UPES

UNIVERSITY OF PETROLEUM
AND ENERGY STUDIES

End Semester Examination – December 2017.

Program/course: APE (Gas)   Semester – VII
Subject: City Gas Distribution and Pipeline Network Analysis   Max. Marks   : 100
Code   : PTEG442   Duration   : Three Hrs.
No. of page/s: 2

SECTION A
Answer all questions. (20)

1) a) What are assumptions made for general flow equation   05
   b) Discuss pressure range in City Gas Distribution   05
   c) Derive general flow equation, derive medium and low-pressure equation   10

SECTION B
Answer all Questions (20*2=40)

2) a) Explain applications and functions of GIS for CGD in detail   10
   b) Prepare emergency and disaster management plan for CGD   10

3) Solve following network by Hardy Cross Method (Use three iterations)   20
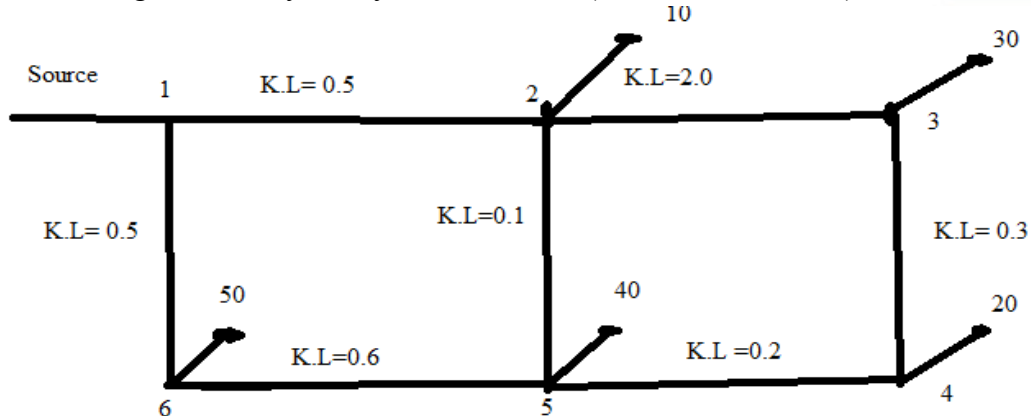
SECTION C
Answer any two Questions (20*2=40)

4) As a project manager of CGD Company you have been asked by your chief to design CGD project for a city .Which factors will you consider for city gas distribution? With an aid of diagrams, prepare a report for CGD. You may provide justification for your consideration   20

5) a) Natural gas is supplied through a low-pressure distribution pipe 1200m in length with an initial pressure 50 mbar (gauge)at A and a final pressure of 30mbar at B. It is required to increase the flow rate by 20%, 40 %, 60 %, 80 % and 100% by reinforcing the existing pipe with parallel Pipe of the same diameter as the original pipe.

What length of reinforcement pipe must be installed if the pressure drop is to remain unchanged?   10
Plot a graph of capacity vs reinforcement and discuss your results.   05
b) Explain supply facilities at City Gate station   05

6) a) Describe CNG infrastructure in detail   10
    b) What are common measurement problems in metering system? Give suggestions to overcome these problems   10