

M.Sc. 2nd Semester Examination, 2023

CHEMISTRY

PAPER – CEM-204(CBCS)

Full Marks : 40

Time : 2 hours

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

GROUP—A

Answer any **four** questions : 2 × 4

1. (a) “Nano particles are used in hair care product” why ?
- (b) How will you synthesize nano emulsion for skin care ?

(Turn Over)

- (c) State the benefits of hydroxyapatite nanoparticles which are used in oral care product.
- (d) Why Nanoliposomes are used in cosmetics ?
- (e) What is meant by Green Chemistry ?
- (f) What is the bottom-up approach for the synthesis of metal nanoparticles ?

GROUP-B

Answer any **four** questions : 4 × 4

2. (a) What do you mean by nano-fertilizers ? Suggests a method for its synthesis. State its advantages of use in agriculture.
- (b) "Silica nanoparticles have attracted interest from cosmetic industry". Justify the statement with an example.
- (c) Write down the name of nanoparticles used in Hair colour product. Why they are used ?

- (d) State the advantages of ACCR wire for transmission of electricity.
- (e) What are the advantages of using silver nanoparticles in anti bacterial fabrics ?
- (f) Write four principles of green chemistry. Describe the green synthesis of gold nanoparticles in brief.

GROUP-C

Answer any two questions : 8 × 2

3. (a) How is nanoparticle used for modulation of skin colour ? Explain with an example.
- (b) What is meant by 'Smart drug' ? How it works ? 4 + 4
4. (a) How nano-particles can be applied in food packaging ? What is a smart package ?
- (b) Why nanofiltration is superior over RO filtration for the purification of water ? 4 + 4

5. (a) What is the wavelength of an electron ? Why optical microscope is not suitable for observing nanoparticles ? What are the methods used for the characterization of metal nanoparticles ?
- (b) How terpenoids can be termed as Renewable Molecular Functional Nanos ? Give an example of a nanosized terpenoid.
- 2 + 2 + 2 + 2
6. (a) How hydrophobic surfaces can be produced to use in textile substrate ?
- (b) What is lotus effect ? On which factors does it depend ?
- (c) How UV-blocking cotton fabrics are made ?
- 3 + 3 + 2
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