

BHILAI MAHILA MAHAVIDYALAY BHILAI DEPARTMENT OF EDUCATION SESSION 2015-16 FIRST SEMESTER TEST NO. 1 DATE NO. 14/09/2015 QUESTION:- WHAT DO YOU MEAN BY MICRO-TEACHING? BY EXPLAINING DIFFERENT TEACHING SKILLS. PREPARE ONE MICRO LESSION PLAN IN ANY OF THE SKILL. सूक्ष्म शिक्षण से आप क्या समझते हैं ? शिक्षण में इसका महत्व लिखिए। विभिन्न शिक्षण कौशलों का उल्लेख करते हुए किसी एक कौशल में सूक्ष्म पाठ योजना तैयार कीजिए। TEST NO. 2 DATE NO. 21/09/2015 QUESTION:- DESCRIBING THE NATURE OF EDUCATION , IN DETAIL THE DIFFERENT AIMS OF EDUCATION ? शिक्षा कि प्रकृति को समझाने हुए शिक्षा के विभिन्न उद्देश्यों का सविस्तार वर्णन कीजिये। TEST NO. 3 DATE NO. 28/09/2015 QUESTION:- WHAT IS LEARNING ? EXPLAIN JEAN- PIYAGET THEORY OF COGNITIVE DEVELOPMENT IN DETAIL. ? ITS BASIC CONCEPT & ITS STAGES ?	TEST PAPER TEST NO. 4 DATE NO. 05/10/2015 QUESTION:- WRITE ABOUT THE CONTRIBUTE OF THE YOUNRNG EDUCATIONLIST IN THE FIELD OF EDUCATION . (A) J. KRISHNANMURTI (B) GIJJU BHAI TEST NO. 5 DATE NO. 13/10/2015 QUESTION:- WRITE ABOUT THE CONTRIBUTE WESTERN THINKERS RUSSEL IN ITS FIELD OF EDUCATION . EXPLAIN IN DETAIL. ? TEST NO. 6 DATE NO. 19/10/2015 QUESTION:- STATE THE CHARACTERISTICS OF CREATIVE STUDENT .WHAT ARE THE DIFFERENT METHOD OF TESING THE QUALITIES OF CREATIVITY AMONG THE STUDENT ? STATE THE RELATIONSHIP BETWEEN INTELLIGENCE AND CREATIVITY SESSION 2016-17 THIRD SEMESTER TEST NO. 1 DATE NO. 11/07/2016	QUESTION:- WHAT IS LESSION ePLAN? EXPAIN THE NEED OF LESSION PLAN.PREPARE A LESSION PLAN IN ANY TOPIC OF CLASS-IX TEST NO. 2 DATE NO. 19/07/2016 QUESTION:- EXPLAIN THE MEANING OF EVALUATION .CLARITY THE FORMATIVE AND SUMMATIVE EVALUATION AND CONTINUOUS & COPRAHENSIVE EVALUATION ? TEST NO. 3 DATE NO. 25/07/2016 QUESTION:- WHAT DO YOU MEAN BY MICRO-TEACHING ? WRITE ITS IMPORTANCE IN TEACHING . BY EXPLAINING DIFFERENT TEACHING SKILLS. PREPARE ONE MICRO LESSION PLAN IN ANY OF THE SKILL. TEST NO. 4 DATE NO. 01/08/2016 QUESTION:- PHYSICAL.SCIENCE /BIOLOGICAL.SCIENCE
WHAT DO YOU MEAN BY ICT EXPERIENCES IN TEACHING SCIENCE ? HOW CAN A TEACHER USE COMMUNITY RESOURCES FOR LEARNIG SCIENCE ? MATHMATICS EXPLAIN THE CHARACTERISTICS & IMPORTANCE OF MATHMATICS TEXT BOOK ? WHAT IS UTILITY OF TEXT BOOK FOR A MATHMATICAS TEACHER . HINDI WHAT DO YOU SAY MEANING , DEFINATION , AIMS QUALITY AND IMPORTANCE OF DRAMA? SOCIAL SCIENCE EXPLAIN IN DETAL MEANING, DEFINATION& PERIODP OF HISTORY. TEST NO. 5 DATE NO. 08/08/2016 QUESTION:- EXPLIN THE CHARACTERISTICS OF TEST WRITE THE GENRAL PRINCIPLES OF TEST CONSTRUCTION . WRITE & EXPLAIN ALL STEPS ? TEST NO. 6 DATE NO. 22/08/2016	QUESTION:- WHAT IS CREATIVITY ? EXPLAIN IN BRIEF THE TEST OF CREATIVITY TEST NO. 8 DATE NO. 24/10/2016 QUESTION:- EXPLAIN IN DETAIL ASSESSMENT TOOLS ? WITH DIAGRAM . WHAT IS PORTFOLIO . STEPS IN DESINING PORTFOLIO & IMPORTANCE OF PORTFOLIO . TEST NO. 9 DATE NO. 09/10/2016 QUESTION:- WHAT DO YOU MEAN BY TEST ? EXPLAIN BRIEFLY TYPES OF TEST? FIRST SEMESTER TEST NO. 1 QUESTION – DESCRIBING THE NATURE OF EDUCATION , EXPLAIN IN DETAIL THE AIMS OF EDUCATION TEST NO. 2 QUESTION –	EXPLAIN THE CONCEPT OF EXCEPTIONAL CHILDREN , HOW CAN YOU DIFFRENTIATE BACKWARD & GIFTED CHILDREN? TEST NO. 3 HINDI BIASA ARJAN AUR ADHIIGAM KA DARSANIK ,SAMAJIK AUR ,MANOVAIGYANIK ADHAR PAR PRAKASH DALIYE ? BIOLOGICAL SCIENCE QUESTION – EXPLAIN THE NATURE OF BIOLOGY CONSIDERING IT AS A SUBJECT INDEPENDENT OF HUMAN APPLICATION .EXPLAIN HOW SCIENCE CAN BE USED AS A TOUR TO PROMOTE FAIRNESS (TWENTIELTH). PHYSICAL SCIENCE QUESTION – WHAT DO YOU MEAN BY HABBIT ? WRITE ITS CHARACTRISTICS HMUNING LEARNER IN TEACHING LEARNING PROCESS HOW CAN YOU ENCOUREG LEARNER TO RAISE QUESTION ?
SOCIAL SCIENCE QUESTION – WHAT DO YOL MEAN BY NATURAL SCIENCE . DIFFERENTIATE BEST NATURAL AND SOCIAL SCIENCE . TEST NO. 4 QUESTION – WRITE ABOUT THE CONTRIBUTE OF THE FOLLOWING EDUCATIONALIST IN THE FIELD OF EDUCATION . TEST NO. 5 QUESTION – WHAT IS LEARNING ? EXPLAIN JEAN PIYAGET THEORY OF COGNITIVE DEVELOPMENT IN DETAIL . ITS BASIC CONCEPT & ITS STAGES . SESSION 2017 2ND SEM TEST NO. 1	QUESTION – DESCRIBE DIVERSITY IN INDIAN SOCIALLY . EXPLIN BRIEFLY ABOT DIVERSITY WITH SEQUENCE. TEST NO. 2 QUESTION – WHAT IS KNOWLEDGE ? EXPLAIN NATURE OF KNOWLEDGE IN BRIEFLY EXPLAIN DIFFERENT TYPES OF KNOWLEDGE TEST NO. 3 QUESTION – EXPLIN THE MEANING OF VISUAL AIDS & TECHNIQUES OF 2D ART TEST NO. 4 DATE – 20-02-17 QUESTION – WHAT DO YOU MEAN BY VALUE EDUCATION ? EXPLAIN THE NATURE OF VALUE EDUCATION WHY IS ESSENTIAL TO MODERN VALUE EDUCATION ? AS THE PART OF CURRICULAR. TEST NO. 5 DATE – 27-02-17 QUESTION –	EXPLAIN THE MEANING OF CURRICULAR EXPLAIN THE PRINCIPLES OF CURRICULAR WRITE IN DETAIL ABOUT THE MERITS & DEMERITS OF CURRENT CURRICULAR. TEST NO. 6 QUESTION – EDUCATIONAL TECNOLOGY WHAT DON YOU MEAN COMMUNICATION TECNIQUE ? DESCRIBE THE DETAIL OF NATUR & PROCESS OF COMMUNICATION. ME EXPLAIN THE DEFFINATION OF MEASUREMENT & EVALUATION ? CLARITY THE DIFFERENT BETWEEN MEASURMENT & EVALUATION & WRITE ITS IMPORTANCE . 4TH SEM TEST NO. 1 QUESTION – WHAT DO YOU MEAN BY GENDERED BIAS WRITE THE SOLUTE OF GENDERED BIAS EXPLAINING ITS RESOURCES ? TEST NO. 2 QUESTION – HINDI BIASA KI PRAKRITI VISESTA ,AOSAKTA AUR MAHAITWAY KO VISTARPURVAK VARNAN KIJIYE?

