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Report on Offline-3(Exam Scheduling Using Local Search)

In this offline we have used a local search algorithm to schedule exams using several constructive heuristics and two perturbative heuristics. For each constructive heuristics, penalty 1 is the penalty after applying the constructive heuristic only, penalty 2 is the penalty after applying Kempe chain and penalty 3 is the penalty after applying Pair swap heuristic.

Benchmark Data	Known Best Solution		Scheme 1 (Largest Enrollment + Kempe Chain + Pair Swap)							
			Exponential Penalty				Linear Penalty			
	Time Slots	Penalty	Time Slots	Penalty 1	Penalty 2	Penalty 3	Time Slots	Penalty 1	Penalty 2	Penalty 3
CAR91	35	4.42	36	13.7759	6.63216	6.44452	36	8.4414	4.1295	4.11698
CAR92	32	3.74	34	10.8422	5.15213	5.05207	34	6.83229	3.26011	3.23036
KFU93	20	12.96	21	54.4122	17.9039	16.258	21	34.1802	10.2677	10.1926
TRE92	23	7.75	22	16.3308	10.7834	10.4459	22	10.4296	6.76066	6.67033
YOR83	21	34.84	24	63.7885	35.7386	35.0797	24	40.5399	22.9522	22.9522

Benchmark Data	Known Best Solution		Scheme 2 (Largest Degree + Kempe Chain + Pair Swap)							
			Exponential Penalty				Linear Penalty			
	Time Slots	Penalty	Time Slots	Penalty 1	Penalty 2	Penalty 3	Time Slots	Penalty 1	Penalty 2	Penalty 3
CAR91	35	4.42	34	11.6292	7.48954	7.17718	34	7.42916	4.64327	4.62673
CAR92	32	3.74	32	10.5233	5.72132	5.52028	32	6.71242	3.61008	3.56545
KFU93	20	12.96	20	46.2109	20.5179	17.8981	20	28.5474	12.0576	11.8422
TRE92	23	7.75	23	16.0261	10.3867	9.94292	23	10.2086	6.57267	6.41724
YOR83	21	34.84	23	65.6982	38.7577	36.44	23	41.39	23.9469	23.6642

Benchmark Data	Known Best Solution		Scheme 3 (Smallest Saturation + Kempe Chain + Pair Swap)							
			Exponential Penalty				Linear Penalty			
	Time Slots	Penalty	Time Slots	Penalty 1	Penalty 2	Penalty 3	Time Slots	Penalty 1	Penalty 2	Penalty 3
CAR91	35	4.42	34	11.4426	7.16714	6.98966	34	7.38592	4.56292	4.53385
CAR92	32	3.74	32	10.5598	5.66182	5.52668	32	6.73544	3.57196	3.51572
KFU93	20	12.96	20	46.4004	21.0398	19.1884	20	28.5867	12.8637	12.7665
TRE92	23	7.75	23	16.0138	10.1304	9.85144	23	10.2082	6.46905	6.42366

YOR83	21	34.84	23	65.6472	38.1615	36.8427	23	41.3603	24.2997	24.1658

Benchmark Data	Known Best Solution		Scheme 4 (Random Ordering + Kempe Chain + Pair Swap)							
			Exponential Penalty				Linear Penalty			
	Time Slots	Penalty	Time Slots	Penalty1	Penalty2	Penalty3	Time Slots	Penalty 1	Penalty 2	Penalty 3
CAR91	35	4.42	48	9.2443	4.97932	4.68675	48	5.92379	3.12832	3.07621
CAR92	32	3.74	47	7.72735	3.67343	3.41093	47	4.86237	2.2454	2.20729
KFU93	20	12.96	26	34.8955	13.3948	12.2845	26	21.9069	8.50552	7.78613
TRE92	23	7.75	29	12.8044	8.49312	7.19395	29	8.09766	4.82714	4.77212
YOR83	21	34.84	28	49.5154	29.5632	28.6791	28	31.5579	18.9756	18.6844