**SAINTGITS COLLEGE OF APPLIED SCIENCES, PATHAMUTTOM P.O, KOTTAYAM**

**FIRST INTERNAL EXAM [SEPTEMBER-2015]**

**B.A CORPORATE ECONOMICS**

**FIRST SEMESTER**

**MATHEMATICS FOR ECONOMICS I**

Time: 2 hours Maximum: 50 Marks

**Section A**

*Answer* ***all*** *questions. Each question carries* ***1 mark****.*

 1. Define transpose of a matrix.

2. Define skew symmetric matrix.

3. If A=$\left[\begin{matrix}\begin{matrix}-3&2\\5&8\\4&3\end{matrix}& \\ & \end{matrix}\right]$ find -4A

4. Define singular matrix.

5. Find the trace of the matrix $\left[\begin{matrix}\begin{matrix}-5&3&8\\4&3&0\\9&8&4\end{matrix}& \\ & \end{matrix}\right]$ **(5×1=5)**

**Section B**

*Answer any* ***five*** *question . Each question carries* ***2 marks****.*

6. Find the rank of the matrix $ \left[\begin{matrix}\begin{matrix}3&2&1\\4&-2&8\\5&1&0\end{matrix}& \\ & \end{matrix}\right]$

7. Find BA if A=$\left[\begin{matrix}\begin{matrix}1\\-2\\3\end{matrix}& \\ & \end{matrix}\right]$ and B=$\left[\begin{matrix}\begin{matrix}-2&5&4\\1&0&2\end{matrix}& \\ & \end{matrix}\right]$

8. Show that I3 is an idempotent matrix .

9. Prove that $\left[\begin{matrix}\begin{matrix}5&7&2\\2&3&1\\4&6&2\end{matrix}& \\ & \end{matrix}\right]$ is singular.

10. If A=$\left[\begin{matrix}\begin{matrix}3&6&1\\2&2&3\\1&3&1\end{matrix}& \\ & \end{matrix}\right]$ , find determinant of A

11. Find 3A-4B where A=$\left[\begin{matrix}\begin{matrix}2&0&-6\\5&3&4\end{matrix}& \\ & \end{matrix}\right]$ , B=$\left[\begin{matrix}\begin{matrix}6&-1&7\\2&9&4\end{matrix}& \\ & \end{matrix}\right]$

 **(5×2=10)**

**Section C**

*Answer any* ***five*** *question. Each question carries* ***4 marks****.*

12. Solve 2x-3y=3 and 4x-y=11 by Crammer’s rule.

13. Find the inverse of A where A=$\left[\begin{matrix}\begin{matrix}3&5&7\\2&-3&1\\1&1&2\end{matrix}& \\ & \end{matrix}\right]$

14. If A=$\left[\begin{matrix}\begin{matrix}-1&-2&-2\\2&1&-2\\3&-2&1\end{matrix}& \\ & \end{matrix}\right]$ , show that Adj A=3At

15. If A=$\begin{matrix} & \\ & \end{matrix}\left[\begin{matrix}\begin{matrix}1&2&3\\2&0&1\\1&-1&2\end{matrix}& \\ & \end{matrix}\right]$ , B=$\left[\begin{matrix}\begin{matrix}1&0&5\\2&1&4\\3&-1&0\end{matrix}& \\ & \end{matrix}\right]$ find AB.

16. Show that A=$\left[\begin{matrix}\begin{matrix}2&-3&-5\\-1&4&5\\1&-3&-4\end{matrix}& \\ & \end{matrix}\right]$ is idempotent.

17. Find the adjoint of A=$\left[\begin{matrix}\begin{matrix}0&1&2\\1&2&3\\3&1&1\end{matrix}& \\ & \end{matrix}\right]$.

 **(5×4=20)**

**Section D**

*Answer any* ***one*** *question. Each question carries* ***15 marks****.*

18. .Show that A=$\left[\begin{matrix}\begin{matrix}2&-1&1\\-1&2&-1\\1&-1&2\end{matrix}& \\ & \end{matrix}\right]$ satisfies the equation

 A3-6A2+9A-4I=0.Hence find the inverse of A.

19. Solve 3x1+x2+x3=1, 2x1+ +2x3=0, 5x1+x2+2x3=2 using matrix method

 **(1×15=15)**