Roll No.	Total No. of Pages : 02
Total No. of Questions : 09	
B.Sc. (Non-Medical) (2018 Batch)	(Sem3)
DIFFERENTIAL EQUATION	DNS
Subject Code : BSNM-306-	18
M.Code : 76905	
Date of Examination : 14-12	2-22
Time:3 Hrs.	Max. Marks:50

### **INSTRUCTIONS TO CANDIDATES :**

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

## **SECTION-A**

# 1. Write briefly :

- a) Check whether the equation  $(x y)^2 dx (y^2 2xy x^2)dy = 0$  is Exact differential Equation or not.
- b) Solve the Clairauts differential equation  $y = px + p p^2$
- c) Define self orthogonal family of curves.
- d) Solve  $(D^2 + 9)y = cosec 3x$  by using method of variation of parameters.
- e) What do you mean by Legendre linear differential equation.

f) Solve 
$$(x^2D^2 + 1)y = 0$$

- g) Write the order of a partial differential equation  $\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} = z + xy$
- h) Find the partial differential equation by eliminating 'a' and 'b' from z = a (x + y) + b.
- i) What do you mean by Particular integral of a partial differential equation.
- j) Write complementary function of  $(D^2 DD' 2D'^2) z = 0$

### **SECTION-B**

- 2. Find the orthogonal trajectories of  $6ay^2 = (x 3)$  where *a* is parameter.
- 3. Solve the simultaneous differential equations  $\frac{dx}{dt} = 3x + 2y$ ,  $\frac{dy}{dt} = 5x + 3y$ .
- 4. Solve the partial differential equation  $x^2p + y^2q = z^2$
- 5. Solve  $(D^3 4D^2D' + 4DD'^2)z = 4 \sin(2x + y)$
- 6. Discuss the geometrical meaning of differential equation.

## **SECTION-C**

- 7. Find a complete integral of  $z^2 = pqxy$  using Charpit's method.
- 8. Solve  $\sin^2 x y'' + \sin x \cos x y' + 4y = 0$  by changing independent variable.
- 9. Solve y (1 + xy)dx + x (1 xy)dy = 0

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.