MONAD UNIVERSITY HAPUR (UP)

Programme: B.Sc.

Semester: IV

Course: MTH-221 Differential Equations and Integral Transforms

Assignment No: 1

Due date of submission: 12.03.19

Instructions:

1. Write the responses to the assignment in your own handwriting.
2. Submit the responses to your HOD within the due date.
3. Write your Name, Program me, and Enrolment No. clearly at the top of the page.

Q.1

(a) Solve the following differential equation:

$$\frac{d^3y}{dx^3} + 3\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + y = e^{-x}.$$

(b) Solve the following differential equation:

$$x(x-1)\frac{dy}{dx} - y = x^2(x-1)^2.$$

Q.2

(a) Solve $\quad \frac{d^2y}{dx^2} + (1 - \cot x)\frac{dy}{dx} - y\cot x = \sin^2 x.$

(b) Solve $\quad p = \tan(px - y).$

Programme: B.Sc.

Semester: IV

Course: MTH-222 Complex Analysis

Assignment No: 1

Due date of submission: 12.03.19

Instructions:

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Q.1

(a) Evaluate the integral $\oint_C \frac{1}{z-z_0} dz$, where C is a circle centered at z_0 and of any radius. The path is traced out once in the anticlockwise direction.

(b) Find the residue at the following function:
$$\frac{e^z - 1}{z^5}$$

Q2.

(a) As you are aware of the bilinear transformation, show that the map of the straight line x=y is a circle under the transformation $w = \frac{z-1}{z+1}$. Find its center and radius.

(b) What is the relation between conformal mappings and holomorphic functions?

MONAD UNIVERSITY HAPUR (UP)

Programme: B.Sc. [PCM]
Semester: IV SEM
Course: PHYSICAL OPTICS AND LASER
Assignment No: 1
Due date of submission: 12/03/2019
Instructions:
1. Write the responses to the assignment in your own handwriting.
2. Submit the responses to your HOD within the due date.
3. Write your Name, Programme and Enrolment No. clearly at the top of the page.

Q1.

   a) Discuss the phenomenon of double refraction in a calcite crystal. Explain the construction and working of Nicol prism.
   b) As you are the laser. Explain the construction and working of Ruby laser.

Q 2

   a) As you are aware of stimulated emission of radiation. Establish relations among "Einstein's coefficients"?
   b) Write note on :
   (i)   Optical pumping.
   (ii)   Optical resonator active medium.

MONAD UNIVERSITY HAPUR (UP)

Programme: B.Sc. [PCM]
Semester: IV SEM
Course: RELATIVITY AND STASTICAL PHYSICS
Assignment No: 1
Due date of submission: 12/03/2019
Instructions:
1. Write the responses to the assignment in your own handwriting.
2. Submit the responses to your HOD within the due date.
3. Write your Name, Programme and Enrolment No. clearly at the top of the page.

Q1.

a) As you are aware of density of states .You are to find density of states of confined electrons in a box of length a.
b) As you are aware of Lorentz transformation .Explain length contraction and time dilation.

Q 2

a) As you are aware of Bose Einstein condensation .Explain population inversion and show it is achieved.
b) Write note on :
   (i)   Minkowskian space.
   (ii)   Cooriolis force.

ORGANIC CHEMISTRY-II

Assignment No: 01
Due Date of Submission: 12 March 2019
Program: - B.Sc. IV SEM
Instructions:
- Write the responses to the assignment in your own handwriting.
- Submit the responses to your HOD with in the due date.
- Write your Name, Programme & Enrolment No. Clearly at the top of the page.

Question: 01

A. What is ultraviolet spectroscopy? Describe the instrumentation of ultraviolet spectroscopy.
B. What is solvent effect in electronic spectroscopy?

Question: 02
A. Explain different types of electronic transitions in ultraviolet spectroscopy.
B. What is Infrared spectroscopy? Explain degree of freedom.

Instructions:

1. **Write the assignment in your own handwriting.**
2. **Submit assignment to your HOD within given time.**
3. **Write your name , program and enrolment number clearly at the top of the Page**

1.

a) Our present education system gives us knowledge and skills but does not emphasize enough on value education. Do you agree on this above statement?

b) In your views what should be the basic guideline for the teaching or learning value education?

2.

a) Self exploring means seeing inside. Give your own views.

b) "Respect" is one of the most foundational values in human life. Do you agree on that? If yes, than how?