CS-2001 Data Structure Fall - 2024

[Assignment – 03]   **[Total Marks 300]**

Instructions.

- **Plagiarism is strictly prohibited. If any instance of plagiarism is detected, a consequence of receiving a score of zero will be applied to all assignments, quizzes, and homework. Additionally, the matter will be forwarded to the Disciplinary Committee. No exceptions or excuses will be entertained.**
- This is a handwritten assignment. Submit hardcopy (handwritten) in the next class.
- The deadline of assignment is **21st October 2024 5:30 PM**.
- Assignments submitted after the deadline will be marked DIRECT ZERO.
- Correct and timely submission of the assignment is the responsibility of every student; hence no relaxation will be given to anyone.
- For timely completion of the assignment, start as early as possible.
- Note: Follow the given instructions to the letter, failing to do so will result in a zero.

Convert the following <u>Infix</u> expressions into <u>prefix</u> and <u>postfix</u> expressions. Show complete steps in tabular form.

1. (a + b) * (c - d)
2. (x * y) + (z / (p - q))
3. (m + (n * o)) / (p - (q + r))
4. (a + b) / (c * d) + (e - f)
5. (x * y) - (a / b) + (c + d)
6. (p * (q + r)) / (s - t) + (u + v)
7. (x + (y - z)) * (a * (b / c))
8. (m * n) - (p + (q / r)) + (s + t)
9. ((a + b) * (c - d)) / (e + (f / g))
10. (x * (y + z)) - ((a + b) / (c - d))
11. ((a + b) * (c - d) + (e * (f / g))) / (h + (i - (j * (k + l))))
12. (x + (y - z)) * (a * (b / (c - (d * (e + f)))))
13. ((m * n) - (p + (q / r))) + ((s * (t / (u - (v * (w + x))))))
14. ((a + b) * (c - d)) / ((e + f) * (g - (h / (i + (j * (k + l))))))
15. (x * (y + z)) - (((a * (b + (c - (d / (e + f)))))))
16. ((p * (q + r)) / (s - (t * (u + (v - (w * (x + y)))))))
17. (((x + (y - z)) * (a * (b / (c - (d * (e + f)))))))
18. ((m * n) - ((p + (q / r)) + (s * (t / (u - (v * (w + x)))))))
19. ((((a + b) * (c - (d * (e + f)))))) / ((g + h) * (i - (j / (k + (l * (m + n))))))
20. (x * (y + (z * (a + (b / (c - (d * (e + (f + g)))))))))

Evaluate the following postfix expressions. Show complete steps in tabular form.

1. 1 2 + 3 4 - * 5 6 7 / * + 8 9 10 1 * - + /
2. 1 2 3 - + 4 5 6 7 * + / * 8 9 / -
3. 10 1 2 - * 3 4 5 6 7 - * + /
4. 1 2 + 3 4 * / 5 6 - +
5. 1 2 * 3 4 / - 5 6 + +
6. 7 8 9 + * 1 2 3 4 + * - /
7. 1 2 3 - + 4 5 6 7 * - / *
8. 10 1 * 2 3 4 / + - 5 6 + +
9. 1 2 + 3 4 5 6 + * - * 7 8 9 / + 10 1 2 3 4 + * - / /
10. 1 2 3 + * 4 5 6 / + 7 8 9 10 + * - /