

Seat No.	
-------------	--

B.Sc. (Part - III) (Semester - V) (CBCS) Examination, January - 2023

ENGLISH (Compulsory) (Paper - III)

English for Communication

Sub. Code : 79671

Day and Date : Saturday, 07 - 01 - 2023

Total Marks : 40

Time : 2.30 p.m. to 4.30 p.m.

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.

Q1) A) Choose the appropriate answer and complete the following sentences.

[3]

- a) The devotees, in our country, should go to the pilgrims with their eyes lowered and body couched in _____.
 - i) happiness
 - ii) fear
 - iii) anxiety
 - iv) terror
- b) For more than thirty years Morris has made a study of _____.
 - i) detective fiction
 - ii) his shortcomings
 - iii) safety measures
 - iv) jewellery shops
- c) According to Sudha Murty, _____ is inversely proportional to economic standing.
 - i) writing
 - ii) travelling
 - iii) conversation
 - iv) reading

B) Answer the following questions in one word/phrase/sentence each. [3]

- a) Who are William Morris's favorite writers?
- b) Whom did the pilgrims or travellers lose?
- c) Which award did Sudha Murty receive from Bhopal?

P.T.O.

- Q2) A)** Answer the following questions in three to four lines each. (2 out of 3) [4]
- a) What was the cause of George's worry in the story?
 - b) Who were the incredible women in Indian history referred by Sudha Murty?
 - c) How was the first stage of pilgrimage?
- B)** Write a short note on the following in about 7-8 sentences. (any one)[4]
- a) The American
 - b) "Enterprise" as a social satire
- C)** Do as directed. [2]
- a) Write the noun form of the word "beautiful"
 - b) Give antonyms of "honest"
- Q3) A)** a) Suppose you have been called for an interview for the post of Chemist. Write a piece of conversation between you and the interviewer. [8]

OR

- b) Read the following advertisement carefully and answer the questions given below the advertisement. [8]

A Fast Growing Pharma Allopathic Company
AREA SALES MANAGER - 02 Posts
HQ - Pune (Independent working)
Candidates must have 3-5 years' experience in
Pharmaceutical industry as an M.R. or Area Manager.
Walk in for interview on SUNDAY
Date 22nd Sept., 2019 between 09.00 to 02.00 p.m. at
Hotel Natraj, Pune-Bangalore Road, Pune.
Director, Lifeline Health Care Pvt. Ltd.,
Pune, Cell No. 8050399456

- i) What certificates will you take with if you are called for an interview for the post of area sales manager?
 - ii) Suppose you do not have any working experience, how will you answer the question about it?
 - iii) How will you explain you strong points to the interviewers?
 - iv) How will you introduce yourself?
- B) a) Suppose you participated in a N.S.S. residential camp for seven days. Write a Personal Blog describing your experiences there. [8]

OR

- b) Write an email to Municipal Corporation complaining about the bad condition of the roads in your area.

Q4) A) Write a report about your participation in a Cultural Event. [8]

OR

- B) Write a well-organized paragraph on 'My First Experience of Travelling by Train'.



Seat No.	
----------	--

B.Sc. (Part - III) (Semester - V) Examination, January - 2023

CHEMISTRY

Inorganic Chemistry (Paper-IX)

Sub. Code: 79682

Day and Date : Tuesday, 03 - 01 - 2023

Total Marks : 40

Time : 2.30 p.m. to 4.30 p.m.

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Neat diagrams should be drawn wherever necessary.

Q1) A) Answer the following in one sentence. [4]

- a) Define Lewis acid.
- b) What are semiconductors?
- c) Define organometallic compounds?
- d) What is homogeneous catalysis?

B) Select most correct alternative and rewrite the sentence. [4]

- a) Arrhenius concept is called as _____
 - i) Water Ion system
 - ii) Proton donor acceptor system
 - iii) Electron donor acceptor system.
 - iv) Oxide Ion theory
- b) In octahedral complexes eg electrons are destabilized by _____
 - i) $-4Dq$
 - ii) $-6Dq$
 - iii) $+6Dq$
 - iv) $+4Dq$

P.T.O.

- c) Asymmetric filling of eg orbitals, with _____ electronic configuration Jahn-Teller distortion takes place.
- i) d^4 (low spin), d^7 (low spin), and d^9 (both low and high spin)
 - ii) d^4 (high spin), d^7 (high spin), and d^9 (both low and high spin)
 - iii) d^4 (high spin), d^7 (low spin), and d^9 (both low and high spin)
 - iv) d^4 (high spin), d^7 (low spin), and d^8 (both low and high spin)
- d) Superconductors shows _____
- i) Resonance effect
 - ii) Trans effect
 - iii) Raman effect
 - iv) Meissner effect

Q2) Attempt any TWO of the following. **[20]**

- a) Explain in brief the classification or types of solvent in detail.
- b) Describe crystal field splitting of d orbitals in octahedral complexes.
- c) Explain the semiconducting action in silicon caused due to the addition of penta-valent and tri-valent atoms.

Q3) Attempt any THREE of the following. **[12]**

- a) Mention the factors affecting the magnitude of crystal field splitting parameters and explain any one in detail.
- b) Nature of Bonding in metal carbonyls
- c) Geometry of $\text{Cr}(\text{CO})_6$.
- d) Mechanisms of catalysis on the basis of Adsorption theory
- e) Explain homogeneous catalytic reactions?



