

Department of Mathematics and Statistics, KFUPM
Math-333 Semester-173 QUIZ I

NAME:

S.No.

ID:

Maximum Marks: 10

Section:02

Time Allowed: 30 minutes

(1) If $\mathbf{F}(x, y, z) = \langle x^2y^3 - z^4, ze^x, xy \sin(z) \rangle$, find $\text{div}\mathbf{F}$. (01 pt)

(2) Consider the line integral $\int_{(1,1,\ln 3)}^{(2,2,\ln 3)} e^{2z} dx + 3y^2 dy + 2xe^{2z} dz$.

(i) Show that the line integral is independent of the path. (01 pt)

(ii) Find a potential function. (03 pt)

(iii) Use the Fundamental Theorem to evaluate the line integral. (02 pt)

(iv) Use any convenient path between the endpoints of the path to evaluate the line integral. (03 pt)