



MONAD UNIVERSITY HAPUR (UP)

Programme: **B.Sc (PCM)**

Semester: **IV**

Course: **MTH-221 Differential Equations and Integral Transforms**

Assignment No: **2**

Due date of submission: **20.04.2018**

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 Number clearly at the top of the page.

Q.1

- (a) Using Laplace transform, solve the following initial value problem:

$$y'' + y = t \cos 2t, \quad y(0) = 0, \quad y'(0) = 0.$$

- (b) Using the Convolution theorem, find the inverse Laplace transform of the following:

$$(i) \frac{1}{(s-2)(s+2)^2} \quad (ii) \frac{1}{(s^2+1)^3}$$

Q.2

- (a) Define Fourier transform and inverse Fourier transform. Find the Fourier transform of

$$f(x) = \begin{cases} 1 - x^2, & |x| \leq 1 \\ 0, & |x| > 1 \end{cases}$$

- (b) Find a Fourier series to represent: $f(x) = x \sin x$, for $0 < x < 2\pi$.



MONAD UNIVERSITY HAPUR (UP)

Programme: **B.Sc. (PCM)**

Semester: **IV**

Course: **MTH-222 Complex Analysis**

Assignment No: **2**

Due date of submission: **20.04.2018**

Instructions

4. Write the responses to the assignment in your own handwriting.
5. Submit the responses to your HOD within the due date.
6. Write your Name, Programme and Enrolment Number clearly at the top of the page.

Q.1

- (b) State and prove Cauchy's fundamental theorem.
- (c) Obtain the Taylor's and Laurent's series which represent the function

$$f(z) = \frac{z^2-1}{(z+2)(z+3)} \text{ in the regions}$$

(i) $|z| < 2$

(ii) $2 < |z| < 3$

(iii) $|z| > 3$

Q.2

- (c) State and prove Rouché's theorem.
- (d) Evaluate the residues of $\frac{z^3}{(z-1)(z-2)(z-3)}$ at $z = 1, 2, 3$ and infinity and show that their sum is zero.



MONAD UNIVERSITY HAPUR (UP)

Programme: B.Sc.

Semester: IV

Course: STATISTICAL PHYSICS

Assignment No: 2

Due date of submission: 20 April 2018

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) Explain Doppler broadening in context to sharp energy levels.
- b) As you are aware of partition function of any example. Calculate Gibbs free energy enthalpy using partition function.

Q2

- a) Find the density of matrix of an identical particles arranged in a canonical assemble.
- b) Write note on :
 - (i) Thermodynamic function.
 - (ii) Statistical equilibrium.



MONAD UNIVERSITY HAPUR (UP)

Programme: B.Sc.

Semester: IV

Course: PHYSICAL OPTICS AND LASER

Assignment No: 2

Due date of submission: 20 April 2018

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.

Q2

- 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.



Department of Chemistry

ASSIGNMENT-2

Course- B.Sc(PCM)/(ZBC)

Sub code-CHE-221

Sub-Organic Chemistry

Year- 2nd year/4thsem

Last date of Submission-20/4/2018

Instruction

- 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 and Enrollment nu clearly at the top of the page.

Q1.

- a) As you know glycol is dihydroxy alcohol. Discuss preparation, properties and uses of glycol.
- b) What is pinacol-pinacolone rearrangement reaction?

Q2.

- a) Give the manufacturing methods of phenol preparation.
- b) You know about aldehyde and ketone. Can you mention different methods of aldehyde and ketone preparation.

Assignment No: II

Program: B.Sc. (PCM) IV SEM

Course Name- Fundamental of Value Education in Profession.

Course code-FVEP-221

Submission Date: 20 April, 2018

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 Pages**

1.

(a) Right understanding and feelings help in self knowing and self organising. In this context please try to explain right understanding in relationship.

(b). Self exploration always help us to know ourselves in a better way. Can you brief any five process of self exploration?

2.

(a) As we know that we have self and body and each need their fulfilment. How could you explain the needs of “self” and “body”?

(b) As we know “Sukh” is qualitative and “Suvidha” is quantitative. Can you explain the relation between the two?