

Vivekanand College, Kolhapur (Autonomous)

Department of Chemistry

M. Sc. II Sem. III Inorganic Chemistry

Theory Internal Examination 2022-23

All the students of M. Sc. II Inorganic Chemistry are hereby informed that their theory Internal Examination of Chemistry will be conducted on **6th January 2023** and **7th January 2023**. The examination will be conducted only one time, students are directed to attend the examination without fail. Syllabus and schedule for examination will be as mentioned in following table. Seating arrangement will be communicated on the day of examination.

Sr. No.	Name of Paper	Topics
1	Inorganic Chemical Spectroscopy 06/01/2023 11.30 to 12.30 pm	1. Mass Spectroscopy 2. Inorganic NMR spectroscopy
2	Organometallic and Bioinorganic Chemistry 06/01/2023 1.30 to 2.30pm	1. Metal Compounds in Medicine 2. Organo-transition metal Chemistry
3	Coordination Chemistry- I 07/01/2023 11.30 to 12.30 pm	1. Magnetic Properties of transition metal complexes 2. Mixed ligand complexes and catalysis of transition metal complexes
4	Material Science 07/01/2023 1.30 to 2.30pm	1. Catalysis 2. Magnetic Materials

***Nature of question paper: Solve any two questions from given four questions (10 marks each)**



S.D. Shirke
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Head
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Vivekanand College, Kolhapur (Autonomous)

Internal Examination 2022-23

M.Sc. II Sem-III Subject: Inorganic Chemical Spectroscopy

Date: 06/01/2023

Time: 11.30 to 1 2.30 pm

Total Marks: 20

Q. 1 Answer the following question(any one)

10 Marks

- a. Describe the principle and instrumentation of Fast atom bombardment Mass spectroscopy?
- b. Write a short note on i) Metastable ions ii) Applications of Mass spectroscopy

Q. 2 Answer the following question(any one)

10 Marks

- a. What are the chemical shift values in NMR spectroscopy? Explain shielding and deshielding effect.
- b. Describe spin coupling constant used in structure determination.

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Internal Examination 2022-23

M.Sc. II Sem-III Subject: Organometallic and Bioinorganic Chemistry

Date: 06/01/2023

Time: 1.30 to 2.30 pm

Total Marks: 20

Q. 1 Answer the following question(any one) 10 Marks

- a. Explain the role of gold compounds in treatment of Rheumatoid Arthritis.
- b. Write short notes on i) Antimicrobial agents ii) Zinc deficiency diseases

Q. 2 Answer the following question(any one) 10 Marks

- a. Differentiate Homonuclear and heteronuclear carbene complexes.
- b. Explain chemical reactions and properties of Fischer and Schrock carbene complexes.

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Internal Examination 2022-23

M.Sc. II Sem-III Subject: Coordination Chemistry

Date: 7/1/2023

Time: 11.30 to 12.30 pm

Total Marks: 20

Q.1 Answer the following question(any one) 10 Marks

- a. What is Pascal constant? And give their applications.
- b. Discuss two methods for the determination of magnetic susceptibility.

Q.2 Answer the following question(any one) 10 Marks

- a. Discuss the hydrogenation of olefin compounds using Wilkinson's catalyst.
- b. Give the mechanism of oxidation of ascorbic acid.

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Internal Examination 2022-23

M.Sc. II Sem-III Subject: Material Science

Date: 7/1/2023

Time: 1.30 to 2.30 pm

Total Marks: 20

Q. 1 Answer the following question(any one)

10 Marks

- a. Explain in detail soft and hard magnetic materials. Discuss the distinguishing features between them. Mention their industrial applications.
- b. What are ferrites? How are they superior to ferromagnetic materials?

Q. 2 Answer the following question(any one)

10 Marks

- a. Derive the expression for Michaelis–Menten equation for enzyme catalysis.
- b. Explain monsanto acetic acid process.

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Department of Chemistry

M. Sc. II Sem. III Inorganic Chemistry

Theory Internal Examination 2022-23

All the students of M. Sc. II Inorganic Chemistry are hereby informed that their theory Internal Examination will be conducted on **17th May, 2023 to 20th May, 2023**. The examination will be conducted only one time, students are directed to attend the examination without fail. Syllabus and schedule for examination will be as mentioned in following table. Seating arrangement will be communicated on the day of examination.

Sr. No.	Name of Paper	Topics
1	Instrumental Techniques 17/05/2023 Time: 12:00 to 1:00 pm	1) Mossbauer Spectroscopy 2) ESR Spectroscopy
2	Co-Ordination Chemistry-II 18/05/2023 Time: 12:00 to 1:00 pm	1) Inorganic Reaction Mechanism 2) Reaction Mechanism of Transition metal Complex
3	Energy and Environmental Chemistry 19/05/2023 Time: 12:00 to 1:00 pm	1) Energy Conversion Devices 2) Water Pollution and Monitoring Control Methods
4	Inorganic Nanomaterials 20/05/2023 Time: 12:00 to 1:00 pm	1) Advanced synthetic Methods 2) Applications of nanomaterials

***Nature of question paper: - Solve any two questions from given four questions (10 Marks each)**



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Head

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Vivekanand College Kolhapur

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Internal Examination 2022-23

M.Sc. II Sem-IV- Inorganic Chemistry

Subject: Instrumental Techniques

Date: 17/05/2023

Time: 12 noon to 1pm

Total Marks: 20

Instructions:

Attempt any two questions of the following.

