STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2015–16)

SUBJECT CODE : 15MT/AC/MT35

B. Com. / B.Com.(A&F) DEGREE EXAMINATION, NOVEMBER 2016
THIRD SEMESTER

COURSE : ALLIED – CORE
PAPER : MATHEMATICS FOR COMMERCE
TIME : 3 HOURS **MAX. MARKS : 100**

SECTION – A **(10 X 2 = 20)**
ANSWER ALL THE QUESTIONS

1. Define skew symmetric matrix and give an example.
2. Find the eigen values of the matrix $\begin{pmatrix} 3 & 1 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{pmatrix}$.
3. Form a fourth degree equation if two of its roots are $2\sqrt{5}$ and 3i.
4. If α, β, γ are the roots of the equation $x^3 + 3x^2 + 7x - 6 = 0$, Find the value of $\sum \frac{1}{\alpha}$.
5. Give an example of an algebraic equation and a transcendental equation.
6. Write the necessary condition for solving a system of equations by Gauss Seidal Method.
7. Define subgraph of a graph.
8. Draw any four trees with 8 vertices.
9. Write the Pigeonhole principle.
10. Find the 8^{th} term in the expansion of $\left(2x + \frac{1}{y}\right)^9$.

SECTION – B **(5 X 8 = 40)**
ANSWER ANY FIVE QUESTIONS

11. Find the eigen values and eigen vectors of the matrix $\begin{pmatrix} 3 & 2 \\ 2 & 3 \end{pmatrix}$.
12. Solve the equation $x^3 - 4x^2 - 3x + 18 = 0$ given that two of its roots are equal.
13. Find a real root of the equation $x^3 - x - 1 = 0$ correct to four decimal places by bisection method.
14. Solve the system of equations $x + 2y + z = 3$, $2x + 3y + 3z = 10$, $3x - y + 2z = 13$ by Gauss elimination method.

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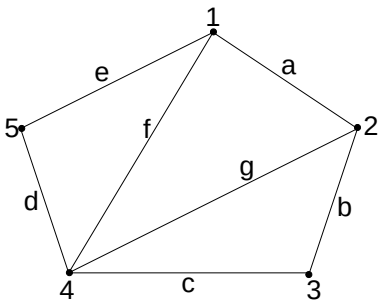
15. Define adjacency matrix and incidence matrix and find the same for the following graph.



16. Prove that in any graph the number of vertices of odd degree is even.

17. Find the value of 11^7 using binomial theorem.

SECTION – C **(2 X 20 = 40)**

ANSWER ANY TWO QUESTIONS

18. Verify Cayley Hamilton theorem for the matrix $\begin{pmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{pmatrix}$ and hence find its inverse.

19. a) Solve the equation $6x^5 + 11x^4 - 33x^3 - 33x^2 + 11x + 6 = 0.$

b) Find a real root of the equation $x^3 = 6x - 4$ correct to 4 places of decimals by Newton Raphson method. (10+10)

20. a) Define the following and give an example of each.
(i) Walk
(ii) Trail
(iii) Path
(iv) Eulerian graph
(v) Hamiltonian graph

b) An examination paper consists of 12 questions divided into two parts A and B. Part A contains 7 questions and part B contains 5 questions. A candidate is required to answer 8 questions selecting at least 3 questions from each part. In how many ways can he select the questions? (10+10)

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