A)  $4\sqrt{x}$
- (B)  $2\sqrt{x}$
- (C)  $\frac{4}{\sqrt{x}}$
- (D) None

2.  $\int 3\sqrt{x} dx$
- (A)  $2x^{3/2}$
- (B)  $\frac{3}{\sqrt{x}}$
- (C)  $2x^{1/3}$
- (D) None

**(For Q. 3 & 4) :** Find the differential of the following functions.

3.  $y = 2\sqrt{x}$
- (A)  $\frac{1}{\sqrt{x}}$
- (B)  $\sqrt{x}$
- (C)  $\frac{x}{2}$
- (D)  $\frac{1}{2}\sqrt{x}$
4.  $y = 3x^4$
- (A)  $4x^3$
- (B)  $12x^3$
- (C)  $12x^2$
- (D)  $3x^3$

**(For Q. No.5 & 6) :** Which among the following are true:

5. (A)  $n(A \cup B) = n(A) + n(B)$   
(B)  $n(A \cup B) = n(A) + n(B) - n(A \cap B)$   
(C)  $n(A \cup B) = n(A) + n(B) + n(A \cap B)$   
(D) None of these
6. (A)  $A \cap B \subset A$   
(B) For equal Sets  $A \cap B = \phi$   
(C)  $A \cap B \neq B \cap A$   
(D) None of these
7. A Set that contains all sets in a given contest is called the Set.  
(A) Sub Set  
(B) Power Set  
(C) Universal  
(D) None of these
8. Which among the following is a void set.  
(A)  $A = \{\phi\}$   
(B)  $\phi$   
(C)  $B = \{ \}$   
(D) (B) & (C)
9. Which among the following is correct.  
(A)  $P = \frac{SI \times 100}{R \times T}$   
(B)  $P = \frac{R \times T}{SI \times 100}$   
(C)  $P = \frac{R \times SI}{100 \times T}$   
(D)  $P = \frac{R \times T}{SI}$

10. The sum of an infinite Geometric Progression is given by-

(A)  $S_n = \frac{a(1-r^n)}{(1-r)}$

(B)  $S_n = \frac{a(r^n-1)}{r-1}$

(C)  $S_\alpha = \frac{a}{1-r}$

(D)  $S_\alpha = \frac{a}{1-r^n}$

11. General term of an arithmetic Progression is given by-

(A)  $T_n = a + (n-1) d$

(B)  $T_n = ar^{n-1}$

(C)  $T_n = a + nd$

(D) None.

