

Match the complex ions given in Column I with the colours given in Column II and assign the correct code :

Column I (Complex ion)

- A. $[\text{Co}(\text{NH}_3)_6]^{3+}$
- B. $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$
- C. $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$
- D. $[\text{Ni}(\text{H}_2\text{O})_4(\text{en})]^{2+}(\text{aq})$

Column II (Colour)

- 1. Violet
- 2. Green
- 3. Pale blue
- 4. Yellowish orange
- 5. Blue

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|-------|-------|-------|-------|-------|
| (i) | A (1) | B (2) | C (4) | D (5) |
| (ii) | A (4) | B (3) | C (2) | D (1) |
| (iii) | A (3) | B (2) | C (4) | D (1) |
| (iv) | A (4) | B (1) | C (2) | D (3) |

Ans : (i) A (1) B (2) C (4) D (5)

The crystal field splitting depends on the ligand strength . Energy is high for these molecules which have strong field ligands and E is inversely proportional to lambda . so Highest lambda will have weakest ligand .