King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math-302 Semester-133 QUIZ II

NAME: S.No. ID:

Maximum Marks: 10 Section:02 Time Allowed: 30 minutes

(1) Use the divergence theoren Theorem to compute $\int\int_S \mathbf{F}.\mathbf{n}ds$, where $\mathbf{F} =< y, x, z^2 >$ and D is the region bounded by the paraboloid $z = x^2 + y^2$ and the plane $z = 1$.

(2) Given a subset S of R^3 defined by

$$S = \{u = (u_1, 0, u_3) | u_1 + u_3 \geq 0\}.$$

Is S a subspace? (Why?)

(3) Find the rank of the matrix

$$A = \begin{pmatrix} 6 & 1 & 3 & 8 \\ 4 & 2 & 6 & -1 \\ 10 & 3 & 9 & 7 \\ 16 & 4 & 12 & 15 \end{pmatrix}$$