CHAPTER 22- MISCELLANEOUS

EE24BTECH11021 - Eshan Ray

Section-B [JEEMain/AIEEE]

- 61. The statement $\sim (p \leftrightarrow \sim q)$ is: [JEE M2014]
 - (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 M2015]
 - (a) 275
 - (b) 510
 - (c) 219
 - (d) 256
- 63. The negation of $\sim s \lor (\sim r \land s)$ is equivalent to: [JEE M2015]
 - (a) $s \lor (r \lor \sim s)$
 - (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 M2015]
 - (a) 15.8
 - (b) 14.0
 - (c) 16.8
 - (d) 16.0
- 65. If $f(x) + 2f(\frac{1}{x}) = 3x, x \neq 0$ 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

 $(p \land \sim q) \lor q \lor (\sim p \land q)$ is equivalent to: [JEE – M2016]

- (a) $p \cup q$
- (b) $p \lor \sim q$
- (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 M2016]
 - (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 - M2016]

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- (a) 20
- (b) 5
- (c) 6
- (d) 10
- 69. The following statement

$$(p \rightarrow q) \rightarrow [(\sim p \rightarrow q) \rightarrow q]$$
 is: [JEE – M2017]

- (a) a fallacy
- (b) a tautology
- (c) equivalent to $\sim p \rightarrow q$
- (d) equivalent to $p \rightarrow \sim q$
- 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, \dots, x_9 is: [*JEE M2018*]
 - (a) 4
 - (b) 2
 - (c) 3
 - (d) 9
- 71. The Boolean Expression

 $\sim (p \lor q) \lor (\sim p \land q)$ is equivalent to: [JEE – M2018]

- (a) p
- (b) q
- (c) $\sim q$
- (d) $\sim p$
- 72. Let $S = \{x \in R : x \ge 0\}$ and $2 | \sqrt{x} 3| + \sqrt{x} (\sqrt{x} 6) + 6 = 0$. Then S: [JEE M2018]
 - (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

 $(p \oplus q) \land (\sim p \odot q)$ is equivalent to $p \land q$, where $\oplus, \odot \in \{\land, \lor\}$ then the ordered pair (\oplus, \odot) is: [JEE - M2019 - 9JAN]

- (a) (\vee, \wedge)
- (b) (\lor, \lor)
- (c) (\land, \lor)
- (d) (\land, \land)
- 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 $(incm^2)$ of the height of these six students is: [JEE M2019 9JAN]
 - (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) $2\sqrt{6}$

 - (a) $2\sqrt{0}$ (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 $p \lor (\sim p \land q)$ is: [JEEM2019 - 9April]
 - (a) $\sim p \wedge \sim q$
 - (b) $p \wedge q$
 - (c) $p \leftrightarrow q$
 - (d) $\sim p \lor \sim q$