

Name:

Enrolment No:



**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**

**End term Examination – December 2018**

**Program: B.Tech APE (Gas)**

**Course: City Gas Distribution and Pipeline Network Analysis**

**Code: PTEG 442**

**Max Marks :100**

**Semester: V**

**Time: 03 hrs.**

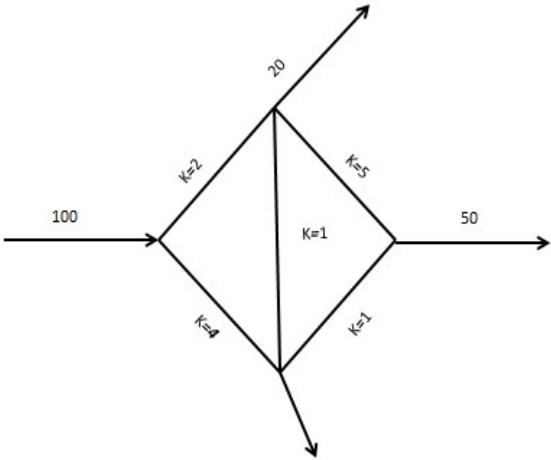
**SECTION A (20)**

1	i) What are PNG over LPG ?	<b>05</b>	<b>CO2</b>
	ii) What are challenges in CGD?	<b>05</b>	<b>CO2</b>
	iii) Explain in detail meters used in residential, commercial and industrial sectors.	<b>10</b>	<b>CO3</b>

**SECTION B (40 Marks)**

2	Explain application of natural gas electricity generation in detail	<b>10</b>	<b>CO1</b>
3	A gas pipeline, NPS 20 with 0.500 in. wall thickness, transports natural gas (specific gravity = 0.6) at a flow rate of 250 MMSCFD at an inlet temperature of 60°F. inlet pressure is 1000 psig and the outlet pressure is 850 psig. The base pressure and base temperature are 14.7 psia and 60°F, respectively. Assume compressibility factor $Z = 0.90$ ? Assuming isothermal flow calculate the velocity of gas at the inlet, outlet velocity & Erosional Velocity.	<b>10</b>	<b>CO4</b>
4	An existing 150mm supplies gas from A to B a distance 1200m. It is proposed to double the demand at B & reinforce the existing pipe with parallel pipe so that original pressure remains constant. Calculate length of reinforcement for 120mm, 140mm 180mm.	<b>10</b>	<b>CO4</b>
	If size of pipe in above example is further increased to 200mm and 220 what will be the effect on length of reinforcement and discuss your results.	<b>10</b>	<b>CO4</b>

**SECTION-C (Answer any two 40 Marks)**

6	<p>i) What are EHS issues in CGD projects? As a safety Engineer in CGD company give some suggestions to overcome these issues</p> <p>ii) Explain ultrasonic meter .</p>	15	CO5
7	<p>i) What are advantages of PE pipelines in CGD?</p> <p>ii) What are assumptions made for derivation of General Flow Equation Derive General flow equation; Derive medium and low pressure equation</p>	05	CO3
8	<p>Calculate flow rate in each pipe by using Hardy Cross Method. Use maximum three iterations.</p>	15	CO2
		20	CO4