Dr. Madhulika Shivastava
2015-2016
M.Sc. I Sem (Chemistry)
Unit II - Q1. What is Trans Effect? Describe it with theory and one example. (20)
Unit - III - Write a short note on silicates. (20)
M.Sc. II Sem
Unit - I - Q1. What are inert and labile complexes? Describe stability and inertness according to VSEPR and CFT. (20)
2016-2017
M.Sc. I Sem (Chemistry)
Unit II - Q1. Describe formation of σ bond between metal and ligand according to MOT with suitable example. (20)
Unit - III - Q1. Illustrate stepwise formation constant. What are the factors which affect the stability constant? (20)
M.Sc. II Sem
Unit - I - Describe substitution reactions in Octahedral complexes. (20)

2017-2018
M.Sc. I Sem (Chemistry)
Unit - II - Q1. Write a short note on (a) Dioxogen complexes (20)
Unit - III - Q1. Describe substitution reactions in square planar complexes with suitable example. (20)
M.Sc. II Sem
Unit - I - Describe substitution reactions in square planar complexes with suitable example. (20)
2018-2019
M.Sc. I Sem (Chemistry)
Unit - II - Q1. Describe bonding in transition metal carbonyls. (20)
Unit - III - What are Brønsted and Lewis acids? Explain with one example of Mo. (20)
M.Sc. II Sem
Unit - I - Describe mechanism of one electron transfer reaction and

outer sphere type reaction. (20)
2019-2020
M.Sc. I Sem (Chemistry)
Unit - II - Q1. Write a short note on Tropylium cation. (20)
Unit - III - Q1. What are thermodynamic stability and kinetic stability? Describe factors which affect the stability. (20)
Unit - IV - Q1. Write preparation, properties and structure of Borane and Phosphine. (20)
M.Sc. II Sem
Unit - I - Q1. Write a short note on Trans effect. (20)
Unit - III - Q1. Write preparation, properties and structure of benzyl complexes. (20)
Dr. Madhulika Shivastava
H.O.D. Chemistry Dept.
BMM, Bilai

2015-16
M.Sc. - I
UNIT - I
Paper CH-3
Time: 40 min
Attempt any one question:-
Q-1) Explain the postulates of Quantum Mechanics.
Q-2) Discuss the solutions of Schrödinger equation for a particle in a 1-D box, Harmonic Oscillator, Rigid Rotator, H-atom.
Dr. Basma Pal Mozumdar
AP, Chem. Dept.
BMM, Bilai

2016-18
M.Sc. - I
Paper No. CH-3
UNIT - I
Time: 40 min
Attempt any one question:-
Q-1. Derive Maxwell's Thermodynamic Relations.
Q-2. Define Classical Potential. How does it vary with Temperature & Pressure?
Dr. Basma Pal Mozumdar
AP, Chem. Dept.
BMM, Bilai

