1147-94-45 **Khodakhast Bibak*** (bibakk@miamioh.edu) and **Olgica Milenkovic** (milenkov@illinois.edu). *Explicit Formulas for the Weight Enumerators of Some Classes of Deletion Correcting Codes.*

We introduce a general class of codes which includes several well-known classes of deletion/insertion correcting codes as special cases. For example, the Helberg code, the Levenshtein code, the Varshamov–Tenengolts code, and most variants of these codes including most of those which have been recently used in studying DNA-based data storage systems are all special cases of our code. Then, using a number theoretic method, we give an explicit formula for the weight enumerator of our code which in turn gives explicit formulas for the weight enumerators and so the sizes of all the aforementioned codes. We also obtain the size of the Shifted Varshamov–Tenengolts code. Another application which automatically follows from our result is an explicit formula for the number of binary solutions of an *arbitrary* linear congruence which, to the best of our knowledge, is the first result of its kind in the literature and might be also of independent interest. Our general result might have more applications/implications in information theory, computer science, and mathematics. (Received November 12, 2018)