Report On Local Search

Iftekhar E Mahbub Zeeon – 1805038

Penalty Strategy: Exponential

Benchmark Data	Known Best Solution		Scheme - 1 Largest Degree Heuristic			
			Timeslots	Penalty		
	Timeslots	Penalty		After Heuristic	After Kempe	After Pairswap
CAR-F-92	32	3.74	32	10.6152	5.6556	5.5487
CAR-S-91	35	4.42	34	11.4957	7.0083	6.9411
KFU-93	20	12.96	20	46.5259	17.2811	16.7936
TRE-92	23	7.75	23	15.9009	9.9387	9.8649
YOR-93	21	35.84	23	64.6886	36.4954	36.0924

Benchmark Data	Known Best Solution		Scheme - 2 Highest Saturation Degree Heuristic			
			Timeslots	Penalty		
	Timeslots	Penalty		After Heuristic	After Kempe	After Pairswap
CAR-F-92	32	3.74	30	9.935	6.3222	6.2456
CAR-S-91	35	4.42	31	12.4463	7.8503	7.8195
KFU-93	20	12.96	19	46.7077	18.9446	17.653
TRE-92	23	7.75	23	15.6502	10.2082	10.0738
YOR-93	21	35.84	20	61.6588	46.1402	45.9075

Benchmark Data	Known Best Solution		Scheme - 3 Largest Enrollment Heuristic			
			Timeslots	Penalty		
	Timeslots	Penalty		After Heuristic	After Kempe	After Pairswap
CAR-F-92	32	3.74	35	10.696	4.767	4.72
CAR-S-91	35	4.42	36	13.7809	6.3919	6.3316
KFU-93	20	12.96	21	54.512	16.312	15.9624
TRE-92	23	7.75	22	16.3281	10.702	10.605
YOR-93	21	35.84	25	63.2709	32.4155	32.2763

Benchmark Data	Known Best Solution		Scheme - 4 Random Heuristic			
			Timeslots	Penalty		
	Timeslots	Penalty		After Heuristic	After Kempe	After Pairswap
CAR-F-92	32	3.74	42	8.1761	3.925	3.7833
CAR-S-91	35	4.42	45	10.1	4.91	4.81
KFU-93	20	12.96	27	35.6816	10.616	9.6784
TRE-92	23	7.75	30	11.2126	7.0734	6.8646
YOR-93	21	35.84	29	52.628	27.1498	27.1073

Penalty Strategy: Linear

Benchmark Data	Known Best Solution		Scheme - 2 Highest Saturation Degree Heuristic			
			Timeslots	Penalty		
	Timeslots	Penalty		After Heuristic	After Kempe	After Pairswap
CAR-F-92	32	3.74	30	6.4716	3.8506	3.8028
CAR-S-91	35	4.42	31	8.0505	5.0631	5.0183
KFU-93	20	12.96	19	28.9844	12.7736	12.1798
TRE-92	23	7.75	23	10.0477	6.6431	6.6
YOR-93	21	35.84	20	38.9245	29.7385	29.6748

Observation:

From all the schemes, we can conclude that the second heuristic: **Highest Saturation Degree** has the most efficient outcome. That is why this heuristic was chosen for the linear penalty observation.