United College of Engineering & Research, Prayagraj

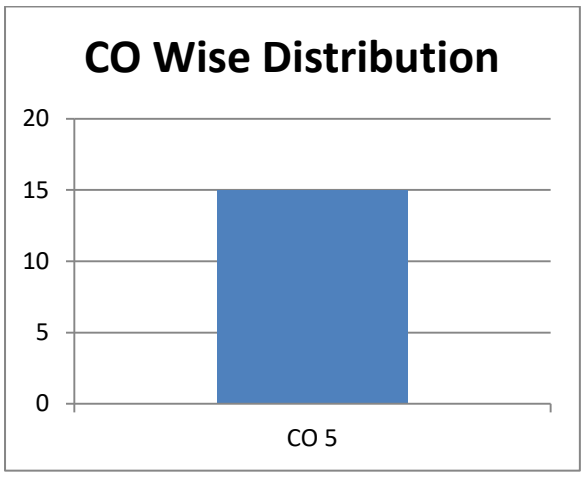
Department of Computer Science & Engineering

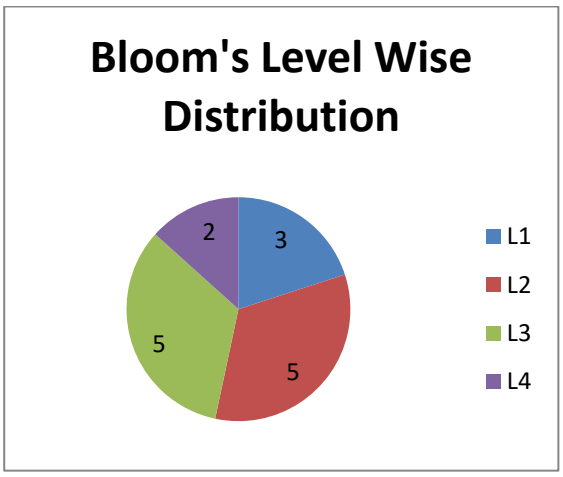
Automata Theory(KCS-402)

Assignment-4

Q. No.	Question	CO	Bloom's level
	Section-A		
1	What do you mean by Two stack Pushdown Automata?	CO5	L1
2	Define Deterministic Pushdown Automata(DPDA).	CO5	L1
3	Design PDA for L = $\{a^n b^m \mid m,n > 0\}$.	CO5	L2
4	Can we make Deterministic Pushdown Automata for the language L=$\{ww^R$	CO5	L2
5	Is the power of PDA and DPDA equal? Justify.	CO5	L1
	Section-B		
6	Convert the grammar S→aAA, A→a|aS|bS to a PDA that accepts the language by empty stack.	CO5	L3
7	Design a PDA for the following language: L = $\{a^i b^j c^k \mid i = j \text{ or } j = k\}$	CO5	L4
8	Design a PDA for the Language L =$\{ww^R \mid w \in \{a,b\}^*\}$	CO5	L3
9	Construct a PDA from the following CFG. G = ({S, X}, {a, b}, P, S) where the productions are – S → XS | ε , A → aXb | Ab | ab	CO5	L2
10	Consider the CFG ({S, A, B} {a, b}, P, S), where productions P are as follows: S→aABB/ aAA, A→aBB/a, B→bBB / A. Convert the given grammar to PDA that accept the same language by empty stack.	CO5	L2
11	Obtain PDA to accept all strings generated by the language, L=$\{a^n b^m a^n \mid m, n \geq 1\}$.	CO5	L3
12	Prove that language recognized by final state PDA is also recognized by empty stack PDA and vice-versa i.e. L(M) = N(M).	CO5	L3
13	Construct PDA for the following language L = $\{a^n b^m c^m d^n \mid m, n \geq 1\}$.	CO5	L4
14	Consider following PDA:- M= ($\{q_0\}$,{0,1},{a,b,Z_0}, δ,q_0,Z_0, Ø) Where, δ is defined as following:- δ (q_0,0, Z_0) = (q_0, aZ_0) δ (q_0,1, Z_0) = (q_0, bZ_0) δ (q_0,0, a) = (q_0, aa) δ (q_0, 1, b) = (q_1, bb) δ (q_0, 0, b) = (q_0, ε) δ (q_0,1, a) = (q_0, ε) δ (q_0, ε, Z_0) = (q_0, ε)	CO5	L3

	Convert this PDA into corresponding CFG.		
15	Let G be a CFG and its language is L(G). How do you decide that L(G) is finite?	CO5	L2





CO - Course Outcome

Bloom's Levels

1- Remembering 2-Understanding 3-Applying

4-Analyzing 5-Evaluating 6-Creating