CHAPTER 22- MISCELLANEOUS

EE24BTECH11021 - Eshan Ray

SECTION-B [*JEEMain/AIEEE*]

61. The statement $\sim (p \leftrightarrow \sim q)$ is: [*JEE − M*2014]
    (a) a tautology
    (b) a fallacy
    (c) equivalent to $p \leftrightarrow q$
    (d) equivalent to $\sim p \leftrightarrow q$
62. Let A and B be two sets containing four and two sets respectively. Then the number of subsets of $A \times B$, each having at least three elements is: [*JEE − M*2015]
    (a) 275
    (b) 510
    (c) 219
    (d) 256
63. The negation of $\sim \; s \vee (\sim r \wedge s)$ is equivalent to: [*JEE − M*2015]
    (a) $s \vee (r \vee \sim s)$
    (b) $s \wedge r$
    (c) $s \wedge \sim r$
    (d) $s \wedge (r \wedge \sim s)$
64. The mean of the data set comprising of 16 observations is 16. If one of the observation valued 16 is deleted and three new observations valued 3, 4 and 5 are added to the data, then the mean of the resultant data, is: [*JEE − M*2015]
    (a) 15.8
    (b) 14.0
    (c) 16.8
    (d) 16.0
65. If $f(x) + 2f\left(\frac{1}{x}\right) = 3x, x \neq 0$ and S=$\{x \mid R : f(x) = f(-x)\}$; then S: [*JEE − M*2016]
    (a) contains exactly two elements.
    (b) contains more than two elements.
    (c) is an empty set.
    (d) contains exactly one element.
66. The Boolean Expression $(p \wedge \sim q) \vee q \vee (\sim p \wedge q)$ is equivalent to: [*JEE − M*2016]
    (a) $p \cup q$
    (b) $p \vee \sim q$
    (c) $\sim p \wedge q$
    (d) $p \cup q$
67. If the standard deviation of the numbers $2, 3, a$ and 11 is 3.5, then which of the following is true? [*JEE − M*2016]
    (a) $3a^2 - 34a + 91 = 0$
    (b) $3a^2 - 23a + 44 = 0$
    (c) $3a^2 - 26a + 55 = 0$
    (d) $3a^2 - 32a + 84 = 0$
68. A man is walking towards a vertical pillar in a straight path, at a uniform speed. At a certain point A on the path, he observes that the angle of elevation of the top of the pillar is 30. After walking for the 10 minutes from A in the same direction, at a point B, he observes that the angle of elevation of the top of the pillar is 60. Then the time taken (*inminutes*) by him, from B to reach the pillar, is: [*JEE − M*2016]
    (a) 20
    (b) 5
    (c) 6
    (d) 10
69. The following statement $(p \to q) \to [(\sim p \to q) \to q]$ is: [*JEE − M*2017]
    (a) a fallacy
    (b) a tautology
    (c) equivalent to $\sim p \to q$
    (d) equivalent to $p \to \sim q$
70. $\sum_{i=1}^{9}(x_i - 5) = 9$ and $\sum_{i=1}^{9}(x_i - 5)^2 = 45$, then the standard deviation of the 9 items $x_1, x_2, \ldots, x_9$ is: [*JEE − M*2018]
    (a) 4
    (b) 2
    (c) 3
    (d) 9
71. The Boolean Expression $\sim (p \vee q) \vee (\sim p \wedge q)$ is equivalent to: [*JEE − M*2018]
    (a) p
    (b) q
    (c) $\sim q$
    (d) $\sim p$
72. Let S=$\{x \in R : x \geq 0\}$ and $2\left|\sqrt{x} - 3\right| + \sqrt{x}\left(\sqrt{x} - 6\right) + 6 = 0$. Then S: [*JEE − M*2018]
    (a) contains exactly one element.
    (b) contains exactly two elements.
    (c) contains exactly four elements.
    (d) is an empty set.
73. If the Boolean expression $(p \oplus q) \wedge (\sim p \odot q)$ is equivalent to $p \wedge q$, where $\oplus, \odot \in \{\wedge, \vee\}$ then the ordered pair $(\oplus, \odot)$ is: [*JEE − M*2019 − 9*JAN*]
    (a) $(\vee, \wedge)$
    (b) $(\vee, \vee)$
    (c) $(\wedge, \vee)$
    (d) $(\wedge, \wedge)$
74. 5 students of a class have an average height 150 cm and variance 18 cm^2. A new student, whose height is 156 cm joined them. The variance$\left(incm^2\right)$ of the height of these six students is: [*JEE − M*2019 − 9*JAN*]
    (a) 16

(b) 22
(c) 20
(d) 18

75. If the standard deviation of the numbers $-1, 0, 1, k$ is $\sqrt{5}$ where k>0, then k is equal to: $[JEE - M2019 - 9April]$
(a) $2\sqrt{6}$
(b) $2\sqrt{\frac{10}{3}}$
(c) $4\sqrt{\frac{5}{3}}$
(d) $\sqrt{6}$

76. For any two statements p and q, the negative of the expression $p \vee (\sim p \wedge q)$ is: $[JEEM2019 - 9April]$
(a) $\sim p \wedge \sim q$
(b) $p \wedge q$
(c) $p \leftrightarrow q$
(d) $\sim p \vee \sim q$