Homework 05   22CST 蒋玉翔

Section 10.1

Ex.3-9:

(3) simple graph   (4) multigraph   (5) Pseudograph   (6) multigraph

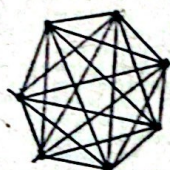(7) Directed multigraph   (8) Directed multigraph   (9) Directed multigraph

Section 10.2

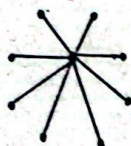Ex. 8

$\deg^-(a) = 2$. $\deg^-(b) = 3$, $\deg^-(c) = 2$, $\deg^-(d) = 1$

$\deg^+(a) = 2$, $\deg^+(b) = 4$, $\deg^+(c) = 1$, $\deg^+(d) = 1$
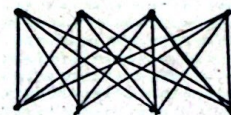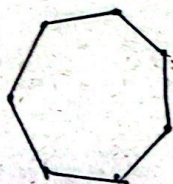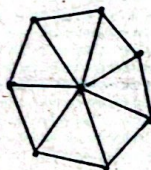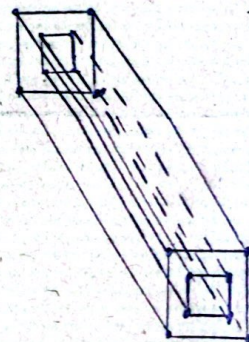
Ex.20

(a) K_7.

(b) $K_{1,8}$:

(c) $K_{4,4}$

(d) C_7:

(e) W_7

(f) Q_4:

Section 10.3

Ex.32

(a) K_n: $\begin{bmatrix} 0 & 1 & 1 & 1 & \cdots & 1 \\ 1 & 0 & 1 & & \cdots & 1 \\ 1 & 1 & 0 & 1 & \cdots & 1 \\ 1 & 1 & 1 & 0 & & 1 \\ \vdots & & & & \ddots & \vdots \\ 1 & 1 & 1 & \cdots & 1 & 0 \end{bmatrix}$

(a) K_n: $\begin{bmatrix} 0 & 1 & 1 & \cdots & 1 \\ 1 & 0 & 1 & \cdots & 1 \\ 1 & 1 & 0 & \cdots & 1 \\ \vdots & & & & \vdots \\ 1 & 1 & 1 & \cdots & 0 & 1 \\ 1 & 1 & 1 & \cdots & 1 & 0 \end{bmatrix}$

(d) $K_{m,n}$: $\begin{bmatrix} 0 & \cdots & 0 & 1 & \cdots & 1 \\ \vdots & & \vdots & \vdots & & \vdots \\ 0 & \cdots & 0 & 1 & \cdots & 1 \\ 1 & \cdots & 1 & 0 & \cdots & 0 \\ \vdots & & \vdots & \vdots & & \vdots \\ 1 & \cdots & 1 & 0 & \cdots & 0 \end{bmatrix}$

Ex. 38 Yes, these 2 are isomorphic:

$f_{(u_3)}$ $f(u_1) = V_1$, $f(u_2) = V_5$, $f(u_3) = V_2$, $f(u_4) = V_3$, $f(u_5) = V_4$

Ex. 42. No, these 2 are not isomorphic.
There are two vertices of degree 4 that are adjacent, but not in graph 2.
                                        $\wedge$
                                    in graph 1.