ATAL BIHARI VAJPAYEE VISHWAVIDYALAYA BILASPUR (C.G.)

Pre Ph. D. Course work Examination 2019-20

CHEMISTRY

PAPER II: CW – 02 (TOOLS AND TECHNIQUES)

Model question paper

[Set – II]

Duration - 3.00 Hrs **Max. Marks - 80**

Note: Section - A is Compulsory. Answer one question from each unit of Section - 'B' carrying equal marks

Section - A

1. Answer the following questions in brief. **2 X 10 = 20**

i. What is theoretical & computational chemistry?

ii. What are the 3-types of enzymes?

iii. Explain why Cu (II) salts are blue in color but Cu (I) salts are white?

iv. Why is ethanol a good solvent in Ultraviolet Spectroscopy?

v. Why are compounds of Ti^{4+} and Zn^{2+} typically white?

vi. Why natural compounds show greater activity than synthetic compounds?

vii. What are the factors which affect filtration in analytical chemistry?

viii. What are the basic differences in accuracy and precision in analytical chemistry?

ix. What is catalysis in Green Chemistry?

x. What is Nanotechnology?

Section - B **12 X 5 = 60**

UNIT – I

2. What are challenges and solutions in theoretical Chemistry?

3. What is Chem.-informatics? Discuss its importance in modern chemical science?

UNIT – II

4. What is drug design and drug discovery? Discuss the factors affecting development of new drugs in medicinal chemistry?

5. What is molecular recognition? Discuss the importance of molecular recognition in biological systems?

UNIT – III

6. Calculate the spin only magnetic moment for a d^8 ion in Octahedral, Square planar and tetrahedral legend fields?

7. Describe the preparation and characterization methods of inorganic polymers?

UNIT – IV

8. How do you propose to control?

i) CO emission ii) Hydrocarbon emission iii) SO_2emission iv) Particulate emission

9. What is the basic principle of Chromatography? Discuss the Classification of chromatography for analytical purpose?

UNIT – V

10. Describe and discuss 12-basic principles of green chemistry.

11. Describe the research work in chemistry of the following Indian chemists:

i) Prof. C. N. R. Rao ii) Prof. R. C. Mehrotra

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