

TEZPUR UNIVERSITY
Assignment (Spring) 2018
MMS404: Graph Theory

Total Marks: 30

The figures in the right-hand margin indicate marks for the individual question.

All questions are compulsory.

Answers should be concise and entire answer to a question should be together. State assumptions wherever made.

1. Let $S = \{2, 3, 4, 7, 11, 13\}$. Draw the graph G whose vertex set is S and such that $ij \in E(G)$ for $i, j \in S$ if $i + j \in S$ or $|i - j| \in S$. What is the degree of the vertex 7? **4+1**
2. If G is a graph on n vertices, then show that at least two vertices of G have the equal degree. **5**
3. Show that any gathering of six people contains either three mutual acquaintances or three mutual strangers. **5**
4. Let G and H be two graphs such that G is isomorphic to H . Show that G is bipartite if and only if H is bipartite. **5**
5. The degree of each vertex of a certain graph of order 12 and size 31 is either 4 or 6. How many vertices of degree 4 are there? **5**
6. Find the complement of C_4 . Show that P_4 is self complementary. **2+3**

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