

**BJNP***Learning with the Speed of Mumbai and the Tradition of Kota***Max Marks: 200****Date: 10.10.2022****JB 2 MR BATCH
CHEMISTRY : PART TEST****Topic: Atomic Structure (Till Lecture 3) + Mole Concept (Full)**

- Total number of nucleons present in ${}_{92}\text{U}^{235}$
(a) 92 (b) 235 (c) 143 (d) 327
- The ratio of specific charge of a proton and an α -particle is:
(a) 2 : 1 (b) 1 : 2 (c) 1 : 4 (d) 1 : 1
- Which of the following statements concerning sunlight is false?
(a) It is a form of energy (b) It cannot be deflected by a magnet
(c) It consists of photons of same energy (d) It is a part of electromagnetic spectrum
- x^{-3} is iso electronic with Argon ($Z = 18$). It has electrons and neutrons in equal number. The mass number of x is
(a) 30 (b) 31 (c) 32 (d) 33
- Number of protons, neutrons and electrons in the element ${}_{89}^{231}\text{Y}$ is
(a) 89, 231, 89 (b) 89, 89, 242 (c) 89, 142, 89 (d) 89, 71, 89
- The increasing order of specific charge of electron (e), proton (p), alpha particle (α) and neutron (n) is
(a) e, p, n, α (b) n, p, e, α (c) n, α , p, e (d) n, p, α , e
- The ratio between the neutrons present in carbon atom and silicon atoms with mass numbers 12 and 28 is
(a) 7 : 3 (b) 3 : 7 (c) 1 : 2 (d) 2 : 1
- When alpha particles are sent through a thin metal foil, most of them go straight through the foil because
(a) Alpha particle are much heavier than electron
(b) Alpha particles are much heavier than electron
(c) Alpha particles move with high velocity
(d) Most part of the atom is empty

Space for Rough Work



9. Correct statement among the given
- Isotopes of an element have same physical properties
 - ${}^{14}_6\text{C}$ and ${}^{18}_8\text{O}$
 - Volume of an atom is 10^5 times less than that of the nucleus
 - ${}^1_1\text{H}$ and ${}^2_1\text{H}$ occupy the same position in the Periodic Table
10. The triad of nuclei which is isotonic is
- ${}^{14}_6\text{C}, {}^{15}_7\text{N}, {}^{17}_9\text{F}$
 - ${}^{12}_6\text{C}, {}^{14}_7\text{N}, {}^{19}_9\text{F}$
 - ${}^{14}_6\text{C}, {}^{14}_7\text{N}, {}^{17}_9\text{F}$
 - ${}^{14}_6\text{C}, {}^{14}_7\text{N}, {}^{19}_9\text{F}$
11. Which one of the following pairs is not correctly matched
- Rutherford-Proton
 - J.J. Thomson-Electron
 - J.H. Chadwick-Neutron
 - Bohr-isotope
12. What is the ratio of mass of an electron to the mass of a proton?
- 1 : 2
 - 1 : 1
 - 1 : 1837
 - 1 : 3
13. Which is not a redox reaction?
- $\text{BaO}_2 + \text{H}_2\text{SO}_4 \longrightarrow \text{BaSO}_4 + \text{H}_2\text{O}_2$
 - $2\text{BaO} + \text{O}_2 \longrightarrow 2\text{BaO}_2$
 - $4\text{KClO}_3 \longrightarrow 4\text{KClO}_2 + 2\text{O}_2$
 - $\text{SO}_2 + 2\text{H}_2\text{S} \longrightarrow 2\text{H}_2\text{O} + 3\text{S}$
14. A compound contains atoms X, Y, Z. The oxidation number of X is +2, Y is +5, and Z is -2. The possible formula of the compound is
- XY_1Z_2
 - $\text{Y}_2(\text{XZ}_3)_2$
 - $\text{X}_3(\text{YZ}_4)_2$
 - $\text{X}_3(\text{Y}_4\text{Z})_2$
15. The oxidation number of I in HIO_4 is
- +7
 - +6
 - +3
 - +14
16. In acid solution, the reaction $\text{MnO}_4^- \longrightarrow \text{Mn}^{2+}$ involves
- Reduction by 5e^-
 - Reduction by 3e^-
 - Oxidation by 5e^-
 - Oxidation by 3e^-

