B.Sc. III B-327 Linear Programming Topic: Simplex Method

Q.1 Simplex method to solve ~~L.P.P.~~ L.P.P. was developed by
(a) Lagrange, (b) George Dantzig
(c) Newton (d) None of these

Q.2 If a constraint has $\leq$ sign, we introduce:
(a) Slack variable (b) Surplus variable
(c) Artificial variable (d) none of these

Q.3. Solution of the L.P.P.:
Max $Z = 10x_1 + 6x_2$, subject to $x_1 + x_2 \leq 2, 2x_1 + x_2 \leq 4$, $3x_1 + 8x_2 \leq 12$, $x_1, x_2 \geq 0$ is
(a) $x_1 = 2, x_2 = 0$ Max $Z = 20$ (b) $x_1 = 1, x_2 = 7$, Max $Z = -2$
(c) $x_1 = 0, x_2 = 0$ max $Z = 0$ (d) $x_1 = 0, x_2 = 3$, Max $Z = 1$.

Q.4. If in the final simplex table of a L.P.P., $\Delta_j = C_j - C_i y_j < 0$ for all non basic variables then the solution is
(a) Optimal and alternate solution exist (b) Unique and optimal
(c) Unbounded (d) none of these

Q.5. If in a L.P.P. the variable x_3 is unrestricted in sign then we put
(a) $x_3 = x_3' + x_3''$, $x_3', x_3'' \geq 0$ (b) $x_3 = x_3' - x_3''$, $x_3', x_3'' \geq 0$
(c) $x_3 = x_3' + x_3''$, $x_3', x_3'' \leq 0$ (d) $x_3' = x_3' - x_3''$ $x_3', x_3'' \leq 0$

Q.6. In simplex method if a_k is the incoming vector then departing vector B_r is selected so the value of r for which
(a) $\frac{x_{Bi}}{y_{ik}}$, $y_{ik} > 0$ is minimum (b) $\frac{x_{Bi}}{y_{ik}}$, $y_{ik} \geq 0$ is maximum
(c) $\frac{x_{Bi}}{y_{ik}}$, $y_{ik} < 0$ is minimum (d) none of these

Q.7. When the successive iterations in simplex method enters a loop which repeats the same sequence of iterations, then the phenomenon is called
(a) Non degeneracy (b) Cycling
(c) Degeneracy (d) None of these

Q.8. In Big-M method of L.P.P. we take coeff. of slack, surplus and artificial variables in the objective function are respectively
(a) $0, 0, -M$ (b) $0, 0, M$
(c) $-1, -1, -M$ (d) None of these

Q.9. To convert a minimization problem into maximization L.P.P. we multiply the objective function by:

(a) 1 (b) −1
(c) 2 (d) −2

Q.10 In phase I of Two-phase method of L.P.P. we eliminate:

(a) Surplus variable (b) Artificial variable
(c) Slack variable (d) none of these

Q.11 In Simplex method, all variables must be:

(a) non-negative (b) negative
(c) may or may not be negative (d) none of these

Q.12 In a simplex table if the value of basic variable appears with a negative sign then:

(a) the solution is optimal (b) the solution is feasible
(c) the solution is unbounded (d) all of the above

Q.13 Which of the following method is used to resolve degeneracy?

(a) Simplex method (b) Hungarian method
(c) graphical method (d) Colonel's Perturbation method.

Q.14 The degeneracy may appears in a L.P.P. in first iteration with some component of vector b is:

(a) Positive (b) zero
(c) negative (d) none of these

Q.15 The procedure which prevent cycling with the simplex routine is called the resolution of:

(a) non-degeneracy (b) degeneracy
(c) both (a) & (b) (c) none of these

Q.16 The number of additional constraints in standard form I & II of revised simplex method are respectively:

(a) 0 and 1, (b) 1 and 2
(c) 1 and 1 (d) 2 and 1,

Q17 In standard form II of revised simplex method we need

(a) slack variable (b) surplus variable
(c) Artificial variable (d) Basic variable

Q18 In standard form I and II of revised simplex method the basis matrices are respectively denoted by:

(a) B_1 and B_2 (b) B' and B''
(c) B_0 and B_0 (d) $\overline{B}$ and $\overline{\overline{B}}$.