**(For Q. 12 to 15)**

$u = \{1,2,3,4,5,6,7,8,9,10\}$

If Set  $A = \{1,2,3,4,5\}$ ,  $B = \{2,3,4,6\}$ ,  $C = \{1,2,3\}$

12. Find.  $A \cap B \cap C$

(A)  $\{2,3,4\}$

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

(C)  $\{\}$

(D) None of the above

13. Find  $A - B$

(A)  $\{1,5\}$

(B)  $\{6\}$

(C)  $\{5\}$

(D) None of the above

14. Find  $A$ :

(A)  $\{1,2,3,4,5\}$

(B)  $\{6,7,8,9\}$

(C)  $\{6,7,8,9,10\}$

(D)  $\{2,4,6,7,8\}$

15. Find  $(A \cap B)$ -
- (A)  $\{2,3,6\}$   
 (B)  $\{1,2,3\}$   
 (C)  $\{2,3,4\}$   
 (D)  $\{3,2\}$
16.  $I = \int \log x \, dx$
- (A)  $x \log x - x + c$   
 (B)  $x \log x - 1 + c$   
 (C)  $\log x - x + c$   
 (D) None of the above
17.  $I = \int \sqrt{x}(x^2 + 2x + 3) \, dx$
- (A)  $\frac{1}{7}x^{7/2} + \frac{1}{5}x^{5/2} + 2x^{3/2} + c$   
 (B)  $\frac{2}{7}x^{7/2} + \frac{4}{5}x^{5/2} + 2x^{3/2} + c$   
 (C)  $\frac{2}{7}x^{7/2} + \frac{4}{5}x^{5/2} + x^{3/2} + c$   
 (D) None of the above
18. Find  $I = \int (x + \frac{1}{x})^3 \, dx$
- (A)  $I = \frac{x^4}{4} + \frac{3x^3}{2} + 3 \log x - \frac{1}{2x^2} + C$   
 (B)  $I = \frac{x^3}{4} + \frac{x^3}{2} + 3 \log x^2 - \frac{1}{2x^2} + C$   
 (C)  $I = \frac{x^4}{4} + \frac{x^3}{2} + \frac{3}{2} \log x + C$   
 (D) None of these
19.  $y = 3x^4 - 5x^2 + 7$  find  $y'$
- (A)  $y' = 2x^2 - 10x$   
 (B)  $y' = 3x^3 - 10x + 7$   
 (C)  $y' = 12x^3 - 10x + 1$   
 (D)  $y' = 12x^3 - 10x$

20.  $y = (x^3+2x)^2$  find  $\frac{dy}{dx}$
- (A)  $2(x^3+2x)(3x^2+2)$   
(B)  $2(2x^2+2)(3x^2+2)$   
(C)  $2(x^3+2x)(2x+2)$   
(D) None of the above
21. Find  $\frac{dy}{dx}$  when  $y = (x^2-3x+2)(x+2)$
- (A)  $x^2 - 2 + 4$   
(B)  $3x^2 - 2x - 4$   
(C)  $3x^2 - 2x + 4$   
(D)  $(x - 3)$
22. Differentiate w. r. t. x.  $e^3 \log x$
- (A)  $e^3 \log x^3$   
(B)  $\frac{e^3}{x}$   
(C)  $\frac{x^2}{3}$   
(D)  $e \log x^3$
23. Differentiate w. r. t. x.  $x^{-3/2}$
- (A)  $\frac{3}{2} x^{5/2}$   
(B)  $-\frac{3}{2} x^{5/2}$   
(C)  $-\frac{3}{2} x^{-5/2}$   
(D)  $\frac{3}{2} x^{-3/2}$
24. The third term of GP is 9. The product of its first five terms:
- (A)  $3^{10}$   
(B)  $3^{12}$   
(C)  $3^9$   
(D)  $3^5$

25. The sum of the series  $5+9+13+\underline{\hspace{2cm}}+49$  is.
- (A) 535  
(B) 324  
(C) 351  
(D) 435
26. For what possible value of X are the numbers  $(x+9)$ ,  $(x-6)$  and 4 in GP
- (A) 3  
(B) 2  
(C) 16  
(D) None of these
27. What is the Geometric Mean of the following numbers 2,4,8,16,32?
- (A) 32  
(B) 64  
(C) 8  
(D) 16
28. For what values of X are the numbers  $-2/7$ , X,  $-7/2$  in GM
- (A) -1  
(B) 1  
(C) Both (A) & (B)  
(D) None of these
29.  $18 : x = 27 : 3$
- (A) 3  
(B) 2  
(C) 5  
(D) 6

30. Find the value of x in the following.

$$x : 6 = 5 : 11$$

(A) 50/11

(B) 30/11

(C) 60

(D) 66

**(For Q. No.31 & 32) :** A certain sum was divided in the ratio 7: 5: 4 among A, B and C respectively. If the total sum is 8000.

