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

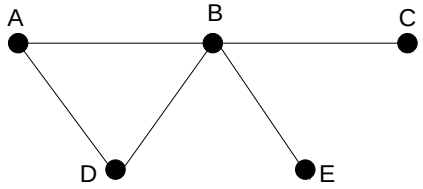
SUBJECT CODE :15MT/AC/MT35

B. Com. / B.Com.(A&F) DEGREE EXAMINATION, NOVEMBER 2018
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 symmetric matrix and give an example.
2. When are two matrices said to be similar?
3. Obtain the fourth degree equation one of whose roots is $\sqrt{2}+\sqrt{5}$.
4. Define reciprocal equation.
5. Write Newton Raphson formula for finding the root of an equation.
6. How do you solve a system of linear equations by Gauss Jacobi method.
7. Write the adjacency matrix of the following graph.



8. Define Eulerian graph.
9. In how many ways 4 examinations can be scheduled within a six day period so that no two examinations are scheduled on the same day?
10. Write the pigeonhole principle.

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

11. Find the eigen values and eigen vectors of the matrix $\begin{pmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{pmatrix}$.
12. Solve the equation $x^4+2x^3-25x^2-26x+120=0$ given that the product of two of its roots is 8.
13. Given that $-2+\sqrt{-7}$ is a root of the equation $x^4+2x^2-16x+77=0$. Solve it completely.
14. Find a real root of the equation $x^3-2x+0\cdot5=0$ lying between $0\cdot2$ and $0\cdot3$ correct to four decimal places by bisection method.

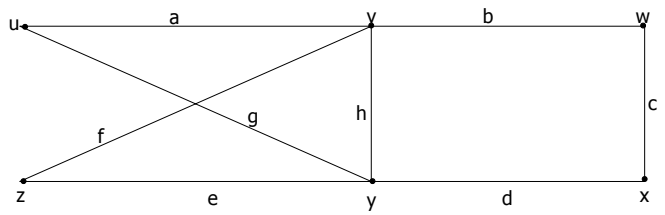
$$27x+6y-z=85$$

15. Solve the system of equations $6x+15y+2z=72$ by Gauss Seidal method.

$$x+y+54z=110$$

..2

16. Write Fluery's algorithm and construct an Eulerian trial for the following graph using Fluery's algorithm.



17. How many 6-digit numbers, without repetitions of digits, are there such that the digits are all non-zero and 1 and 2 do not appear consecutively in either order?

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) The equation $x^3 + 24x - 50 = 0$ has a root between 1 and 2. Calculate it to three places of decimals by Newton Rapshon method. (10+10)

20. a) Define degree of a graph and prove that in any graph the number of points of odd degree is even.

b) Define the following give an example of each.

(i) tree

(ii) forest

(iii) spanning tree

c) Out of 4 officers and 10 clerks in an office, a committee consisting of 2 officers and 3 clerks is to be formed. In how many ways can this be done if

(i) any officer and any clerk can be included

(ii) one particular clerk must be in the committee

(iii) one particular officer cannot be in the committee. (6+6+8)

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