Faculty of Engineering- Shoubra Eng. Mathematics & Physics Department Qualifying Studies (Mathematics)Date: $26 / 5 / 2015$ Operations Research EMM 406 Duration: 3 hours 2 Answer All questionsThe exam consists of one page $ \bullet No. of questions: 4$ Total Mark: 200[11](a)Write the mathematical form of mathematical programming problem. Also, classify the mathematical programming problems. (b)Write the dual problem of the LP problem: maximize $f = -2x + 2y$ s.t $3x + y \le 12$, $-x + y = 6$, $x + y \ge 8$, $x, y \ge 0$ 30[2]Solve the LP problems: (a) maximize $f = 3x + y + 4z$ s.t $x + y + 2z \le 18$ $2x + 3y + 2z = 6$, $x, y, z \ge 0$ 30[3](a) State the definition of convex set. (c)Prove that: (i)The minimum of a strict convex function f on a convex set $\mathbf{G} \subset \mathbf{R}^n$ if exist must be unique.30[4]A company makes desk organizers. The standard model requires 2 hours of the cutter time and one hour of the finisher time. The cutter has 104 hours of time available for this work per month, while the finisher time. The cutter has 104 hours of time available for this work per month, while the finisher time. The cutter has 104 hours of time available for this work per month, while the finisher time. The cutter has 104 hours of time available for this work per month, while the finisher time to make the most profit.30	Benha University		Final Term Exam		
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