2016-17
M.Sc. - I
Paper No. CH-3
UNIT - III
Time: 40 min
Attempt any one question:-
Q-1. Enumerate DHO eqn & its limitations.
Q-2. Explain the Thermodynamics of Electrified Interface.
Dr. Basma Pal Mozumdar
AP, Chem. Dept.
BMM, Bilai

2016-17
M.Sc. - I Sem
Paper No. CH-3
UNIT - II
Time: 40 min
Attempt any one question:-
Q-1. Explain the collision theory of reaction rates.
Q-2. Explain the dynamics of H-Br or H-Cl reaction.
Dr. Basma Pal Mozumdar
AP (Chem. Dept.)
BMM, Bilai

2017-18
M.Sc. II Sem
Paper No. CH-9
UNIT - I
Time: 40 min
Attempt any one question:-
Q-1. Explain Ladder Operators.
Q-2. Apply the variation method to He atom.
Dr. Basma Pal Mozumdar
AP, BMM, Chem. Dept.

2017-18
M.Sc. I Sem
Paper No. CH-3
UNIT - I
Time: 40 min
Attempt any one question:-
Q-1. Explain certain mathematical concepts that are applied in Quantum Chemistry.
Dr. Basma Pal Mozumdar
AP, Chem.
BMM, Bilai

2017-18
M.Sc. II Sem
Paper No. CH-9
UNIT - I
Time: 40 min
Attempt any one question:-
Q-1. Explain Bose-Einstein Statistics.
Q-2. Explain the Debye Model of heat capacity of solids.
Dr. Basma Pal Mozumdar
AP (Chem. Dept.)
BMM, Bilai

2018-19
M.Sc. I Sem
Paper No. CH-3
UNIT - II
Time: 40 min
Attempt any one question:-
Q-1. Explain viscosity & density coefficient of electrolyte with an ex.
Q-2. What is Nernst equation? Enumerate its importance.
Dr. Basma Pal Mozumdar
AP, Chem, BMM, Bilai

2018-19
M.Sc. - I Sem
Paper No. CH-3
UNIT - II
Time: 40 min
Attempt any one question:-
Q-1. Describe the different methods of determining rate laws.
Q-2. What do you mean by kinetic salt effect? Explain Brønsted Bjerrum eqn.
Dr. Basma Pal Mozumdar
AP, Chem.
BMM, Bilai

2019-20
M.Sc. I Sem
Paper No. CH-3
UNIT - I
Time: 40 min
Attempt any one question:-
Q-1. Explain the coordinate transformation from Cartesian to spherical polar coordinates.
Q-2. Write down the different postulates of Quantum Mechanics.
Dr. Basma Pal Mozumdar
AP, Chem,
BMM, Bilai

2019-20
M.Sc. - I Sem
Paper No. CH-3
UNIT - I
Time: 40 min
Attempt any one question:-
Q-1. What is fugacity? How do you determine it?
Q-2. How does Classical Potential vary with Temp. & Pres.?
Dr. Basma Pal Mozumdar
AP, Chem.
BMM, Bilai

2015-16
M.Sc. - II
Paper No. CH-9
UNIT - I
Time: 40 min
Attempt any one question:-
Q-1. Explain perturbation theory to He atom.
Dr. Basma Pal Mozumdar
AP, Chem.
BMM, Bilai

2015-16
M.Sc. - II
UNIT - I
Paper No. CH-9
Time: 40 min
Attempt any one question:-
Q-1. Explain the Debye & Eyring model of heat capacity of solids.
Dr. Basma Pal Mozumdar
AP, Chem.
BMM, Bilai

2016-17
M.Sc. - II
UNIT - III
Paper No. CH-9
Time - 40 min MM - 40

Q-1. Explain the structure of electrophilic intermediates.

Dr. Bara Pal Mozumdar
AP, Chem.
BMM, BLIai

Kalyan P.G. College, Bhilai Nagar
National level Workshop on Nano-Chemistry
2016-17
M.Sc. - II Sem.
Paper No. CH-9
UNIT - IV
MM - 20
Time - 40 min

Q-1. Explain the reaction kinetics of unimolecular reactions.

Dr. Bara Pal Mozumdar
AP, Chem.
BMM, BLIai

2017-18
M.Sc. - II Sem.
Paper No. CH-3
UNIT - I
MM - 20
Time - 40 min

Q-1. Explain certain mathematical concepts that are applied in Quantum Chemistry.

Dr. Bara Pal Mozumdar
AP, Chem.
BMM, BLIai

2017-18
M.Sc. - I
Paper No. CH-3
UNIT - II
MM - 20
Time - 40 min

Q-1. How does Chemical potential vary for ideal gases, pure solids, liquids & a mixture of ideal gases?

Dr. Bara Pal Mozumdar
AP, Chem.
BMM, BLIai

2018-19
M.Sc. - II
Paper No. CH-9
UNIT - II
Time - 40 min MM - 20

Q-1. Describe Butler-Volmer eqⁿ & Make a Tafel Plot.

Dr. Bara Pal Mozumdar
AP, Chem.
BMM, BLIai

National level Workshop on Nano-Chemistry
2018-19
M.Sc. - II
Paper No. CH-9
UNIT - IV
Time - 40 min MM - 20

Q-1. Describe RRK & RRKM theories of Unimolecular Reactions.

Dr. Bara Pal Mozumdar
AP, Chem.
BMM, BLIai

2018-20
M.Sc. - II
Paper No. CH-9
UNIT - I
Time - 40 min MM - 20

Q-1. Explain the Angular Momentum Operators in Quantum Mechanics.

Dr. Bara Pal Mozumdar
AP, Chem.
BMM, BLIai

2018-20
M.Sc. - II Sem
Paper No. CH-9
UNIT - I
Time - 40 min MM - 20

Q-1. Explain the Partition function for Rotational dynamics.

