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|  | **Part–B: Answer All Questions. 5x 13 =65 Marks** | |  |  |  |  |
| 12 | A | Convert the following grammar G into Greibach Normal Form (GNF) X1->X2X3 X2->X3X1 | b X3->X1X2 | a | 13 | 3 | 4 | 2.3.1 |
|  | OR |  |  |  |  |
| B | Construct a Turing Machine for multiplying two non-negative integers using subroutine. | 13 | 3 | 4 | 2.3.1 |
| 13 | A | (i)Explain techniques for Turing machine construction | 7 | 2 | 4 | 1.4.1 |
| (ii)If L1 and L2 are recursively enumerable languages, prove that the union of L1 and L2 is also recursively enumerable | 6 | 2 | 5 | 1.4.1 |
|  | **OR** |  |  |  |  |
| B | (i) Explain the steps to convert CFG to PDA | 7 | 2 | 4 | 1.4.1 |
| (ii) Prove that the complement of recursive language is also recursive language | 6 | 2 | 5 |  |