31. What amount did C receive?

(A) 3500

(B) 2000

(C) 1500

(D) 2500

32. What amount did A receive?

(A) 3000

(B) 4500

(C) 3500

(D) 4000

33. If  $3A = 4B = 6C$ ; Find A: B: C

(A) 5: 3: 2

(B) 4: 1: 2

(C) 4: 5: 2

(D) 4: 3: 2

34. Interest obtained on a sum Rs.5000 for 3 years is Rs.1500. Find the rate %

(A) 8%

(B) 9%

(C) 10%

(D) 11%

35. Find the amount after Simple Interest on Rs.5200 for 2 years at 6% p.a.
- (A) Rs.5650
  - (B) Rs.5824
  - (C) Rs.5224
  - (D) Rs.6000
36. Find the amount Rs.8000 for 3 years at 5% per annum CI.
- (A) 1381
  - (B) 9261
  - (C) 8451
  - (D) 1151
37. Four quantities a, b, c and d are in proportion if and only if:
- (A)  $ad = bc$
  - (B)  $ab = cd$
  - (C) Both (A) & (B)
  - (D) None
38. Two students appeared at an examination. One of them secured 9 marks more than the other and his marks was 56% of the sum of their marks. The marks obtained by them are:
- (A) 39,31
  - (B) 41,31
  - (C) 42,33
  - (D) 40,33
39. 40% of greater number is equal to 60% of the smaller. If their sum is 150, then the greater number is:
- (A) 70
  - (B) 80
  - (C) 90
  - (D) 60

40. Ramesh's salary was reduced by 10% and then reduced salary was increased by 10%. What was his ultimate situation?
- (A) Loss  
(B) Gain  
(C) Can't say  
(D) None of these
41. Find  $\int (7x^2 - x^3 + 2x) dx$ .
- (A)  $7x^3/3 + x^4/5 - 2x^2 + C$   
(B)  $7x^3/3 + x^4/4 + 2x^2/2 + C$   
(C)  $7 \times 5/9 - x^4/4 + 2x^2/2 + C$   
(D)  $7x^3/3 - x^4/4 + x^2 + C$
42. Find the integral of  $8x^3 + 1$ .
- (A)  $2x^4 + x + C$   
(B)  $2x^6 - 5x + C$   
(C)  $2x^4 - x + C$   
(D)  $2x^4 + x^2 + C$
43. Which of the below condition is incorrect for the inverse of a matrix A?
- (A) The matrix A must be a square matrix  
(B) A must be singular matrix  
(C) A must be a non-singular matrix  
(D)  $\text{adj } A \neq 0$
44. Which of the following is the formula for calculating the inverse of the matrix?
- (A)  $(2/|A|) \text{adj } A$   
(B)  $(1/|A|) \text{adj } A$   
(C)  $(-1/|A|) \text{adj } A$   
(D)  $(1/|2A|) \text{adj } A$

45. Find the cofactor of element -3 in the determinant  $\Delta$

$$\Delta = \begin{vmatrix} 1 & 4 & 4 \\ -3 & 5 & 9 \\ 2 & 1 & 2 \end{vmatrix}$$

- (A) -4  
(B) 4  
(C) -5  
(D) -3

46. Find the minor and cofactor respectively for the element 3 in the determinant  $\Delta$

$$\Delta = \begin{vmatrix} 1 & 5 \\ 3 & 6 \end{vmatrix}$$

- (A)  $M_{21}=-5, A_{21}=-5$   
(B)  $M_{21}=5, A_{21}=-5$   
(C)  $M_{21}=-5, A_{21}=5$   
(D)  $M_{21}=5, A_{21}=5$

47. What is the minor of the element 5 in the determinant  $\Delta$  ?

$$\Delta = \begin{vmatrix} 1 & 5 & 4 \\ 2 & 3 & 6 \\ 7 & 9 & 4 \end{vmatrix}$$

- (A) -34  
(B) 34  
(C) -17  
(D) 21

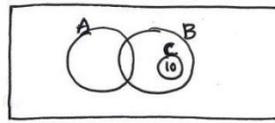
48. What will be the point of maximum of the function  $2x^3 + 3x^2 - 36x + 10$ ?

