

(6 pages)

Reg. No. :

Code No. : 41096 E Sub. Code : JMCH 11/
SMCH11

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2018.

First Semester

Chemistry – Main

INORGANIC CHEMISTRY – I

(For those who joined in July 2016 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. de-Broglie equation is

- (a) $\lambda = \frac{h}{mV}$ (b) $\lambda = \frac{\lambda}{mV}$
(c) $E = mc^2$ (d) $V = \frac{h}{\lambda}$

2. Electrons enter the various orbitals in the order of increasing energy

- (a) Auffau principle
(b) Hund's rule
(c) Pauli's exclusion principle
(d) De-Broglie principle

3. Which one of the following has the highest ionisation energy?

- (a) Na (b) K
(c) Rb (d) Cs

4. Electro negativity is the power of an atom in a molecule to attract electrons to itself. It is defined by

- (a) Mullikan (b) All red Rochow
(c) Pauling (d) Faraday

5. The Geometry of BF_3 is

- (a) Linear (b) Trigonal planar
(c) Tetrahedral (d) Octahedral

6. Which of the following is ionic compound?

- (a) Cl_2 (b) Co_2
(c) NaCl (d) F_2

7. Which of the following has diagonal relationship with lithium?

- (a) Mg (b) Be
(c) Ca (d) B

8. The alkaline-earth metal of the following is

- (a) Na (b) K
(c) C (d) Ca

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9. The P-block element is

- (a) Be (b) B
(c) Na (d) Fe

10. In P-block elements moving from top to bottom, the metallic character

- (a) decreases
(b) increases
(c) no change
(d) none of the above

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What are principle quantum numbers and magnetic quantum numbers? What are their significances?

Or

(b) Explain the Hund's rule and Pauli's exclusion principle.

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12. (a) What is meant by electro negativity? Explain how it is varied in periodic table with suitable examples.

Or

(b) What is atomic radius? Explain its periodicity in properties in periodic table with suitable examples.

13. (a) What is lattice energy? Explain the factors affecting it.

Or

(b) Explain the formation of F_2 using MO theory with diagram.

14. (a) What is meant by diagonal relationship? Explain with example.

Or

(b) What is meant by hydration energy? Explain the hydration energy of alkali and alkaline earth metals.

15. (a) Explain any five properties of P-block elements.

Or

(b) Explain the structure of diborane.

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PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Write down the Schrodinger wave equation. Explain its applications.

Or

- (b) Discuss briefly the Bohr's atom model. Write down its limitations.

17. (a) How is electro negativity determined by Pauling and Allred Rochow's methods?

Or

- (b) How are the elements classified in the long form of the periodic table? Explain them.

18. (a) Explain the VSEPR theory with suitable examples.

Or

- (b) What is hybridisation? Explain sp^3d^2 and sp^3d^3 with suitable examples.

19. (a) What are hydrides? How are they classified? Explain any two with suitable examples.

Or

- (b) Explain briefly the position of hydrogen in the periodic table.

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20. (a) What are carbides? Write down its preparation properties and uses.

Or

- (b) What are silicates? How are they classified? Write down the structures of any three silicates.
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