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 2019
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 Hermitian matrix and give an example.
2. Find the eigen values of the matrix $\begin{bmatrix} a & h & g \\ 0 & b & 0 \\ 0 & 0 & c \end{bmatrix}$.
3. Obtain the second degree equation one of whose roots is $2-3i$.
4. If α, β, γ are the roots of the equation $x^3+px^2+qx+r=0$, Find the value of $\sum \alpha^2$.
5. Find the first approximation of the root of the equation $x^3-x-1=0$ by bisectionmethod.
6. Write the necessary condition for solving a system of equations by Gauss Seidalmethod.
7. Find the incidence matrix of the following graph.
8. Define Hamiltonian graph.
9. State Binomial theorem.
10. Write down the rules of sum and product.

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

11. Verify Cayley Hamilton theorem for the matrix $\begin{bmatrix} 1 & 1 & 3 \\ 5 & 2 & 6 \\ -2 & -1 & -3 \end{bmatrix}$.
12. Solve the equation $3x^3-4x^2+x+88=0$ if one of the roots of the equation is $2+\sqrt{-7}$.
13. If the roots of the equation $x^3+px^2+qx+r=0$ are in Arithmetic progression , Show that $2p^3-9pq+27r=0$.
14. Find a positive root of $x^3+x^2-1=0$by iteration method.
15. Solve the system of equations $x+2y+z=3,\quad 2x+3y+3z=10,$ $3x-y+2z=13$byGausselimination method.
16. Explain the Konisberg bridge problem.
17. How many odd numbers of odd digits can be formed out of the digits 1,2,3,…9 if repetition of digits is
    (i) not allowed
    (ii) allowed?

..2

SECTION – C **(2 X 20 = 40)**
ANSWER ANY TWO QUESTIONS

18. (a) What are similar matrices? Give an example.

(b) Find the eigen values and eigen vectors of the matrix $\begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$.

(5+15)

19. (a) Solve the equation $6x^5 - x^4 - 43x^3 + 43x^2 + x - 6 = 0$.

(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 degree of a graph and prove that in any graph the number of points ofodd degree is even.

(b) Define the following and give an example of each.

(i) Trail

(ii) Eulerian graph

(iii) Hamiltonian graph

(c) A cricket team of 11 players is to be selected from two sets consisting of 6and 8 players respectively. In how many ways can the selection be made on theassumptionthat the first set of 6 players contribute not fewer than 4 players?

(6+6+8)

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