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

49. For which value of  $x$  will  $(x-1)(3-x)$  have its maximum?
- (A) 0
  - (B) 1
  - (C) 2
  - (D) -2
50. A combination of direct and inverse variations of one or more than one variables is known as:
- (A) direct variation
  - (B) inverse variation
  - (C) joint variation
  - (D) complex variation
51. In  $a : b = c : d$ ,  $b$  and  $c$  are called:
- (A) Antecedent
  - (B) Extreme
  - (C) Consequent
  - (D) Mean
52. In real numbers, the additive identity is:
- (A) 1
  - (B) 3
  - (C) 0
  - (D) -1
53. If the number of rows in A matrix are equal to the number of column in B matrix, then A and B are comfortable for:
- (A) Product
  - (B) Division
  - (C) Transpose
  - (D) Making identity

54. A scalar matrix having each element equal to 1 is said to be-
- (A) Unit to identical matrix
  - (B) Rectangular matrix
  - (C) Square matrix
  - (D) Diagonal matrix
55. If A, B and C matrices are of same order and  $(A+B) + C = A + (B+C)$ , this law is known as:
- (A) Cramer's law
  - (B) Distributive laws
  - (C) Commutative law
  - (D) Associative law
56. We can add two matrices having real numbers A and B if their:
- (A) Order is same
  - (B) Rows are same
  - (C) Columns are same
  - (D) Elements are same
57. If a matrix has equal number of columns and rows then it is said to be a:
- (A) Row matrix
  - (B) Identical matrix
  - (C) Square matrix
  - (D) Rectangular matrix
58. If A and B matrices are of same order and  $A + B = B + A$ , this law is known as:
- (A) Distributive law
  - (B) Commutative law
  - (C) Associative law
  - (D) Cramer's law

59. Complement of a set B is denoted by:
- (A)  $B'$   
 (B)  $B^\circ$   
 (C)  $\{B\}$   
 (D)  $B^2$
60. If  $U = \{1,2,3,4,5\}$  and  $A = \{2,4\}$  then  $A'$  should be:
- (A)  $\{2,4,5\}$   
 (B)  $\{2,4\}$   
 (C)  $\{1,2,3,4,5\}$   
 (D)  $\{1,3,5\}$
61. In the given figure the if  $n(A)=20, n(U)=50, n(C)=10$  and  $n(A \cap B)=5$  then  $n(B)=?$



- (A) 35  
 (B) 20  
 (C) 30  
 (D) 10
62. If  $n(A)=20$  and  $n(B)=30$  and  $n(A \cup B) = 40$  then  $n(A \cap B)$  is:
- (A) 20  
 (B) 30  
 (C) 40  
 (D) 10
63. The set of positive integers is\_\_\_\_\_
- (A) Infinite  
 (B) Finite  
 (C) Subset  
 (D) Empty

64. Which of the following two sets are equal?
- (A)  $A = \{1,2\}$  and  $B = \{1\}$
  - (B)  $A = \{1,2\}$  and  $B = \{1,2,3\}$
  - (C)  $A = \{1,2,3\}$  and  $B = \{2,1,3\}$
  - (D)  $A = \{1,2,4\}$  and  $B = \{1,2,3\}$
65. Power set of empty set has exactly \_\_\_\_\_ subset.
- (A) One
  - (B) Two
  - (C) Zero
  - (D) Three
66. A \_\_\_\_\_ is an ordered collecting of objects.
- (A) Relation
  - (B) Function
  - (C) Set
  - (D) Proposition
67. In how many ways can the letters of the word INDIA be arranged:
- (A) 48
  - (B) 60
  - (C) 28
  - (D) 36
68. How many words can be formed by using all letters of word ALIVE.
- (A) 86
  - (B) 95
  - (C) 105
  - (D) 120

69. A box contains 3 white, 5 black and 2 red balls. In how many ways can three black balls be drawn from the box?

- (A) 29
- (B) 36
- (C) 48
- (D) 10

**(For Q.No.70 to 72) :** In how many ways can we arrange the word 'UNIVERSITY'

70. So that every word begins with U

- (A)  $9! / 2!$
- (B)  $10! / 2! - 2$
- (C)  $10!$
- (D) None of the above

71. So that no vowel comes together?

- (A)  $(7! * 4!)/2!$
- (B)  $10! / 2!$
- (C)  $(10! / 2!) - (7! * 4!)/2!$
- (D) None of these

