Molecular orbital theory

41. The number of nodal planes ′ d ′ orbital has

(a) Zero (b) One

(c) Two (d) Three

42. Atomic number of an element is 26. The element shows

(a) Ferromagnetism (b) Diamagnetism

(c) Paramagnetism (d) None of these

43. What is correct sequence of bond order

(a) $O_2^+ > O_2^- > O_2$ (b) $O_2^+ > O_2 > O_2^-$

(c) $O_2 > O_2^- > O_2^+$ (d) $O_2^- > O_2^+ > O_2$

44. Which bond is strongest

(a) $F - F$ (b) $Br - F$

(c) $Cl - F$ (d) $I - F$

45. Which of the following is not paramagnetic

(a) S^{-2} (b) N_2^-

(c) O_2^- (d) NO

46. Which one of the following molecules is paramagnetic

(a) CO_2 (b) SO_2

(c) NO (d) H_2O

47. N_2 and O_2 are converted into monoanions N_2^- and O_2^- respectively, which of the following statements is wrong

(a) In N_2, the $N - N$ bond weakens

(b) In O_2, the $O - O$ bond order increases

(c) InO_2, bond length increases

(d) N_2^- becomes diamagnetic

48. With increasing bond order, stability of a bond

(a) Remains unaltered (b) Decreases

(c) Increases (d) None of these

49. Which is not paramagnetic

(a) O_2 (b) O_2^+

(c) O_2^{2-} (d) O_2^-

50. The number of antibonding electron pairs in O_2^{2-} molecular ion on the basis of molecular orbital theory is

(a) 4 (b) 3

(c) 2 (d) 5

51. The bond order of He_2^+ molecule ion is

(a) 1 (b) 2

(c) $\frac{1}{2}$ (d) $\frac{1}{4}$

52. Which one does not exhibit paramagnetism

(a) ClO_2 (b) ClO_2^-

(c) NO_2 (d) NO

53. In which of the following pairs the two molecules have identical bond order

(a) N_2, O_2^{2+} (b) N_2, O_2^-

(c) N_2^-, O_2 (d) O_2^+, N_2

54. The bond order is not three for

(a) N_2^+ (b) O_2^{2+}

(c) N_2 (d) NO^+

55. In H_2O_2molecule, the angle between the two $O - H$ planes is

(a) 90^o (b) 101^o

(c) 103^o (d) 105^o

56. Which of the following molecule has highest bond energy

(a) $F-F$ (b) $C-C$

(c) $N-N$ (d) $O-O$

57. Which of the following species would be expected paramagnetic

(a) Copper crystals (b) Cu^+

(c) Cu^{++} (d) H_2

58. Which of the following is correct for N_2 triple bond

(a) $3s$ (b) $1p$, $2s$

(c) $2p$, $1s$ (d) $3p$

59. In which of the following pairs molecules have bond order three and are isoelectronics

(a) CN^-, CO (b) NO^+, CO^+

(c) CN^-, O_2^+ (d) CO, O_2^+

60. Which of the following is paramagnetic

(a) O_2^+ (b) CN^-

(c) CO (d) N_2