

2018

Chemical Science

PAPER - II

Full marks - 100

Time - 1 hr. 15 minutes

Signature and Name of Invigilator

1. (Signature) _____

(Name) ↓ _____

Time : 1¼ hours]

[Maximum Marks : 100

Number of Pages in this Booklet : 16

Number of Questions in this Booklet : 50

Instructions for the Candidates

1. This paper consists of fifty objective type questions.
2. At the commencement of examination, the question booklet will be given to you. In the first 5 minutes, you are required to open the booklet and compulsorily examine it as below :
 - (i) To have access to the Question Booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal and do not accept an open booklet.
 - (ii) **Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be got replaced immediately by a correct booklet from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given.**
3. Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.
Example : (A) (B) ● (D)
where (C) is the correct response.
4. Your responses to the items are to be indicated in the **OMR Sheet given with the Paper I Booklet only**. If you mark at any place other than in the circle in the OMR Sheet, it will not be evaluated. **Also answer once marked shall not be cancelled or erased. If anybody does it, his/her OMR sheet shall be treated as cancelled and shall not be evaluated.**
5. Read instructions given above carefully.
6. Rough Work is to be done in the end of this booklet.
7. If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or resort to any other unfair means, you will render yourself liable to disqualification.
8. You have to return the Original OMR Sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are, however, allowed to carry the test booklet with the carbon copy of OMR Sheet on conclusion of examination.
9. **Use only Ball point pen.**
10. **Use of any calculator or log table etc., is prohibited.**
11. **There is no negative marks for incorrect answers.**

Note : This paper contains **fifty (50)** objective type questions, each question carrying **two (02)** marks. **All** the questions are compulsory.

1. Which of the following uses X-rays.

- (A) Electronic spectra
- (B) NMR spectra
- (C) Photoelectronic spectra
- (D) Roman spectra

2. Two analysts gave the following readings —. Select the correct answer

Analyst 1. (a) 49.01 (b) 49.21 (c) 49.08

Analyst 2. (a) 49.40 (b) 49.42 (c) 49.44

- (A) Analyst 1 is more precise and accurate
- (B) Analyst 2 is more precise and accurate
- (C) Analyst 1 is more precise but Analyst 2 is more accurate
- (D) Analyst 2 is more precise but Analyst 1 is more accurate

3. Match the techniques given in Column-I with the region of spectroscopy given in Column-II and select the correct match from the code given below :

Column-I **Column-II**

(Technique) **(Region of Spectroscopy)**

- | | |
|---|------------------------|
| (a) Vibrational Spectroscopy | 1. Microwave |
| (b) Electronic Spectroscopy | 2. Radio frequency |
| (c) Rotational Spectroscopy | 3. Infrared |
| (d) Nuclear Magnetic Resonance Spectroscopy | 4. Ultraviolet visible |

Codes :

	(a)	(b)	(c)	(d)
(A)	1	2	3	4
(B)	2	3	4	1
<input checked="" type="checkbox"/> (C)	3	4	1	2
(D)	4	1	2	3

4. Read the following statements given as Assertion (Ass) and Reason (R) and pick out the correct answer from the codes (A) — (D) given below :

Assertion (Ass) : Stokes lines in Raman spectra is more intense than antistokes line

Reason (R) : Stokes lines arises from transition of molecules from lower energy level than that of antistokes lines. Intensity is proportional to number of molecules in the initial level and lower level of energy is more populated.

Codes :

- (A) Both (Ass) and (R) are true and (R) is the correct explanation of (Ass)
- (B) Both (Ass) and (R) are true but (R) is not the correct explanation of (Ass)
- (C) (Ass) is true but (R) is false
- (D) (Ass) is false but (R) is true

5. Read the following statements given as Assertion (Ass) and Reason (R) and pick out the correct answer from the codes (A) — (D) given below :

Assertion (Ass) : In IR spectrometer the beam is focused by mirrors silvered in their surface.

Reason (R) : Ordinary lenses and mirrors made of glass absorbs strongly over the frequency in IR region.

Codes :

- (A) Both (Ass) and (R) are true and (R) is the correct explanation of (Ass)
- (B) Both (Ass) and (R) are true but (R) is not the correct explanation of (Ass)
- (C) (Ass) is true but (R) is false
- (D) (Ass) is false but (R) is true

6. The most stable conformer of trans-1-tert-butyl-4-methylcyclohexane, substituents at C1 and C4 positions are

- (A) C1 is equatorial, C4 is axial
- (B) C1 is axial, C4 is equatorial
- (C) Substituents at C1 and C4 equatorial
- (D) Substituents at C1 and C4 axial