Dr. Bara Pal Mozumdar
AP, Chem.
BMM, BLIai

National level Workshop on Nano-Chemistry
2015-16
M.Sc. - III Sem.
Paper No. CH-15
UNIT - III
MM - 20
Time - 40 min

Q-1. Explain the Heterozygosity of Clotting & Rhesus Defects.

Ms. Bara Mozumdar
AP, Statist-28
BMM, BLIai

2015-16
M.Sc. - III Sem.
Paper No. CH-15
UNIT - IV
MM - 20
Time - 40 min

Q-1. Explain the different kinds of polymers & explain any one method of molecular mass determination.

Ms. Bara Mozumdar
AP (CH-28)
BMM, BLIai

2016-17
M.Sc. - III Sem.
Paper No. CH-15
UNIT - I
MM - 20
Time - 40 min

Q-1. What do you mean by acidity & basicity for a given substance? Explain its acidity function.

Ms. Bara Mozumdar
AP (ST-28)
BMM, BLIai

2016-17
M.Sc. - III Sem.
Paper CH-15
UNIT - II
MM - 20
Time - 40 min

Q-1. What is CMC? Evaluate Siple eqⁿ.

Ms. Bara Mozumdar
AP, (ST-28)
BMM, BLIai

2017-18
M.Sc. - III Sem.
Paper No. CH-15
UNIT - III
Time - 40 min MM - 20

Q-1. What are Crystal Defects? Describe the Perfect & Imperfect crystals.

Ms. Bara Mozumdar
AP (CH-28)
BMM, BLIai

2017-18
M.Sc. - III Sem.
Paper No. CH-15
UNIT - IV
MM - 20
Time - 40 min

Q-1. Explain the kinetics & mechanism of chain polymerization.

Ms. Bara Mozumdar
AP (CH-28)
BMM, BLIai

2018-19
M.Sc. - III Sem.
Paper No. CH-15
UNIT - I
MM - 20
Time - 40 min

Q-1. Explain the alpha effect & nucleofugality in detail.

Dr. Ms. Bara Pal Mozumdar
AP (Chem)
BMM, BLIai

2018-19
M.Sc. - III Sem.
Paper CH-15
UNIT - II
Time - 40 min MM - 20

Q-1. Explain the kinetics of micellar Catalysis & derive as well.

Dr. Bara Pal Mozumdar
AP (CH-28)
BMM, BLIai

2013-20
M.Sc. III Sem
Paper No. CH-15
UNIT- II
M.H.-20 Time-40 min.

Q-1. Explain the electronic properties & band theory of Semiconductors.

Dr. Basu Pal Nagendras
AP (St-28)
BNM, Bilal

2013-20
M.Sc. III Sem
Paper No. CH-15
UNIT- IV
M.H.-20 Time-40 min.

Q-1. Explain the Ornstein-Zernike or Sedimentation method of determination of molecular mass of polymers.

Dr. Basu Pal Nagendras
AP (St-28)
BNM, Bilal

2015-16
M.Sc. IV Sem
Paper No. CH-21
UNIT- III
M.H.-20 Time-40 min.

Q-1. Explain the principle of molecular association & organisation.

Mr. Basu Nagendras
AP (St-28)
BNM, Bilal

2015-16
M.Sc. IV Sem
Paper No. CH-21
UNIT- IV
M.H.-20 Time-40 min.

Q-1. Explain the application of X-rays in Chemical Investigations with ex.

Mr. Basu Nagendras
AP (St-28)
BNM, Bilal

2016-17
M.Sc. IV Sem
Paper No. CH-21
UNIT- II
M.H.-20 Time-40 min.

Q-1. What do you mean by forces & fluxes with special reference to Enzyme's self property, learn?

Mr. Basu Nagendras
AP (Chem)
BNM, Bilal

2016-17
M.Sc. IV Sem
Paper No. CH-21
UNIT- II
M.H.-20 Time-40 min.

Q-1. How do you characterize nanomaterials? Explain any one of them.

Mr. Basu Nagendras
AP (Chem)
BNM, Bilal

2017-18
M.Sc. IV Sem
Paper No. CH-21
UNIT- III
M.H.-20 Time-40 min.

Q-1. Explain Biological macromolecules with special reference to Copolymers & Cyclic ethers.

Mr. Basu Nagendras
AP (Chem)
BNM, Bilal

2017-18
M.Sc. IV Sem
Paper No. CH-21
UNIT- IV
M.H.-20 Time-40 min.

Q-1. Describe the liquid drop model of Nuclear fission.

Mr. Basu Nagendras
AP (St-28)
BNM, Bilal

2018-19
M.Sc. IV Sem
Paper No. CH-21
UNIT- II
M.H.-20 Time-40 min.

Q-1. Explain Entropy Production in Biological systems in particular.

Dr. Basu Pal Nagendras
AP (Chem)
BNM, Bilal

2018-19
M.Sc. IV Sem
Paper No. CH-21
UNIT- II
M.H.-20 Time-40 min.

Q-1. Enumerate the preparation & properties of nanoparticles.

Dr. Basu Pal Nagendras
BNM, Bilal
AP Chem (St-28)

2019-20
M.Sc. IV Sem
Paper No. CH-21
UNIT- III
M.H.-20 Time-40 min.

Q-1. Explain Supramolecular reactivity & catalysis.

Dr. Basu Pal Nagendras
AP (St-28)
BNM, Bilal

2019-20
M.Sc. IV Sem
Paper No. CH-21
UNIT- IV
M.H.-20 Time-40 min.

Q-1. Explain the Nuclear Shell Model & also name no. Write its importance.

