ON DEGREE SETS AND THE MINIMUM ORDERS IN BIPARTITE GRAPHS

Y. MANOUSSAKIS

Université Paris XI (Orsay)
L.R.I., Bât. 490, F-91405
Orsay Cédex, France

e-mail: yannis@lri.fr

AND

H.P. PATIL¹

Department of Mathematics
Pondicherry University
Puducherry, India

e-mail: hpppondy@gmail.com

Abstract

For any simple graph G , let $D(G)$ denote the degree set $\{deg_G(v) : v \in V(G)\}$. Let S be a finite, nonempty set of positive integers. In this paper, we first determine the families of graphs G which are unicyclic, bipartite satisfying $D(G) = S$, and further obtain the graphs of minimum orders in such families. More general, for a given pair (S, T) of finite, nonempty sets of positive integers of the same cardinality, it is shown that there exists a bipartite graph $B(X, Y)$ such that $D(X) = S$, $D(Y) = T$ and the minimum orders of different types are obtained for such graphs.

Keywords: degree sets, unicyclic graphs.

2010 Mathematics Subject Classification: 05C07.

REFERENCES

- [1] F. Harary, *Graph Theory* (Addison-Wesley, Reading Mass, 1969).
- [2] S.F. Kapoor, A.D. Polimeni and C.W. Wall, *Degree sets for graphs*, *Fund. Math.* **XCIV** (1977) 189–194.

¹Research supported by Government of France.

- [3] Y. Manoussakis, H.P. Patil and V. Sankar, *Further results on degree sets for graphs*, AKCE Int. J. Graphs Comb. **1** (2004) 77–82.
- [4] Y. Manoussakis and H.P. Patil, *Bipartite graphs and their degree sets*, R.C. Bose Centenary Symposium on Discrete Mathematics and Applications, (Kolkata India, 15–21 Dec. 2002), Electron. Notes Discrete Math. **15** (2003) 125.
doi:10.1016/S1571-0653(04)00554-2
- [5] S. Pirzada, T.A. Naikoo, and F.A. Dar, *Degree sets in bipartite and 3-partite graphs*, Orient. J. Math Sciences **1** (2007) 39–45.
- [6] A. Tripathi and S. Vijay, *On the least size of a graph with a given degree set*, Discrete Appl. Math. **154** (2006) 2530–2536.
doi:10.1016/j.dam.2006.04.003

Received 25 April 2011

Revised 29 April 2013

Accepted 29 April 2013