72. So that all the vowels come together?

- (A)  $7!$
- (B)  $7! * 4!$
- (C)  $(7! * 4!) / 2!$
- (D) None of the above

73. Evaluate:

$28\% \text{ of } 400 + 45\% \text{ of } 250$

- (A) 220.3
- (B) 224.5
- (C) 190.3
- (D) 150

74. If 20% of an electricity bill is deducted, then Rs.100 is still to be paid. How much was the original bill?
- (A) Rs.110
  - (B) Rs.115
  - (C) Rs.120
  - (D) Rs.125
75. Find SI on ₹1000 for 5 years @ 4% p.a.
- (A) 300
  - (B) 200
  - (C) 500
  - (D) None
76. In 4 years the simple interest on certain sum of money is  $\frac{9}{25}$  of the principal. The annual rate of interest is:
- (A) 4%
  - (B)  $4\frac{1}{2}\%$
  - (C) 9%
  - (D) 10%
77. Guddi invested some money in a bank at rate of 6% per annum. At simple interest, after 9 years, she got Rs. 8470. How many did she invest?
- (A) Rs.5250
  - (B) Rs.6550
  - (C) Rs.6400
  - (D) Rs.5500
78. Kabir paid Rs.9600 as interest on a loan he took 5 years ago at 16% rate of simple interest. What was the amount he took as loan?
- (A) Rs.16400
  - (B) Rs.12000
  - (C) Rs.12500
  - (D) Rs.18000

79. What type of matrix is the following-  $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$
- (A)  $I_3$   
 (B) Identity matrix  
 (C) Both (A) & (B)  
 (D) None.
80. Find the transpose of a matrix  $A = \begin{bmatrix} 2 & 3 & 1 \\ 0 & 2 & -1 \end{bmatrix}$
- (A)  $A^T = \begin{bmatrix} 2 & 0 \\ 3 & -2 \\ 1 & 1 \end{bmatrix}$   
 (B)  $\begin{bmatrix} -2 & 0 \\ -3 & 2 \\ -1 & -1 \end{bmatrix}$   
 (C)  $\begin{bmatrix} 2 & 0 \\ 3 & 2 \\ 1 & -1 \end{bmatrix}$   
 (D) None.
81. What is the sum that Amounts to ₹840 in 5 Years at the rate of 8% per annum Simple Interest?
- (A) ₹  $\{100 \times 840 / 100 \times (5+8)\}$   
 (B) ₹  $\{100 \times 840 / (100+5) \times 8\}$   
 (C) ₹  $\{840 \times 5 \times 8 / 100\}$   
 (D) ₹  $\{(100+5) \times 8 \times 100 / 840\}$
82. Akshay lends a Sum of money for 10 years at 5% Simple Interest. Bobby lends double that Amount for 5 years at the same Rate of interest. Which statement is true?
- (A) Akshay and Bobby will get the same Amount as Interest  
 (B) Akshay will get twice the Amount of Interest that Bobby would get  
 (C) Bobby will get twice the Amount of Interest that Akshay would get  
 (D) Akshay will get Thrice the Amount of Interest that Bobby would get

83. If P is 40% less than Q then Q is how much % more than P?
- (A) 60%
  - (B) 66.66%
  - (C) 40%
  - (D) 33.33%
84. If 10% of m is the same as 20% of n then m:n is:
- (A) 2:1
  - (B) 1:2
  - (C) 10:20
  - (D) 1:20
85. The first term of a GP is 1. The sum of the third term and fifth term is 90. the common ratio of GP is:
- (A) 1
  - (B) 2
  - (C) 3
  - (D) 4
86. A student has to obtain 33%of the total marks to pass. He got 125 marks and failed by 40 marks. The maximum marks are:
- (A) 300
  - (B) 500
  - (C) 800
  - (D) 1000
87. The third term of a geometric progression is 4. The product of the first five terms is:
- (A)  $4^3$
  - (B)  $4^5$
  - (C)  $4^4$
  - (D) None of these

