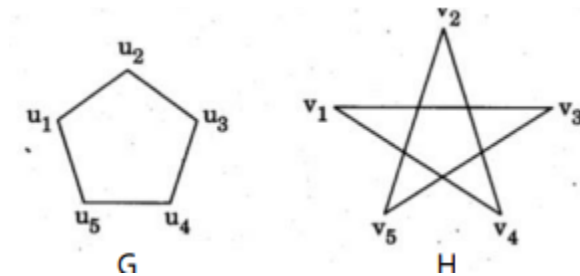


Roll No: 1,12,23, 35

- 1) State and prove the handshaking theorem. [June 2017, 5 marks]
- 2) Define the following symbols : i) $\delta(G)$ [June 2017,1 mark]
- 3) What is meant by complement of a graph ? Find the complement of the C_5 graph (i.e. C_5). [June 2017, 3 marks]
- 4) What is a complete graph ? [June 2017, 2 marks]
- 5) Define isomorphism. Determine whether the following pair of graphs are isomorphic : [June 2017, 3 marks]



Roll No: 2,13,25, 36

- 1) What do you mean by isomorphic graphs ? [June 2016, 2 marks]
- 2) State Handshaking Theorem. [June 2016,3 marks]
- 3) A non-directed graph G has 8 edges. Find the number of vertices, if the degree of each vertex in G is 2. [June 2016, 3 marks]
- 4) Prove that the complement of G' is G. [December 2016,5 marks]
- 5) Draw at least 3 non-isomorphic graphs on 4 vertices. [December 2016,5 marks]

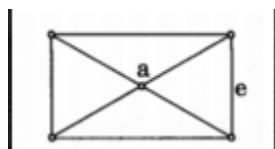
Roll No: 3,15,28

- 1) Determine whether the following graphs are isomorphic. If yes, justify your answer. [December 2016,December 2010,4 marks]
- 2) What is an undirected graph ? Prove that an undirected graph has even number vertices of odd degree. [December 2016, 4 marks]
- 3) Define n-regular graph. Show for which value of n the following graphs are regular : (i) K_n (ii) Q_n [December 2016, 5 marks]
- 4) How many edges does a complete graph of 5 vertices have ? [December 2016,2 marks]
- 5) Define a graph and a subgraph. Show that for a subgraph H of a graph G $\Delta(H) \leq \Delta(G)$. [December 2016S, 5 marks]

Roll No: 4,16,26

- 1) Show that for a subgraph H of a graph G $\Delta(H) \leq \Delta(G)$. [December 2014, December 2011,June 2010,December 2010, 5marks]
- 2) Define Graph and Subgraph. Give an example of a subgraph H of a graph G with $\delta(G) < \delta(H)$ and $\Delta(H) \leq \Delta(G)$. [June 2015,4 marks]

- 3) Define regular graph. Find the number of edges of a 4-regular graph with 6 vertices. [December 2015, 3 marks]
- 4) Define isomorphic graph. Give an example of the same. [December 2015, 2 marks]
- 5) For the following graph G, draw subgraphs 3 (i) $G - e$ (ii) $G - a$. [December 2015, 3 marks]



Roll No: 6,17,29

- 1) Define : (i) Simple graph (ii) Finite and infinite graph (iii) Isolated vertex (iv) Subgraph [June 2014, 4 marks]
- 2) How many edges are there in a graph with 10 vertices each of degree 6? [June 2014, 3 marks]
- 3) Define Isomorphism of two graphs. Find whether the given graphs are isomorphic or not. [June 2014, 5 marks]
- 4) State and prove Handshaking Theorem. [June 2014, 5 marks]
- 5) State and prove Handshaking Theorem. [December 2014, December 2010, 4 marks]

Roll No: 7,18,30

- 1) Show that for a subgraph H of a graph G $\Delta(H) \leq \Delta(G)$.
[December 2014, December 2011, June 2010, December 2010, 5 marks]
- 2) Define : 4 (i) Graph (ii) Simple Graph (iii) null graph (iv) connected Graph [December 2013, 4 marks]
- 3) Define $\delta(G)$ and $\Delta(G)$ for a graph G. [December 2013, 2 marks]
- 4) Are the following graphs isomorphic? If Yes or No justify. [December 2013, June 2010, 4 marks]
- 5) Find the degree of each vertex in the given graph. [June 2012, 4 marks]

Roll No: 8,37,31

- 1) What is the complement of the given graph. [June 2012, 4 marks]
- 2) Determine whether the graphs are isomorphic. [June 2012, 5 marks]
- 3) Construct a 5-regular graph on 10 vertices. [December 2012, June 2010, 3 marks]
- 4) A graph G is said to be self complementary if it is isomorphic to its complement \bar{G} . Show that for a self complementary (p, q)-graph G, either p or $(p - 1)$ is divisible by 4. [June 2011, 4 marks]
- 5) Define minimum vertex degree of G ($\delta(G)$) and maximum vertex degree of G ($\Delta(G)$). [June 2011, 3 marks]

Roll No: 9,20,32

- 1) Can a simple graph exist with 15 vertices, with each of degree five? Justify your answer. [June 2011, 3 marks]
- 2) Are the following graphs isomorphic? 4 If Yes or No Justify. [June 2011, 4 marks]
- 3) Define the concept of a complete graph. Draw complete graph each for the case when number of vertices is given by : $n=3$, $n=4$. [June 2010, 3 marks]
- 4) Define r-regular graph. Give an example of 3-regular graph. [December 2010, 3 marks]

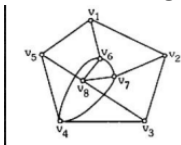
- 5) Show that the sum of the degrees of all vertices of a graph is twice the number of edges in the graph. [June 2009, 3 marks]

Roll No: 10,21,33

- 1) Define isomorphism of graphs. Determine whether the graphs are isomorphic.
- 2) What is the complement of the given graph? [June 2009, 3 marks]
- 3) How many vertices will the following graphs have if they contain : [June 2009, 4 marks]
- 4) The number of vertices of odd degree in a graph is always even. [December 2009, 3 marks]
- 5) What is the complement of the given graph? [December 2009, 2 marks]

Roll No: 11,22,34

- 1) What is the largest number of vertices in a graph with 35 edges if all vertices are of degree at least 3? [December 2009, 5 marks]
- 2) Consider the graph below : i) Find $\delta(G)$ and $\Delta(G)$ [June 2008, 2 mark]



- 3) Draw a 4-regular graph on 6 vertices. [June 2008, 2 marks]
- 4) Show that the graphs G and G' are isomorphic. [December 2008, 4 marks]
- 5) State and prove the handshaking theorem. [June 2017, 5 marks]