1. The greatest value of $c \in R$ for which the system of linear equations $x - cy - cz = 0$, $cx - y + cz = 0$, $cx + cy - z = 0$ has a non-trivial solution, is

(1) -1 (2) 2

(3) $\frac{1}{2}$ (4) 0

2. The system of equations $x + ky + 3z = 0$, $3x + ky - 2z = 0$, $2x + 3y - 4z = 0$ possess a non-trivial solution over the set of rationals, then $2k$, is an integral element of the interval :

(1) $[10, 20]$ (2) $(20, 30)$

(3) $[30, 40]$ (4) $(40, 50)$

3. The system of equations $2x + 6y + 11 = 0$, $6x + 20y - 6z + 3 = 0$ and $6y - 18z + 1 = 0$ will have:

(1) Consistent with unique solution. (2) Consistent with infinitely many solution.

(3) Inconsistent. (4) Data insufficient to give the answer.

4. The sum of distinct values of λ for which the system of equations :

$(\lambda - 1)\, x + (3\lambda + 1)\, y + 2\lambda z = 0$

$(\lambda - 1)\, x + (4\lambda - 2)\, y + (\lambda + 3)\, z = 0$

$2x + (3\lambda + 1)\, y + 3\,(\lambda - 1)\, z = 0,$

Has non-zero solutions, is ..... .

5. The value of λ and μ for which the system of equations $x + y + z = 6$, $x + 2y + 3z = 10$ and $x + 2y + \lambda z = \mu$ have no solution, are

(1) $\lambda = 3,\ \mu \neq 10$ (2) $\lambda \neq 3,\ \mu = 10$

(3) $\lambda \neq 3,\ \mu \neq 10$ (4) None of these

6. Let S be the set of all real values of k for which the system of linear equations

$x + y + z = 2$

$2x + y - z = 3$

$3x + 2y + kz = 4$

has a unique solution. Then S is :

(1) equal to $R - \{0\}$ (2) an empty set

(3) equal to R (4) equal to $\{0\}$

7. The value of $k \in R$, for which the following system of linear equations

$3x - y + 4z = 3$

$x + 2y - 3z = -2$

$6x + 5y + kz = -3$

has infinitely many solutions, is:

(1) 3 (2) -5

(3) 5 (4) -3

8. If the system of equations

$kx + y + 2z = 1$

$3x - y - 2z = 2$

$-2x - 2y - 4z = 3$

has infinitely many solutions, then k is equal to _____ .

9. Consider the following system of equations:

$x + 2y - 3z = a$

$2x + 6y - 11z = b$

$x - 2y + 7z = c$

where a, b and c are real constants. Then the system of equations :

(1) has a unique solution when $5a = 2b + c$ (2) has no solution for all a, b and c

(3) has infinite number of solutions when $5a = 2b + c$ (4) has a unique solution for all a, b and c

10. For the system of linear equations:

$x - 2y = 1,\ x - y + kz = -2,\ ky + 4z = 6,\ k \in R$

Consider the following statements:

(A) The system has unique solution if $k \neq 2, k \neq -2$.

(B) The system has unique solution if $k = -2$.

(C) The system has unique solution if $k = 2$.

(D) The system has no-solution if $k = 2$.

(E) The system has infinite number of solutions if $k \neq -2$.

Which of the following statements are correct?

(1) (A) and (E) only

(2) (B) and (E) only

(3) (A) and (D) only

(4) (C) and (D) only