Seat No.	
----------	--

B.Sc. (Part - III) (Semester - V) (CBCS)
Examination, January - 2022
CHEMISTRY
Organic Chemistry (Paper - X)
Sub. Code : 79683

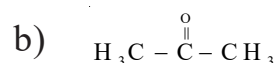
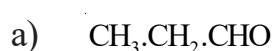
Day and Date Wednesday, 4 - 01 - 2023
 Time : 2.30 p.m. to 4.30 p.m.

Total Marks : 40

- Instructions :
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Spectroscopic chart is allowed.

Q1) A) Answer in one sentence [4]

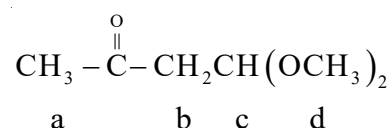
i) How many sets of equivalent protons present in the following compounds?



ii) In which type of vibration, change in bond angle take place?

iii) Which material are used to prepare rod of globar source?

iv) Which of hydrogens a-d in the following molecule gives a triplet signal in a normal ^1H NMR spectrum?



B) Select most correct alternative among those given below and rewrite the sentences. [4]

i) According to Woodward fieser rule, the increment for double bond extending conjugation is _____

a) 5

b) 15

c) 12

d) 30

P.T.O.

Seat No.	
----------	--

B.Sc. (Part - III) (Semester - V) (CBCS) Examination, January - 2023

CHEMISTRY

Physical Chemistry (Paper-XI)

Sub. Code: 79684

Day and Date Thursday, 05 - 01 - 2023

Total Marks : 40

Time : 2.30 p.m. to 4.30 p.m.

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicates full marks.

Q1) A) Answer the following in one sentence only. [4]

- a) Which solution is used in salt bridge?
- b) What is fluorescence?
- c) What is Raman effect?
- d) Write de broglie equation.

B) Choose the most correct alternative for each of the following and rewrite the sentence. [4]

- a) The uncertainty principle was proposed by _____.
 - i) de Broglie
 - ii) Schrodinger
 - iii) Einstein
 - iv) Heisenberg
- b) The quantity $(2S+1)$ is known as _____.
 - i) Spin pairing
 - ii) Spin multiplicity
 - iii) excited state
 - iv) ground state
- c) The process of successive vaporiazation and condensation is called as _____.
 - i) distillation
 - ii) fractional distillation
 - iii) vaporization
 - iv) none of these
- d) When temperature coefficient of cell becomes zero, ΔG of the cell reaction is _____.
 - i) zero
 - ii) euqal to ΔS
 - iii) equal to ΔH
 - iv) equal to ΔA

P.T.O.

Q2) Attempt any two of the following.

- a) Discuss vibrational spectra of diatomic molecules.
- b) Derive the equation for potential of a chemical cell without transference.
- c) State and explain laws of photochemistry.

Q3) Attempt any three of the following.

[12]

- a) What is wave particale duality? Explain de Broglie's hypothesis.
- b) Mention various types of partially miscible liquids and explain any one of them.
- c) Define quantum yield and give reasons for high and low quantum yield.
- d) Derive Nernst equation for the single electrode potential.
- e) Discuss distillation of solutions with the system having boiling point maximum.



Seat No.	
-------------	--

B.Sc. (Part - III) (Semester - V) Examination, January - 2023

CHEMISTRY (Paper - XII)

DSE-E8 : Analytical Chemistry

Sub. Code : 79685

Day and Date : Friday, 06 - 01 - 2023

Total Marks : 40

Time : 2.30 p.m. to 4.30 p.m.

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Draw neat diagrams and give equations wherever necessary.
 - 4) Use of scientific calculator and logarithmic table is allowed.

Q1) A) Answer the following in one sentence : [4]

- a) What are the advantages of digestion?
- b) Which is the device used for measuring response of photocell?
- c) What is the nature of the curve at end point, in potentiometric titration?
- d) Which is the stationary phase used in adsorption chromatography?

B) Choose the most correct alternative and rewrite the sentences. [4]

- a) In Flame emission photometers, the measurement of _____ is used for quantitative analysis.
 - i) Colour
 - ii) Intensity
 - iii) Velocity
 - iv) Frequency
- b) Beer's law is valid when _____
 - i) White light is used
 - ii) Temperature is kept constant
 - iii) Large amount of electrolyte is present
 - iv) Coloured solute forms complexes

P.T.O.

- c) _____ electrode is not used as indicator electrode in determination of pH of the solution.
- i) Glass electrode
 - ii) Quinhydrone electrode
 - iii) Zinc electrode
 - iv) Hydrogen electrode
- d) In column chromatography the alumina used act as _____
- i) Organic phase
 - ii) Adsorbent
 - iii) Aqueous phase
 - iv) Porous material

Q2) Solve any two of the following : **[16]**

- a) Define precipitation and explain the essential requirements of good precipitation.
- b) Describe construction and working of quinhydrone electrode. Discuss its use in determination of pH of solution.
- c) What are the types of ion exchangers? Give the applications of ion exchange chromatography.

Q3) Solve any four of the following. **[16]**

- a) Write short notes on, Co-precipitation.
- b) Explain the terms transmission and optical density used in colorimetry. How are they related?
- c) Write a short note on, Photovoltaic cell.
- d) Write short notes on, Classification of chromatography.
- e) Give a brief account of mirrors and slits in flame photometry.
- f) Give a block diagram of simple flame photometer.