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17. Which of the following is not a reducing agent?
 (a) NaNO_2 (b) HI (c) NaNO_3 (d) SnCl_2
18. Oxidation number of N in $(\text{NH}_4)_2\text{SO}_4$ is
 (a) -3 (b) -1 (c) $+1$ (d) $-1/3$
19. Oxidation number of carbon in $\text{H}_2\text{C}_2\text{O}_4$ is
 (a) $+4$ (b) $+2$ (c) $+3$ (d) -2
20. Oxidation number of P in $\text{Mg}_2\text{P}_2\text{O}_7$ is
 (a) $+3$ (b) $+5$ (c) $+2$ (d) -3
21. In XeO_3 and XeF_6 the oxidation state of Xe is
 (a) $+4$ (b) $+1$ (c) $+6$ (d) $+3$
22. Oxidation state of oxygen atom in potassium superoxide is
 (a) 0 (b) $-1/2$ (c) -1 (d) -2
23. Oxidation number of Mn in K_2MnO_4 and MnSO_4 are respectively
 (a) $+7, +2$ (b) $+5, +2$ (c) $+6, +2$ (d) $+2, +6$
24. The oxidation number of fluorine in F_2O is
 (a) $+2$ (b) $+1$ (c) -1 (d) -2
25. The reaction

$$5\text{H}_2\text{O}_2 + \text{XClO}_2 + 2\text{OH}^- \longrightarrow \text{XCl}^- + \text{YO}_2 + 6\text{H}_2\text{O}$$
 is balanced if
 (a) $\text{X} = 5, \text{Y} = 2$ (b) $\text{X} = 2, \text{Y} = 5$ (c) $\text{X} = 4, \text{Y} = 10$ (d) $\text{X} = 5, \text{Y} = 5$

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JB 2 MR BATCH
MATHEMATICS : PART TEST
Topics: Permutation and Combination

26. The total number of seven-digit numbers the sum of whose digit is even is
(a) 4500000 (b) 9000000 (c) 8100000 (d) None of these
27. We are required to form different words with the help of word INTEGER, let m_1 be the number of words which I and N are never together and m_2 be the number of words which begin with I and end with R, then m_1/m_2 is equal to
(a) $1/30$ (b) 42 (c) 6 (d) 30
28. There are 5 letters and 5 directed envelopes. The number of ways in which all the letters can be put in wrong envelope is
(a) 44 (b) 119 (c) 40 (d) 59
29. The number of ways in which a mixed double game can be arranged amongst 9 married couples if no husband and wife play in the same game is
(a) 3024 (b) 756 (c) 1512 (d) None of these
30. If ${}^{18}C_r = {}^{18}C_{r+2}$, then rC_5 is equal to
(a) 56 (b) 23 (c) 46 (d) None of these
31. There are 20 questions in a question paper. If no two students solve the same combination of questions but solve equal number of questions then the maximum number of students who appeared in the examination is
(a) ${}^{29}C_{10}$ (b) ${}^{20}C_9$ (c) ${}^{20}C_{11}$ (d) None of these

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32. A person writes letters to six friends and addresses the corresponding envelopes. Let x be the number of ways so that at least two of the letters are in wrong envelopes and y be the number of ways so that all the letters are in wrong envelopes. Then $x - y =$
- (a) 454 (b) 265 (c) 719 (d) None of these
33. In how many ways can 15 members of a council sit along a circular table, when the secretary is to sit on one side of the chairman and the Deputy Secretary on the other side?
- (a) $2 \times 15!$ (b) $2 \times 12!$ (c) 24 (d) None of these
34. A boy has 3 library tickets and 8 books of his interest on the library. Out of these 8, he does not want to borrow chemistry part-II, unless chemistry part-I is also borrowed. The number of ways in which he can choose the three books to be borrowed is
- (a) 51 (b) 41 (c) 32 (d) None of these
35. In a city no two persons have identical set of teeth and there is no person without a tooth. Also, no person has more than 32 teeth. If we disregard the shape and size of both and consider only positioning of the teeth, then the maximum population of the city is
- (a) $(32)^2 - 1$ (b) $2^{32} - 1$ (c) 2^{32} (d) 2^{32-1}
36. There are five different green dyes, four different blue dyes and three different red dyes. The total number of combination of dyes that can be chosen taking at least one green and one blue dye is
- (a) 2^{12} (b) 3720 (c) 3255 (d) None of these
37. The number of ways in which the letters of the word ARRANGE can be arranged such that both R do not come together is
- (a) 1260 (b) 900 (c) 1620 (d) 360