88. If  $a, b, c$  are in AP then:
- (A)  $b = a + c$
  - (B)  $2b = a + c$
  - (C)  $b^2 = a + c$
  - (D)  $2b^2 = a + c$
89. If the sum of three numbers is an A.P. is 9 and their product is 24, then numbers are:
- (A) 2,4,6
  - (B) 1,5,3
  - (C) 2,8,4
  - (D) 2,3,4
90. The  $n^{\text{th}}$  term of an A.P. is given by  $a_n = 3 + 4n$ . The common difference is:
- (A) 7
  - (B) 3
  - (C) 4
  - (D) 1
91. The fraction  $2/5$  converted to percentage is:
- (A) 20%
  - (B) 50%
  - (C) 40%
  - (D) 30%
92. The ratio of 10km/hr. to 30km. per hour is:
- (A) 3:1
  - (B) 1:3
  - (C) 1:2
  - (D) 2:1

93. What should be percentage gain on a product when it is sold for Rs.120 with a gain of Rs.20.
- (A) 20%  
 (B) 25%  
 (C) 22%  
 (D) 16.25%
94. What time period is taken when interest is calculated quarterly?
- (A) Twice as much of given time  
 (B) Half as much of given time  
 (C) Same as given  
 (D) None of these
95. If A is an  $m \times n$  matrix such that AB and BA are both defined, then B is a:
- (A)  $m \times n$  matrix  
 (B)  $n \times m$  matrix  
 (C)  $n \times n$  matrix  
 (D)  $m \times m$  matrix
96. If  $\begin{bmatrix} x + y & 2x + z \\ x - y & 2z + w \end{bmatrix} = \begin{bmatrix} 4 & 7 \\ 0 & 10 \end{bmatrix}$  then values of x,y,z and w are:
- (A) 2,2,3,4  
 (B) 2,3,1,2  
 (C) 3,3,0,1  
 (D) None of these.
97. The matrix  $\begin{bmatrix} 0 & -1 & 5 \\ 4 & 0 & 3 \\ 1 & 2 & 0 \end{bmatrix}$  is a:
- (A) Skew symmetric matrix  
 (B) A symmetric matrix  
 (C) A diagonal matrix  
 (D) An upper triangular matrix.

98. For any square matrix  $A$ ,  $A \cdot A^t$  is a:

- (A) Unit Matrix
- (B) Symmetric Matrix
- (C) Skew – symmetric Matrix
- (D) Diagonal Matrix

99. Find the inverse of the matrix  $A = \begin{bmatrix} 1 & 3 \\ 2 & 7 \end{bmatrix}$

- (A)  $\begin{bmatrix} 7 & -3 \\ -2 & 1 \end{bmatrix}$
- (B)  $\begin{bmatrix} 5 & -3 \\ -2 & 1 \end{bmatrix}$
- (C)  $\begin{bmatrix} 1 & -3 \\ -2 & 1 \end{bmatrix}$
- (D)  $\begin{bmatrix} 1 & -3 \\ 2 & 1 \end{bmatrix}$

100. If  $A = \begin{bmatrix} 1 & -2 & 1 \\ 2 & 1 & 3 \end{bmatrix}$  and  $B = \begin{bmatrix} 2 & 1 \\ 3 & 2 \\ 1 & 1 \end{bmatrix}$ , then  $(AB)^t$  is equal to:

- (A)  $\begin{bmatrix} -3 & -2 \\ 10 & 7 \end{bmatrix}$
- (B)  $\begin{bmatrix} -3 & 10 \\ -2 & 7 \end{bmatrix}$
- (C)  $\begin{bmatrix} -3 & 7 \\ 10 & 2 \end{bmatrix}$
- (D) None of these

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