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This *Note* deals with the synthesis and studies of trisaccharides constituted with an un-natural septanoside moiety. Synthesis of these trisaccharides resides primarily on our new method of septanoside formation, namely, the ring expansion of oxyglycals. The stereoselectivity of ring opening, as well as, the attendant formation of glycosidic linkage with a glycosyl acceptor are the attractive features of the oxyglycal ring opening methodology. The method is exemplified eminently in the present manuscript with the synthesis of trisaccharides, constituted with pyranoside-septanoside-pyranoside and pyranoside-septanoside-furanoside sugars. Such a method to synthesize trisaccharides, through ring-opening and concomitant glycosidic bond formation is exceptional and is unknown currently through any other synthetic methods. Further to elaborating the oxyglycal ring expansion strategy, we have performed conformational studies of the new septanoside containing trisaccharides with the aid of NMR spectroscopic and computational techniques. The conformations adopted by a trisaccharide are identified in detail, thereby providing further insights into these new un-natural sugar containing trisaccharides.