Dr. Basu Pal Nagendras
AP (St-28) Chem.
BNM, Bilal

Name of Faculty: Dr. Anupreet Kaur Bhatia
Department: Chemistry
Session: July - Dec, 2018
Class: MSc-3rd Semester
Paper No: CH-01
Paper Title: Group theory & Chemistry of Metal Complexes

Unit-3 (16)
Q-1. Explain the Classification, structure & properties of ligands in detail. (10 marks)

Unit-4:
Q-2. Write a note on:
(1) Boranes
(2) Boranes

Name of Faculty: Dr. Anupreet Kaur Bhatia
Department: Chemistry
Session: July - Dec, 2018
Class: MSc-3rd Semester
Paper No: CH-14

Unit-3 (20 marks)
Q-1. (a) Explain the structure & function of Haemoglobin.
(b) Write a note on Cytochrome.

Unit-2 (20 marks)
Q-2. Write a note on:
(a) Carboxypeptidase
(b) Molecular recognition.

Paper No - CH-16
Unit-1 (20 marks)
Q-1. Write a note on:
(a) Different techniques of sampling of solid & liquid.
(b) Types of Error.

Unit-2 (20 marks)
Q-2. Explain the methods of extraction & its application in detail.

Name of Faculty: Dr. Anupreet Kaur Bhatia
Department: Chemistry
Session: Jan - June, 2019
Class: MSc-3rd Semester
Paper No: CH-10

Unit-1 (20 marks)
Q-1. Different types of electronic transition of IR - Visible Spectroscopy.
(b) Frank-Condon principle

Unit-2 (20 marks)
Q-2. Explain the simple harmonic oscillator in vibrational spectroscopy.

Class: MSc-3rd Semester
Paper No: CH-20

Unit-3 (20 marks)
Q-1. Explain the concepts of lead compound & lead modification.

Unit-4 (20 marks)
Q-2. Explain the synthesis & properties of Paracetamol & Penicillin.

Paper No. CH-22
Unit-4 (B) (20 marks)
Q-1. Write a note on:
(a) Blood urea Nitrogen.
(b) Creatinine.

Name of Faculty: Dr. Anupreet Kaur Bhatia
Department: Chemistry
Session: July - Dec, 2018
Class: MSc-3rd Semester
Paper No: CH-14

Unit-1 (20 marks)
Q-1. Write a note on synthesis of ATP from ADP.

Unit-2 (20 marks)
Q-2. Explain the structure & function of cytochrome P-450 in detail.

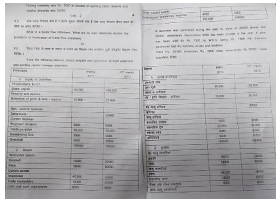
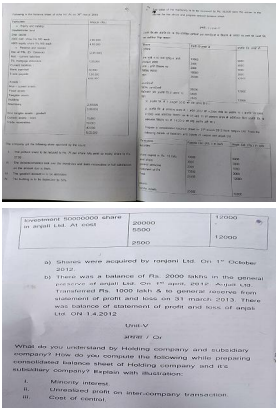
Unit-3 (20 marks)
Q-3. Explain the structure & biological function of Vitamin B12 in detail.

Unit-4 (20 marks)
Q-4. Different types of forces in biopolymer interaction.

MSCH SEM 2016G-17 PAPER NALCH-4 TITLORY AND APPLICATIONS OF SPECTROSCOPY-I UNIT-I EMITTING PRINCIPLES 1. Explain the mechanism of electromagnetic radiation with number (a) Explain natural fluorescence and natural fluorescence UNIT-II MICROWAVE SPECTROSCOPY 1. Describe effect of isotopic substitution on diatomic and polyatomic molecules. UNIT-III SCATTERING SPECTROSCOPY 1. Principle, instrumentation and application of Raman spectroscopy UNIT-IV RAMAN SPECTROSCOPY 1. Principle, theory and instrumentation of Resonance Raman spectroscopy MSCH SEM 2016G-17 PAPER NALCH-4 TITLORY AND APPLICATIONS OF SPECTROSCOPY-I UNIT-I EMITTING PRINCIPLES 1. Explain the mechanism of electromagnetic radiation with number (a) Explain natural fluorescence and natural fluorescence UNIT-II MICROWAVE SPECTROSCOPY 1. Describe effect of isotopic substitution on diatomic and polyatomic molecules. UNIT-III SCATTERING SPECTROSCOPY 1. Principle, instrumentation and application of Raman spectroscopy UNIT-IV RAMAN SPECTROSCOPY 1. Principle, theory and instrumentation of Resonance Raman spectroscopy	MSCH SEM 2016G-17 PAPER NALCH-4 TITLORY AND APPLICATIONS OF SPECTROSCOPY-I UNIT-I EMITTING PRINCIPLES 1. Explain the mechanism of electromagnetic radiation with number (a) Explain natural fluorescence and natural fluorescence UNIT-II MICROWAVE SPECTROSCOPY 1. Describe effect of isotopic substitution on diatomic and polyatomic molecules. UNIT-III SCATTERING SPECTROSCOPY 1. Principle, instrumentation and application of Raman spectroscopy UNIT-IV RAMAN SPECTROSCOPY 1. Principle, theory and instrumentation of Resonance Raman spectroscopy
---	--

MSCH SEM 2016G-17 PAPER NALCH-4 TITLORY AND APPLICATIONS OF SPECTROSCOPY-I UNIT-I EMITTING PRINCIPLES 1. Explain the mechanism of electromagnetic radiation with number (a) Explain natural fluorescence and natural fluorescence UNIT-II MICROWAVE SPECTROSCOPY 1. Describe effect of isotopic substitution on diatomic and polyatomic molecules. UNIT-III SCATTERING SPECTROSCOPY 1. Principle, instrumentation and application of Raman spectroscopy UNIT-IV RAMAN SPECTROSCOPY 1. Principle, theory and instrumentation of Resonance Raman spectroscopy	MSCH SEM 2016G-17 PAPER NALCH-4 TITLORY AND APPLICATIONS OF SPECTROSCOPY-I UNIT-I EMITTING PRINCIPLES 1. Explain the mechanism of electromagnetic radiation with number (a) Explain natural fluorescence and natural fluorescence UNIT-II MICROWAVE SPECTROSCOPY 1. Describe effect of isotopic substitution on diatomic and polyatomic molecules. UNIT-III SCATTERING SPECTROSCOPY 1. Principle, instrumentation and application of Raman spectroscopy UNIT-IV RAMAN SPECTROSCOPY 1. Principle, theory and instrumentation of Resonance Raman spectroscopy
--	--

