　　　　　　　Reg. No. : ....

Code No. : 10180 E　　　Sub. Code : SMCO 42

B.Com. (CBCS) DEGREE EXAMINATION,
APRIL 2021.

Fourth Semester

Commerce

BUSINESS MATHEMATICS

(For those who joined in July 2017 onwards)

Time : Three hours　　　　　　　Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1.　Difference of two even numbers is always even

　　(a)　True　　　　　(b)　Not true

　　(c)　ill defined　　(d)　none

2.　Natural number start from

　　(a)　1　　　　　　(b)　0

　　(c)　−1　　　　　(d)　none of the above

3. Which of the following is the power of 5

   (a) 75^m (b) 25^m

   (c) 50^m (d) 105^m

4. $\dfrac{11^7}{11^6}$ is equal to

   (a) 11   (b) 6

   (c) 1   (d) 7

5. If a pair of linear equation is consistent, then these lines will be

   (a) parallel

   (b) always coincident

   (c) intersecting or coincident

   (d) always intersecting

6. Find the distance between (1,3) and (9,18) on the coordinate plane

   (a) 17   (b) 32

   (c) 46   (d) 12

7. The determinant value of the following matrix $\begin{bmatrix} 7 & 1 \\ 2 & 7 \end{bmatrix}$ is _____

   (a) 47   (b) 40

   (c) 57   (d) -57

8. $(3 \quad 8 \quad 9 \quad -2)$ is a row matrix of order _____

   (a) 4×4   (b) 1×4

   (c) 1×1   (d) 4×1

9. The compound interest on Rs.30,000 for 3 years at 10% is

   (a) 9,930   (b) 9,000

   (c) 39,930   (d) 42,000

10. For a face value of a bill Rs.7,000 drawn for 6 months at 6% per annum interest the true discount is

    (a) 204   (b) 210

    (c) 420   (d) 620

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Find the LCM and HCF of the following pair of integer and verify that LCM ×HCF = product of the two numbers 26 and 91.

Or

   (b) The cost of 2kg apples and 1kg of grapes on a day was found to be Rs.160. After a month the cost of 4kg of apples and 2kg of grapes is Rs.300. Represent the situation algebraically.

12. (a) Simplify $(-243)^{-\frac{2}{5}}$

Or

(b) Find the value of x is $3 \times 5^x = \dfrac{3}{125}$

13. (a) Find the distance between two points $(8, 2, 6)$ and $(3, 5, 7)$.

Or

(b) What is the distance between the points $(0,0)$ and $(6,8)$ plotted on a graph.

14. (a) If $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 1 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 1 \\ 1 & 2 \\ 0 & -1 \end{bmatrix}$ find AB.

Or

(b) Write down the transpose of the following matrices $A = \begin{bmatrix} 2 & 3 \\ 7 & 5 \\ 1 & 2 \end{bmatrix}$ $B = \begin{bmatrix} 3 & 5 & -2 & 1 \\ 2 & 3 & 1 & 0 \end{bmatrix}$

$C = \begin{bmatrix} 4 & -2 & 1 & 5 \end{bmatrix}$

15. (a) Find the principal sum which yields simple interest of Rs.77 in 8 years at 3.5% per annum.

Or

(b) The population of a city increases at the rate of 15 per thousand. What will be the population at the end of 5 years if present population is 69360?

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

16. (a) Find the roots of the following quadratic equation. $x^2 - 3x - 10 = 0$.

Or

(b) Find the two numbers whose sum is 27 and product is 182.

17. (a) If a, b, c are 3 consecutive integers prove that $\log(1 + ac) = 2\log b$.

Or

(b) Simplify $\dfrac{\log 72 - \log 3}{\frac{1}{3}\log 27 + \frac{1}{2}\log 64}$

18. (a) The point (4, 8) lies on a circle centered at (12, 14). What is the radius of the circle.

Or

(b) Find out the point of intersection of two lines $x^2 + 2x + 1 = 0$ and $2x^2 + 3x + 5 = 0$.

19. (a) If $A = \begin{bmatrix} 1 & -2 & -3 \\ -4 & 2 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 3 \\ 4 & 5 \\ 2 & 1 \end{bmatrix}$. Find AB and show that $AB \neq BA$.

Or

(b) Using matrices, Calculate the values of x and y for the following equation.

$2x - 2y - 3 = 0$

$8y = 7x + 2$

20. (a) Find the bankers gain on a bill of Rs.3750 due in 8 months at 8% per annum.

Or

(b) A sum of money inverted at compound interest amounts to Rs.21,632 at the end of second year and Rs.22,497.28 at the end of third year. Find the rate of interest and the sum invested.

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