Some Important questions

Select the correct answer to every question

Question 1: A college has 4 departments namely, Biology, Chemistry, Geology and Physics department. If there are 47 members of Biology department, 52 members of the Chemistry departments, 31 members of the Geology department and 38 members of the Physics department and no faculty member belongs to more than one of these departments.

(a) If a representative to the college personnel committee is to be chosen from the previous departments, then the number of ways to choose one representative is:

(1) 47+52+31+38=168 (2) 47x52x31x38=2879032 .

(b) if a committee of size 6 is to be chosen such that it contains one member from Biology, 2 members from chemistry,2members from Geology and one member from physics department then the number of ways to choose the committee is:

(1) C(47,1)xC(52,2)xC(31,2)C(38,1) . (2) P(47,1)xP(52,2)P(31,2)xP(38,1).

(3) C(47,1)+C(52,2)+C(31,2)+C(38,1). (4) P(47,1)+P(52,2)+P(31,2)+P(38,1).

Question 2: Buick automobile come in 4 models, 12 colors, 3 enginesizes, and 2 Transmission types (automatic and manual).

(a) The number of distinct Buicks is:
(1) 21. (2) 288. (3) 51. (4) 42.

(b) If one available colors is red, then the number of red Buicks is:
(1) 24. (2) 12. (3) 18. (4) 25.

(c) The number of red and automatic Buicks is:
(1) 7. (2) 12. (3) 9. (4) 15.

Question 3: Let $\Sigma = \{a, b\}$, L_1 be the set of all strings that begin with b and have length less than or equal to 3.

(1) which of the following statements is true :

(a) $\{bbb, abb\} \subseteq L_1$ (b) $bab \in L_1$ (c) $bab \subset L_1$

(2) The number of elements of L_1 is:

(a) 5. (b) 7. (c) 9. (d) 12.

Question 4: A group contains 5 men and 5 women.

(a) The number of ways to arrange these people in a raw is:

(1) $\frac{10!}{5!5!}$. (2) $10!$. (3) $(10,5)$. (4) $C(10,5)$.

(b) The number of ways to arrange these people in a raw if the men and women alternates is:

(1) $(5!)^2$. (2) $10!$. (3) $2(5!)^2$. (4) $P(10,5)$.

Question 5: Let $X = \{p, e, r\}$.

(a) The number of words of length 6 in which p appears 3 times, e appears 2 times and r appears one time is :

(1) 50 . (2) 60 . (3) 20 . (4) 120 .

(b)The number of words of length 2 is:

(1) 9. (2) 6. (3) 12. (4) 3.

Question 6: Let $p, q \ and \ r$ denote primitive statements.

(a) $\neg(p \vee \neg q) \rightarrow \neg p$ is :

(1) A contradiction. (2) a tautology. (3) neither a contradiction nor a tautology.

(b) $p \rightarrow (q \rightarrow r)$ is:

(1) A tautology. (2) a contradiction. (3)neither(1) nor (2) .

(c) $p \wedge \neg p$ is :

(1) A tautology. (2) a contradiction. (3) neither (1) nor (2).