MSCH SEM 2016G-17 PAPER NALCH-4 TITLORY AND APPLICATIONS OF SPECTROSCOPY-I UNIT-I EMITTING PRINCIPLES 1. Explain the mechanism of electromagnetic radiation with number (a) Explain natural fluorescence and natural fluorescence UNIT-II MICROWAVE SPECTROSCOPY 1. Describe effect of isotopic substitution on diatomic and polyatomic molecules. UNIT-III SCATTERING SPECTROSCOPY 1. Principle, instrumentation and application of Raman spectroscopy UNIT-IV RAMAN SPECTROSCOPY 1. Principle, theory and instrumentation of Resonance Raman spectroscopy	MSCH SEM 2016G-17 PAPER NALCH-4 TITLORY AND APPLICATIONS OF SPECTROSCOPY-I UNIT-I EMITTING PRINCIPLES 1. Explain the mechanism of electromagnetic radiation with number (a) Explain natural fluorescence and natural fluorescence UNIT-II MICROWAVE SPECTROSCOPY 1. Describe effect of isotopic substitution on diatomic and polyatomic molecules. UNIT-III SCATTERING SPECTROSCOPY 1. Principle, instrumentation and application of Raman spectroscopy UNIT-IV RAMAN SPECTROSCOPY 1. Principle, theory and instrumentation of Resonance Raman spectroscopy
--	--



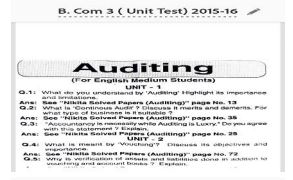
B. Com 3 (Unit Test) 2015-16

प्रबंधकीय लेखांकन (Management Accounting)

(हिन्दी एवं अंग्रेजी दोनों माध्यम के विद्यार्थियों के लिए)

UNIT - 1

- Q.1 : प्रबंधकीय लेखांकन से आप क्या समझते हैं ? इसके दायरे एवं तकनीकों की विवेचना कीजिए। (What is meant by Management Accounting? Discuss its main tools and techniques.)
- Q.2 : प्रबंधकीय लेखांकन के दायरे का उदाहरण दें। विवेकात्मक लेखांकन से यह किस प्रकार भिन्न है ? प्रबंधकीय लेखांकन में प्रमुख तथ्यों का वर्णन कीजिए। (What do you understand by Management Accounting? How does it differ from Financial Accounting? Discuss main function of Management Accounting.)
- Q.3 : प्रबंध लेखांकन की विधा वर्गीकृत करें। उदाहरण के सहित। (What are the different techniques of Management Accounting? Explain in brief.)



B. Com 3 (Unit Test) 2015-16

आयकर (Income Tax)

(हिन्दी एवं अंग्रेजी दोनों माध्यम के विद्यार्थियों के लिए)

UNIT - 1

- Q.1 : आय को वित्तीय दृष्टिकोण से क्या समझते हैं ? आय कर क्या है ? आय कर का उद्देश्य क्या है ? (What is meant by income tax? Explain the importance of income tax.)
- Q.2 : आय कर के दायरे का उदाहरण दें। (What do you understand by income tax? Explain in brief.)
- Q.3 : आय कर के दायरे का उदाहरण दें। (What do you understand by income tax? Explain in brief.)
- Q.4 : आय कर के दायरे का उदाहरण दें। (What do you understand by income tax? Explain in brief.)

B. Com 3 (Unit Test) 2015-16

अप्रत्यक्ष कर (Indirect - Tax)

(हिन्दी एवं अंग्रेजी दोनों माध्यम के विद्यार्थियों के लिए)

UNIT - 1

- Q.1 : अप्रत्यक्ष कर क्या है ? CENVAT क्रेडिट को समझाएं। (What is indirect tax? Explain CENVAT credit.)
- Q.2 : अप्रत्यक्ष कर के प्रकार बताएं। (What are the types of indirect tax?)
- Q.3 : अप्रत्यक्ष कर के प्रकार बताएं। (What are the types of indirect tax?)

UNIT - 2

- Q.4 : अप्रत्यक्ष कर के प्रकार बताएं। (What are the types of indirect tax?)
- Q.5 : अप्रत्यक्ष कर के प्रकार बताएं। (What are the types of indirect tax?)

B. Com 3 (Unit Test) 2015-16

वित्तीय बाजार संचालन (Financial Market Operation)

(हिन्दी एवं अंग्रेजी दोनों माध्यम के विद्यार्थियों के लिए)

Unit - 1

- Q.1 : वित्तीय बाजार संचालन क्या है ? (What is financial market operation?)
- Q.2 : वित्तीय बाजार संचालन के प्रकार बताएं। (What are the types of financial market operation?)
- Q.3 : वित्तीय बाजार संचालन के प्रकार बताएं। (What are the types of financial market operation?)

UNIT - 2

- Q.4 : वित्तीय बाजार संचालन के प्रकार बताएं। (What are the types of financial market operation?)
- Q.5 : वित्तीय बाजार संचालन के प्रकार बताएं। (What are the types of financial market operation?)

