**SVKM’S NMIMS, School of Technology Management & Engineering | Navi-Mumbai**

**B-Tech (A.Y. 2020-21)**

**Term Work 3 (b)**

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| **Course: BTech (COMPUTER Sc. And Business Systems)** | **SEM: III** |
| **Subject: Formal Language and Automata Theory** | **Marks: 5** |
| **Date of Exam: 11.09.2020** | **Duration: 1 Hour** |

***Instruction to students:***

**1.** Answer all questions.

**2.** Figures in brackets on the right hand side indicate full marks.

Q.1) Show that the following grammar is ambiguous: [1 marks]

*S* 🡺 *a* | *a b S b* | *a A b*

*A* 🡺 *b S* | *a A A b*

Q.2) Convert the following CFG into Greibach normal form (GNF): [1 marks]

*S* 🡺 *A B* | 0

*A* 🡺 *B X* | 1

*B* 🡺 *C D* | 2

*C* 🡺 *A D* | 0

*D* 🡺 1

Q.3) Construct a CFG for the following sets: [2 marks]

(i) {*a*2n *bc* | *n* >= 1}

(ii) {*a*n *b*m *c*m *dn*| *m*, *n* >= 1}

Q.4) Construct a regular grammar for the DFA shown in Fig. below [1 mark]

