

King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math-301 Semester-132 QUIZ V

NAME:

S.No.

ID:

Maximum Marks: 10

Section:06

Time Allowed: 40 minutes

(1) Use separation of variables method to solve the problem

$$a^2 \frac{\partial^2 u}{\partial x^2} = \frac{\partial^2 u}{\partial t^2} \quad 0 < x < \pi, t > 0$$

$$u(0, t) = 0, u(\pi, t) = 0, \quad t > 0$$

$$u(x, 0) = 0, u_t|_{t=0} = \sin x, \quad 0 < x < \pi.$$

(2) Classify the PDE as hyperbolic, parabolic or elliptic

$$\frac{\partial^2 u}{\partial x^2} - \frac{\partial^2 u}{\partial x \partial y} - 3 \frac{\partial^2 u}{\partial y^2} = 0.$$