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38. Two packs of 52 cards are shuffled together. The number of ways in which a man can be dealt 26 cards so that he does not get two cards of the same suit and same denomination is
(a) $^{104}C_{26}$ (b) $^{52}C_{26} \cdot 2^{26}$ (c) $2 \cdot ^{52}C_{26}$ (d) None of these
39. A shopkeeper sells three varieties of perfumes and he has a large number of bottle of the same size of each variety in his stock. There are 5 places in a row in his showcase. The number of different ways of displaying the three varieties of perfumes in the showcase is
(a) 150 (b) 50 (c) 6 (d) None of these
40. There are two each of 5 kinds of objects and one each of 8 additional kinds of objects. The number of ways in which we can select 3 objects out of these is
(a) 346 (b) 183 (c) 180 (d) None of these
41. The number of times of the digits 3 will be written when listing the integer from 1 to 1000 is
(a) 302 (b) 271 (c) 269 (d) 300
42. From 3 mangoes, 4 apples and 2 oranges. The number of selections of fruits that can be made, taking at least one of each kind is
(a) 42 (b) 36 (c) 24 (d) None of these
43. The number of all possible selections of one or more questions from 10 given questions, each question having an alternative is
(a) $3^{10} - 1$ (b) $2^{10} - 1$ (c) 3^{10} (d) 2^{10}
44. The number selection of four letters from the letters of the word ASSASSINATION is
(a) 66 (b) 72 (c) 52 (d) 71

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45. The number of ways of selecting 10 balls from unlimited number of red, black, white and green balls is
(a) 286 (b) 715 (c) 84 (d) None of these
46. A person goes for an examination in which there are four papers with a maximum of m marks from each paper. The number of ways in which one can get $2m$ marks is
(a) $\frac{1}{3}(m+1)(2m^2+4m+1)$ (b) ${}^{2m+3}C_3$
(c) $\frac{1}{3}(m+1)(2m^2+4m+3)$ (d) None of these
47. The letters of the word RANDOM are written in all possible orders and these words are written out as in a dictionary then the rank of the word RANDOM is
(a) 616 (b) 613 (c) 614 (d) 615
48. The number of ways in which a committee of 6 members can be formed from 8 gentle men and 4 ladies so that the committee contains at least 3 ladies is
(a) 672 (b) 420 (c) 252 (d) 444
49. Ram has 5 coins each of the different denomination. The number of different sums of money he can form is
(a) 32 (b) 25 (c) 31 (d) 16
50. The number of positive integral solution of $x + y + z = n$, $n \in \mathbb{N}$, $n \geq 3$ is
(a) $n(n-1)$ (b) ${}^{n-1}P_2$ (c) ${}^{n-1}C_2$ (d) None of these

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CHEMISTRY : PART TEST ANSWER KEY
Topic: Atomic Structure (Till Lecture 3) + Mole Concept (Full)

1.	(b)	2.	(a)	3.	(c)	4.	(d)	5.	(c)
6.	(c)	7.	(b)	8.	(d)	9.	(d)	10.	(a)
11.	(d)	12.	(c)	13.	(a)	14.	(c)	15.	(a)
16.	(a)	17.	(c)	18.	(a)	19.	(c)	20.	(b)
21.	(c)	22.	(b)	23.	(c)	24.	(c)	25.	(b)

Date: 09.10.2022

JB 2 MR BATCH
MATHEMATICS : PART TEST ANSWER KEY
Topics: Permutation and Combination

26.	(a)	27.	(b)	28.	(a)	29.	(c)	30.	(a)
31.	(a)	32.	(a)	33.	(b)	34.	(b)	35.	(b)
36.	(b)	37.	(b)	38.	(b)	39.	(a)	40.	(a)
41.	(d)	42.	(c)	43.	(a)	44.	(b)	45.	(a)
46.	(c)	47.	(c)	48.	(c)	49.	(c)	50.	(c)