B. Com 3 (Unit Test) 2015-16

वित्तीय प्रबंध (Financial Management)

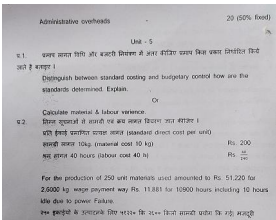
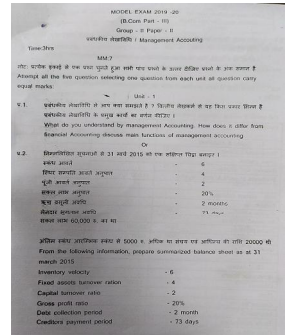
(हिन्दी एवं अंग्रेजी दोनों माध्यम के विद्यार्थियों के लिए)

UNIT - 1

- Q.1 : वित्तीय प्रबंध क्या है ? (What is financial management?)
- Q.2 : वित्तीय प्रबंध के प्रकार बताएं। (What are the types of financial management?)
- Q.3 : वित्तीय प्रबंध के प्रकार बताएं। (What are the types of financial management?)

UNIT - 2

- Q.4 : वित्तीय प्रबंध के प्रकार बताएं। (What are the types of financial management?)
- Q.5 : वित्तीय प्रबंध के प्रकार बताएं। (What are the types of financial management?)



B. Com 3 (Unit Test) 2015-16

वित्तीय बाजार संचालन (Financial Market Operation)

(हिन्दी एवं अंग्रेजी दोनों माध्यम के विद्यार्थियों के लिए)

Unit - 1

- Q.1 : वित्तीय बाजार संचालन क्या है ? (What is financial market operation?)
- Q.2 : वित्तीय बाजार संचालन के प्रकार बताएं। (What are the types of financial market operation?)
- Q.3 : वित्तीय बाजार संचालन के प्रकार बताएं। (What are the types of financial market operation?)

UNIT - 2

- Q.4 : वित्तीय बाजार संचालन के प्रकार बताएं। (What are the types of financial market operation?)
- Q.5 : वित्तीय बाजार संचालन के प्रकार बताएं। (What are the types of financial market operation?)

B. Com 3 (Unit Test) 2015-16

वित्तीय प्रबंध (Financial Management)

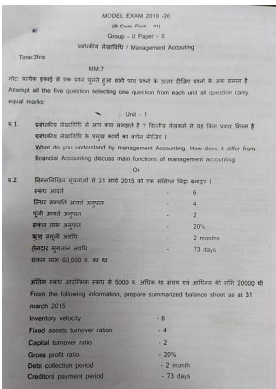
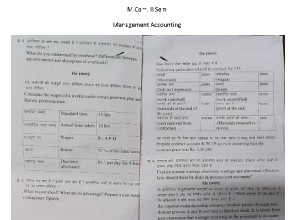
(हिन्दी एवं अंग्रेजी दोनों माध्यम के विद्यार्थियों के लिए)

UNIT - 1

- Q.1 : वित्तीय प्रबंध क्या है ? (What is financial management?)
- Q.2 : वित्तीय प्रबंध के प्रकार बताएं। (What are the types of financial management?)
- Q.3 : वित्तीय प्रबंध के प्रकार बताएं। (What are the types of financial management?)

UNIT - 2

- Q.4 : वित्तीय प्रबंध के प्रकार बताएं। (What are the types of financial management?)
- Q.5 : वित्तीय प्रबंध के प्रकार बताएं। (What are the types of financial management?)



UNIT TEST—

DATE: / /

Q1. Show that the set $S = \{a, b\}$ of all rational numbers satisfies the above 2 properties of an equivalence relation group with operation $\times$ defined by rule $a \times b = a + b - ab$.

ANSWER: |

Q2. Find the asymptotes of the curve: $x^2 + xy - y^2 - x^2y^2 + y^2 - y^3 - 1 = 0$

ANS: $x^2 + xy - y^2 - x^2y^2 + y^2 - y^3 - 1 = 0$ is asymptotic to the lines $y = 1$ and $y = -1$.

Q3. Find the directional derivative of z at a point $(1, 2)$ in the direction of the vector $y + xz$. The value of z at $(1, 2)$ is 3.

ANS: The directional derivative of z at a point $(1, 2)$ in the direction of the vector $y + xz$ is 3.

LIMIT TEST—

UNIT TEST - 4

8. S.C. (2004) : C.S. : REAR

Ques

Q. Prove that $\frac{1}{1+x} = 1 - x + x^2 - x^3 + \dots$ for $|x| < 1$ where x is a factor of real number.

Proof

Let $y = 1 - x + x^2 - x^3 + \dots$

Multiplying both sides by $(1+x)$

$(1+x)y = (1+x)(1 - x + x^2 - x^3 + \dots)$

$(1+x)y = 1 - x + x^2 - x^3 + \dots + 1 - x + x^2 - x^3 + \dots$

$(1+x)y = 2 - 2x + 2x^2 - 2x^3 + \dots$

$(1+x)y = 2(1 - x + x^2 - x^3 + \dots)$

$(1+x)y = 2y$

$y = 1$

$\therefore \frac{1}{1+x} = 1 - x + x^2 - x^3 + \dots$

[illegible]

EXERCISE 1

TEST 1 - 1

Paper second (Differentiation + Integration)

Q1) Find all asymptotes of the curve: $x^2 + 2x^2y - 2y^2 - 2xy + 3y + x + 1 = 0$

Q2) Evaluate $\int \frac{2x+5}{\sqrt{x^2+2x+1}}$

UNIT TEST - 1

Q. 1. f is bounded & integrable in every interval. A function satisfying as the property, then $\int_a^b f(x) dx = f(\xi)(b-a)$ where ξ is any number.

UNIT TEST - 2

Q. Prove that the correlation coefficient of correlation lies between -1 & 1.

Q. Find the mean deviation from the arithmetic mean for the following frequency distribution.

Class	0-6	6-12	12-18	18-24	24-30
	8	10	12	9	5

UNIT TEST - 3

Q. A square of side 10 cm is divided into four smaller squares by a line parallel to one of its sides. Find the area of the largest square.

