

Roll No.

21271

B. Sc. (Physics) (Hons.) 2nd Semester

Examination – May, 2019

MATHEMATICAL PHYSICS - II

Paper : Phy-201

Time : Three hours] [Maximum Marks : 40

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting at least two questions from each Section.

SECTION - I

1. Solve the differential equation : 8

y^2 dx + (x^2 - xy - y^2) dy = 0

2. Solve the differential equation : 8

d^2 y / dx^2 + 4 dy / dx + 4y = e^2x + e^-2x

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3. Apply the method of variation of parameters to the equation :

d^2 y / dx^2 + 9y = sec 3x

4. Use undetermined coefficient method to solve differential equation :

d^2 y / dx^2 - 8 dy / dx + 15y = 9xe^2x; y(0) = 5, y'(0) = 10

SECTION - II

5. Obtain the Fourier series of the function :

f(x) = { 0 -pi <= x <= 0, 1 0 < x < pi

6. Represent f(x) = { 1 0 < x < 1/2, 0 1/2 < x < 1 in

(a) Fourier sine series

(b) Fourier cosine series

7. Explain square Wave and Full wave rectifier.

8. (a) Define systematic and Random Errors.

(b) Discuss the standard and probable errors.