- Q.1 Describe in detail instrumentation of electron spin resonance spectroscopy? 10 marks
- Q.2 What is 'g' value and what are the factors affecting on 'g' value. 10 marks
- Q.3 Describe instrumentation of Mossbauer spectroscopy. 10 marks
- Q.4 Discuss the applications of Mossbauer spectroscopy 10 marks

Vivekanand College, Kolhapur (Autonomous)

Internal Examination 2022-23

M.Sc. II Sem-IV Subject: Coordination Chemistry-II

Date: 18/05/2023

Time: 12 noon to 1pm

Total Marks: 20

Q.1 Answer the following question (any one) 10 Marks

- a. What is trans effect? Discuss the theories of trans effect. Which theory explains better the trans effect of CO compared to that of pyridine?
- b. Discuss the outer sphere and inner sphere mechanisms of electron transfer reactions. Why is the electron transfer in the system $[\text{Co}(\text{NH}_3)_6]^{2+} - [\text{Co}(\text{NH}_3)_6]^{3+}$ slower than that in system $[\text{Fe}(\text{CN})_6]^{4-} - [\text{Fe}(\text{CN})_6]^{3-}$?

Q.2 Answer the following question (any one) 10 Marks

- a. What do you understand by labile and inert complexes? Explain on the basis of crystal field theory the cause of lability and inertness of octahedral complexes.
- b. What is inert ligand? What type of intermediate and product are formed if the inert ligand is pi-acceptor and pi-donor?

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Internal Examination 2022-23

M.Sc. II Sem-IV Subject: Energy and Environmental Chemistry

Date: 19/05/2023

Time: 12 noon to 1pm

Total Marks: 20

Q. 1 Answer the following question (any one)

10 Marks

- a. What are the sources of CO emission? Describe the NDIR technique used to monitor the CO emission.
- b. Describe West-Gaeke spectrophotometric method used for SO₂ monitoring and spectrophotometric determination of cadmium using dithizone reagent.

Q. 2 Answer the following question (any one)

10 Marks

- a. What is meant by fuel cell? Explain working of fuel cell and applications of fuel cells in different fields.
- b. What are the types of fuel cell? Explain any four.

Vivekanand College, Kolhapur (Autonomous)

Internal Examination 2022-23

M.Sc. II Sem-IV Subject: Inorganic Nanomaterials

Date: 20/05/2023

Time: 12 noon to 1pm

Total Marks: 20

Q. 1 Answer the following question(any one)

10 Marks

- a. What is nanomaterials? Explain general properties and applications of nanomaterials in detail.
- b. What is binary chalcogenides? Discuss in brief chemical bath deposition method for preparation of thin films.

Q. 2 Answer the following question(any one)

10 Marks

- a. What is fuel cell? What are the benefits of fuel cells? Explain different types of fuel cells that are available?
- b. Discuss in detail the applications of carbon nanomaterials.

Internal Examination - sem - IV

DEPARTMENT OF CHEMISTRY,

VIVEKANAND COLLEGE, KOLHAPUR Sub: Inorganic Chemistry M.Sc Part II Semester IV (YEAR 2022-23)




Roll No	Name of the Students	Date	Batch 'C'	Title of the Unit : Theory/Practical	Total No. Of Periods/Lectures
358	HALUGADE OMKAR SURESH	17/05/2023	19/5/23	19/5/23 20-5-23	
359	HAUCHKAR RAJIVARDHAN PRAMOD				
360	CHIKHALWALE SHWETA SANJAY				
361	DESAI JUNEED SAMEER				
362	DESAI RUTUJA SUBHASH				
364	JADHAV SHIVANI SHANKAR				
365	KHOT ABHISHEK MANOJ				
367	Mane Suraj Suresh				
370	NAKATE SHIVANI SANJAY				
372	PATIL AKASH EKNATH				
373	PATIL PRADNYA PRATAPSIKH				
374	PATIL SURAJ VIJAY				
376	SUTAR SWAPNIL NARSING				
377	YADAV UTKARSHA KRISHNAT				
379	ZIRANGE PRIYANKA BHAIRAVANATH				

Completed the above unit as per Syllabus

Name of the Teacher & Sign.

Co-ordinator : Dr. K.A. UNDALE

Principal : Dr. R. R. KUMBHAR

- 1) Dr. S. D. shinde 
- 2) Dr. A. T. Mane 
- 3) Dr. A. S. Tapase 
- 4) Dr. S. D. Kharede 