



BRAINWARE UNIVERSITY

Course – BBA

Business Mathematics (BBAC 103)

(Semester – 1)

Time allotted: 3 Hours

Full Marks : 70

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Questions)

Choose the correct answer from the given alternatives:

10x1=10

1. If $A = \begin{bmatrix} 2i & i \\ i & -i \end{bmatrix}$ then $|A| = ?$
 a. 2 b. 3 c. 4 d. 5
2. 5 persons can be seated at a round table in
 a. 25 ways b. 24 ways c. 20 ways d. None of the above
3. Sum and product of roots of equation $x^2 - kx + k^2 = 0$ are
 a. K, k^2 b. K^2, k c. $-k, k^2$ d. $k, -k^2$
4. Common difference of sequence 5,8,11,14,... is
 a. 3 b. -3 c. 0 d. 1
5. If roots of $x^2 - 5x + a = 0$ are equal, then $a =$
 a. $25/5$ b. $\pm 25/4$ c. $25/4$ d. None of Above
6. How many Permutations of the letters of the word APPLE are there?
 a. 600 b. 120 c. 240 d. 60
7. If ${}^nC_{12} = {}^nC_6$ value of n is
 a. 12 b. 14 c. 16 d. 18
8. If ${}^nP_2 = 30$ then $n=?$
 a. 6 b. 4 c. 5 d. 720
9. 10, 7, 4, 1, ... is
 a. AP b. GP c. Arithmetic Series d. Geometric Series
10. If $y = at^2$ then $dy/dt=?$
 a. $2at$ b. 0 c. a d. t

Group – B
(Short Answer Type Question)
Answer any three questions

3 x 5 = 15

1. The 7th and 21st terms of an AP are 6 and -22 respectively. Find the 26th term.
2. Find the sum of the following series 3+6+12+24+.....up to 20 terms
3. Find the expansion of $(2+3x)^5$
4. If $y = e^x x^e a^x$ then find dy/dx .
5. Calculate the present value of Rs 1000 received 4 years from now at the discount rate of 6%.

Group – C
(Long Answer Type Question)
Answer any three questions

3 x 15 = 45

1. a) Find the coefficient of x^2 in the expansion of $(x/2 + 2/x)^8$ (10+5)
 b) Evaluate $(19)^4$.
2. a) Show that the matrix $A = \begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$ satisfies the equation $A^2 - 4A + 3I = 0$. Also find A^{-1} . (10)
 b) Solve the equations by using Cramers Rule: $2x+5y-21=0$, $x+2y-8=0$. (5)
3. a) If $y = \tan^{-1} x$ show that $y_2 (1+x^2) + 2xy_1 = 0$ (10+5)
 b) Find the compound interest on Rs. 25, 000 at 5% per annum at the end of 2.5 years if interest is calculated half yearly.
4. a) The sum of three in AP is 18 and their product is 192. Find the numbers. (5+5+5)
 b) Sum the series $2+4+6+...$ Up to 40 terms.
 c) Find the first term of an AP whose 8th and 12th terms are respectively 39 and 59.
5. a) How many words can be formed out of letters of word COMMITTEE? (5+5+5)
 b) How many different teams containing 3 boys and 4 girls can be made from a BBA class of 20 boys and 10 girls?
 c) In a cricket team of 14 players, there are 6 bowlers. How many different teams of 11 players can be formed taking at least 4 bowlers in the team?