UNIT TEST - 4

UNIT TEST - 5

Q. Simplify - row office

2	3	4	1	-1	0	1
1	5	6	2	0	1	2
			1	-1	1	7

UNIT TEST - 6

Q. Find out the value with the help of log table.

Q. The difference between compound interest and simple interest on a certain sum of money for 2 years @ 10% p.a. is Rs. 40. Find the sum.

UNIT TEST - 2

Q. Solve the following problem by graphical method.

Maximize $Z = x + 1.5y$

such that $2x + 3y \leq 6$

and $x + y \leq 4$

UNIT TEST - 4

Q. Solve the following transportation problem by least cost method.

	M ₁	M ₂	M ₃	Available
W ₁	16	19	12	16
W ₂	22	13	19	16
W ₃	14	28	8	12
Demand	10	15	17	42

UNIT TEST - 5

Q. (a) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises $P \vee Q$, $Q \rightarrow R$, $P \rightarrow M$ and $\neg M$.

(b) Define tautology and show that:

(c) Define the following:

(i) Quantifiers

(ii) Monoid

(iii) Symbolic representation

(iv) Formal logic

UNIT TEST - 6

Q. (a) Define semigroup and let $(S, *)$ be a semigroup and $g: S \rightarrow T$ and $h: T \rightarrow V$ be semigroup homomorphism, then prove that $h \circ g: S \rightarrow V$ is a semigroup homomorphism from $(S, *)$ to $(V, \circ)$.

(b) Let $(S, *)$ be a given semigroup, then show that there exists a homomorphism $g: S \rightarrow S^*$ where $(S^*, \circ)$ is a semigroup of functions from S to S under operation of (left) composition.

(c) Define the following:

(i) Homomorphism of semigroup and monoids

(ii) Congruence relation and quotient semigroup.

UNIT TEST - 7

Q. (a) Explain distributive lattice and prove that in a distributive lattice, if an element has a complement, then this complement is unique.

(b) Find the value of:

(c) Write a short note on lattice and sub-lattice.

UNIT TEST - 8

Q. (a) Write the following Boolean expression in an equivalent sum of products canonical form in three variables x_1, x_2 and x_3 :

(b) Explain Karnaugh map method for one, two and three variables function.

(c) Define gate and draw the logic circuit with inputs c, d and output f where:

UNIT TEST - 1

Q. (a) Write a short note on Notions of Polish notation and Polish notation.

(b) Define grammar and construct a grammar for the language:

(c) Define the following:

(i) Context Free Grammar

(ii) Reverse Polish Notation

(iii) Regular Sets

(iv) Regular Expressions

UNIT TEST - 4

Q. (a) Show that $(C, (G, D), p)$ is a metric space.

(b) To state and prove Hurwitz's theorem for the space of analytic functions.

(c) Show that a set $F \subset C(\Omega, \mathbb{C})$ is normal if and only if the following two conditions are satisfied:

(i) For each $z \in \Omega$, $\{f(z) : f \in F\}$ has compact closure in $\mathbb{C}$.

(ii) F is equicontinuous at each point of Ω .

UNIT TEST - 5

Q. (a) Evaluate:

(b) Evaluate:

(c) Show by contour integration:

UNIT TEST - 6

Q. (a) Prove that $f(z)$ be analytic within and on a closed contour C , and let a be any point within C . Then show that:

(b) To state and prove Poisson's integral formula for a circle.

(c) If the function $f(z)$ is analytic and c -valued in $|z| < R$, prove that when $0 < r < R$:

UNIT TEST - 7

Q. (a) Prove that all metric spaces are T_4 .

(b) Prove that every regular second countable space is normal.

(c) Let X be a topological space and suppose $\{U_i : i \in \mathbb{Q}\}$ is a family of sets in X such that:

UNIT TEST - 8

Q. (a) Find the fundamental solution of Laplace equation $\Delta u = 0$.

(b) Let $u \in C^2(U_1)$. Solve the heat equation, then

UNIT TEST - 2

Q. (a) Show that the Poisson brackets are invariant under a canonical transformation.

(b) Show that the transformations:

(c) Prove that all functions whose Poisson brackets with Hamiltonian vanish will be constant of motion.

UNIT TEST - 3

Q. (a) State and prove Lebesgue decomposition theorem.

(b) State and prove Riesz representation theorem.

(c) State and prove Radon-Nikodym theorem.

UNIT TEST - 4

Q. (a) State and prove Fubini's theorem.

(b) Let $\{(A_i \times B_i)\}$ be a countable disjoint collection of measurable rectangles whose union is measurable rectangle $A \times B$. Then show that:

UNIT TEST - 5

Q. (a) Derive fundamental solution of heat equation.

(b) Obtain solution for $n = 1$ of wave equation by spherical means.

(c) State and prove the mean-value formulas for Laplace equation.

UNIT TEST - 6

Q. (a) State and prove Lagrange's equation of second kind.

(b) State and prove Routh's equation.

(c) A bead slides on a wire in the shape of a cycloid described by equations $x = a(\theta - \sin \theta)$, $y = a(1 + \cos \theta)$ where, $0 \leq \theta \leq 2\pi$. Find the Lagrange's function and the equation of motion.

UNIT TEST - 7

Q. (a) Derive Schwarzschild's external solution for gravitational field of point mass.

(b) Find out differential equation for motion of a planet under the gravitational field of star sun in general relativity.

(c) Discuss gravitational red or blue shift when light from a star reaches another star or planet.

UNIT TEST - 8

Q. (a) Define transformation of co-ordinates in the two co-ordinate systems and a general tensor of $(n + m)$ order with the help of laws of transformation of its components.

(b) Define intrinsic derivatives and obtain differential equation for the geodesic.

(c) Obtain law of transformation of Christoffel symbol of 2nd kind.

UNIT TEST - 9

Q. (a) Write short notes on the following:

(i) Principle of equivalence

(ii) Principle of general covariance

(iii) Geodesic postulate

(b) Find Newtonian approximation of equation of motion.

(c) Discuss Einstein's field equations of gravitation: