L-3/T-2/ARCH Date : 06/04/2019

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

B. Arch. Examinations

Sub : **ARCH 345** (Fundamentals of Urban Design)

Full Marks : 140 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer Questions No.1 and any two from the rest.

1. Answer any 2 from the following: **(10×2=20)**
   (a) Levels of Urban Design
   (b) Unity in Urban Design
   (c) New Community Movement.

2. (a) Describe the Visionary ideas like 'Citta Nouva' in designing cities which were the results of Mechanical Interventions of 19th century. **(10+15=25)**
   (b) What were the proposals of 'City Beautiful Movement'?

3. (a) What is meant by 'Scale' in Urban Design? What are the various types of scale that are used in Urban Design? Explain with examples. **(15+10=25)**
   (b) How circulation is considered in determining scale in Urban Design?

4. (a) What are the main outcomes of 'International Movement'? Write briefly. **(10+15=25)**
   (b) Describe the main features of Le Corburier's 'Uni Ville contemporaive' and its different development as part of 'International Movement'.

SECTION – B

There are **FOUR** questions in this section. Answer Q. No. 5 and any two from the rest.

5. Answer any two from the following Questions: **(10×2=20)**
   (a) Typical characters of Medieval Towns
   (b) Urban Design concept of Leonardo da vinci
   (c) Urban Design concept of Agora, Athens

6. (a) What was he Urban Design concept of Architect Fontana in Rebuilding Rome.
   (b) Describe the urban design ideas developed in the Remodeling project of Compidoglio, Rome, by Michelangelo during the Renaissance period.

Contd. P/2

ARCH 345

7. (a) Define Urban space. What are the various type of urban space? Describe in detail with sketch. **(15+10=25)**

   (b) Describe the design factors of Urban square.

8. (a) Describe the Urban design principals of Acropolis, Athens. **(10+15=25)**

   (b) Compare the organizing principles of Imperial Forum with that of Republican Forum of Rome.

L-3/T-2/ARCH Date : 10/04/2019

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 B. Arch. Examinations 2017-2018

Sub : **ARCH 807** (Theories and Practice of Urban Design)

Full Marks : 140 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. **Answer Question No. 01 (ONE) and any 02 (TWO) from the rest.**

1. Write short notes on any 02 (Two) of the following: **(10×2=20)**
   (a) Mental Map
   (b) Street as Place
   (c) Market Context

2. (a) What do you mean by 'Urban Design'? What are the differences between urban design and urban planning? **(10)**
   (b) Briefly explain different elements of urban design with respect to the hierarchical relationship between them. **(15)**

3. (a) Discuss how 'Local Context' influences in urban design process. **(15)**
   (b) Explain 'Government Regulatory Context' for urban design with suitable examples. **(10)**

4. (a) What is 'Visual Dimension' of urban space? Briefly explain environmental preference framework with sketches. **(10)**
   (b) Define sense of place, placelessness, place differentiation from urban design perspective. **(15)**

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Describe Jan Gehl's recommended rules for designing great cities. **(8)**
   (b) Briefly discuss the challenges and give urban design proposal to make Dhaka a more livable city. **(15 1/3)**

6. (a) Give a comparative analysis on Medieval city and Modern city. **(8)**
   (b) What is social dimension of urban design? How does the relationship between space and society influence urban design? **(15 1/3)**

Contd P/2

ARCH 807

7. (a) Describe neo-rationalist theories of urban design by explaining Aldo Rossi's work. **(15 $\frac{1}{3}$)**

   (b) Explain how the dimensions of physical elements change the basic two elements of urban design – the street and the square. **(8)**

8. Write short notes: **(23 $\frac{1}{3}$)**

   (a) "Monument" and "Place" according to Aldo Rossi

   (b) Safety and security in urban design

   (c) Lifeless City.

L-3/T-2/ARCH **Date : 10/04/2019**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 B. Arch. Examinations 2017-2018

Sub : **ARCH 801** (Interior Design)

Full Marks : 140 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer **Q. No. 1** and any **TWO** from the rest.

1. Short notes: (any two) **(15×2=30)**
   (a) Intrusive corner
   (b) Deconstructed interior
   (c) Spatial form

2. (a) Explain Integrated Interior. Is minimalism the Disintegrated Interior? Briefly explain. **(10)**
   (b) "Like the Vitruvian Man inscribed within a circle, the Box Man's perception of geometric boundaries is a projection of his measurements." – Explain. **(10)**

3. Discuss three different types of structural systems; Linear structural system; Planar structural system and Volumetric structural system with neat sketches. **(20)**

4. (a) Mention the design principle that can maintain a sense of visual order in an interior space. Explain 'Balance' and 'Emphasis' with necessary drawings. **(15)**
   (b) Briefly explain "Places at zero point". **(5)**

SECTION – B

There are **FOUR** questions in this section. Answer **Q. No. 5** and any **TWO** from the rest.

5. Write short notes on any 03 (three) from the following: **(10×3=30)**
   (a) Wall Articulation
   (b) Ceiling and Acoustics
   (c) Windows and Space Planning
   (d) Noise Reduction

6. "Changing the ceiling height within a space, or from one space to the next, helps to define spatial boundaries and to differentiate between adjacent areas and affect the light level within a space also" – Explain this statement with relevant sketches. **(20)**

7. Draw and explain different types of walls and partitions used to create/separate spaces within a building. **(20)**

8. (a) Draw and explain different types of stairways. **(12)**
   (b) Describe different types of light fixtures. **(8)**

L-3/T-2/ARCH **Date : 31/03/2019**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 B. Arch Examinations 2017-2018

Sub: **PLAN 821** (Theory & Practice of Planning)

Full Marks: 140 Time: 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) Discuss blueprint and process planning with example **(8 1/3)**

   (b) Explain top-down vs. bottom-up approach. Mention which approach would you prefer to plan in a country like Bangladesh and why. **(10)**

   (c) 'Advocacy planning acts as a direct advocate of certain values' – Explain. **(5)**

2. (a) What is system approach of planning? Discuss with example. **(6)**

   (b) Discuss the pros and cons of comprehensive planning. **(6)**

   (c) What are the barriers to effective planning? **(5 1/3)**

   (d) Write short note on corporate planning. **(6)**

3. (a) What are the pros and cons of participatory approach? **(6)**

   (b) Compare substantive and procedural planning theories. **(12)**

   (c) What are the necessary features of an effective plan? **(5 1/3)**

4. (a) Discuss rational planning vs disjointed incremental planning. Mention which approach is more achievable in reality. **(8)**

   (b) How the advocacy of alternative plans by interest groups outside of government would stimulate the city planning? **(5 1/3)**

   (c) Discuss Normative Planning with example. **(10)**

SECTION - B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Explain the procedure of Master Plan preparation. **(18)**

   (b) Briefly discuss the limitations of DMDP (Dhaka Metropolitan Development Plan) Structure Plan (1995-2015). **(5 1/3)**

Contd P/2

PLAN 821

6. (a) Compare between "Concentric zone model" and "Multiple Nuclei Model" with necessary illustrations. **(15)**

   (b) Briefly describe the industrial land use proposals of Dhaka Master Plan (1959). **(8 1/3)**

7. (a) "Urban areas are characterized by various types of land use and developments."- describe those characteristics with examples. **(10)**

   (b) Briefly describe the functions of a structure plan. **(7)**

   (c) Briefly discuss the application of FAR (Floor Area Ratio) in the context of Dhaka city. **(6 1/3)**

8. (a) Briefly describe the following methods and techniques of Detail Area Planning. **(3×3=9)**

   (i) Site and Services Scheme

   (ii) Land Readjustment

   (iii) Urban Renewal

   (b) Briefly discuss the application of different types of zoning. **(14 1/3)**

L-3/T-2/ARCH **Date : 31/03/2019**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

B. Arch. Examinations

Sub : **ARCH 335** (Architecture of Bengal)

Full Marks : 140 Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this paper. Answer **Q. No. 1** and any **TWO** from the rest.

1. (a) Critically analyze the evolution of temple plan, starting from its rudimentary form of Gupta dynasty and examine how the cruciform arrangement of Paharpur temple was achieved. Use sketches. **(14)**

   (b) Mention the discrepancies associated with the scattered remains inside the entire vihara. **(10)**

2. Why it was necessary to make successive changes in the temple plan of Shalban Vihara? Explain what is the basic conceptual difference between the temple of Paharpur and Shalban Vihar with sketches. **(23)**

3. Critically explain the linear layout plan of Nalanda as a university. Determine the architecture aspects of the geometry & 3 dimensional built form. **(23)**

4. Write short notes on (any two of) the following: **(23)**

   (i) City of Pundranager and Govinda vita.

   (ii) City of Pataliputra and its foundation.

   (iii) Charpatra Mura at Mainamati.

SECTION – B

There are **FOUR** questions in this Section. Answer **Q. No. 5** and any **TWO** from the rest.

5. (a) Illustrate with sketches and describe the Adina Masjid of Bengal and critically examine the following features - i) Entrance and Axis **(18)**

   ii) Scale and proportion

   iii) Probable elements and features influencing the later mosque design

   (b) Explain with sketches how the loads of hemispherical domes were transferred through the piers in Bengal mosque. **(8)**

6. "Besides the ruling community, the native elite group of the 'Zamidars' were found to be responsible in developing a colonial culture and subsequently for the development of local architecture." - evaluate the statement with appropriate examples and sketches. **(22)**

Contd. P/2

ARCH 335

7. Evaluate critically with neat sketches the four basic typologies of the dwelling houses of Panam identifying their difference in planning layout and architectural ambience. **(22)**

8. Identify the visible anamolier present in the spatial layout, façade treatment and 3-dimentional expression of the following edifice of old Dhaka with sketches (any two) **(11+11)**

   a) Ruplal House

   b) Khan Mohammad Mridha Mosque

   c) Skokti Oushadhalay (শক্তি ঔষধালয়) of Mather Babu.

L-3/T-2/ARCH **Date : 25/03/2019**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 B. Arch Examinations 2017-2018

Sub : **ME 363** (Mechanical Equipment)

Full Marks: 140 Time : 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks.

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

Refrigeration and A/C Data Book will ne provided.

1. (a) What are the basic 4 factors in designing an elevator? Show the difference between 4 types of door opening systems of elevators. **(8)**

   (b) What are the 5 time elements in an elevator trip? Of these 5 elements what are the 2 most difficult elements to establish firmly and why? **(8)**

   (c) How door opening time of an elevator be reduced? What is "pre-mature" door opening? What is its limitation? **(7 1/3)**

2. (a) Define "5-min Handling Capacity" of an elevator. For an elevator with round trip time 30 seconds and if only one passengers is served per trip in one direction, determine the "5-min handling capacity". **(8)**

   (b) Show the different types of car grouping in a building with multiple elevators. **(8)**

   (c) For a 15-story building with a lobby 18 ft and other typical floors 12 ft, determine the following with an elevator specification of 2500 @ 700 fpm, using Table 4.6 and Chart 4 **(7 1/3)**

   (i) Total rise in feet
   (ii) Loading capacity in persons per trip and in lb
   (iii) Lobby time
   (iv) Upper floor time
   (v) Probable upper floor stops
   (vi) Total upper floor loading time
   (vii) Rum time

Table 4.6

Car Size and Loading	2000 lb 10	2500 lb 12	3000 lb 16	3500 lb 19	4000 lb 22
Lobby Time*	16	20	23	25	26
Upper Floor Time	8.7	9.5	9.6	9.8	10.0

*Rounded off to nearest second.

Chart 4

Passengers per trip

Upper floors served	10	12	14	16	18	20	22
18	8	9	10	11	12	13	13
16	8	9	10	10	11	12	12
14	7	8	9	9	10	11	11
12	7	8	9	9	10	10	10
10	6	7	8	8	9	9	9
8	6	6	7	7	8	8	8
6	5	5	6	6	7	7	7

Probable stops

Contd P/2

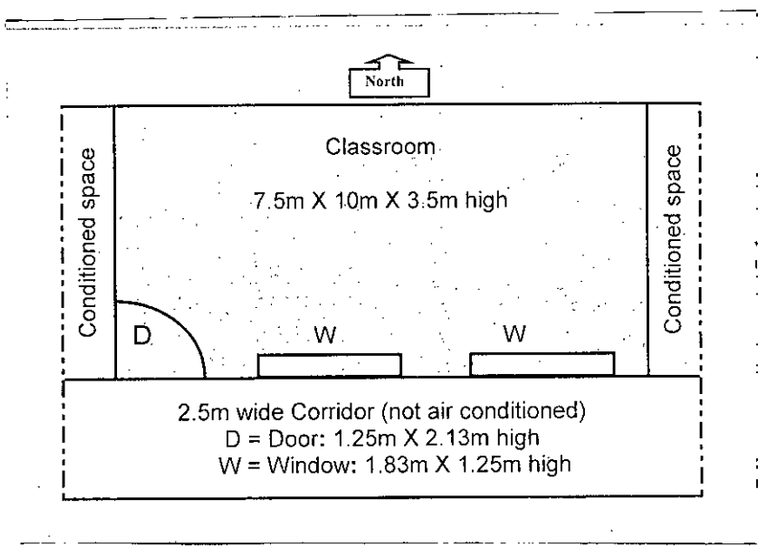
ME 363

3. (a) What are the different classes of fire? Give examples. **(6)**

(b) Show with a labelled diagram the main features of a typical sprinkler system having both the pressure tank and the elevated tank. **(10)**

(c) Write a brief note of a dry powder type fire extinguisher. Where this type of extinguisher cannot be used? **(7 1/3)**

4. (a) Estimate the cooling load using CLTD method for a class-room of 60 students in Bangladesh (24°N Latitude) with following data and layout plan given below: **(23 1/3)**



1 Door: 1.25m × 2.13m (high) × 25 mm thick plywood (Douglas Fir)
2 Windows: 1.83m × 1.25m (high) × 3 mm cellular glass
Lights: 450 Watts; CLF = 0.07
Roof: Without suspended ceiling, 12.7 mm Gypsum board
Walls: 254 mm brick with 12.7 mm plaster both sides, group B walls
Roof type: Number 5, 25 mm wood with 50 mm insulation,
Ventilation: 7.5 l/s per person,
Infiltration: 0.5 air change per hour
(Assume reasonable values for any missing data, use Refrigeration and A/C Data Book).

SECTION - B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) What are the differences between refrigerator mode and heat pump mode of vapor compression cycle and also show the differences with schematic diagram. What are the different processes involved in reversed carnot cycle? Draw the schematic diagram of the cycle and show the processes on T-S diagram. **(11 1/3)**

(b) Calculate the power required by the compressor in a vapor compression refrigeration system with R 134a which has a cooling capacity of 50 kW. The condensing temperature of the system is 26°C and the evaporator temperature is -40°C. Draw the P-h diagram of the system. Also calculate the COP of the system. **(12)**

Contd P/3

ME 363

6. (a) What are the differences between refrigeration and air-conditioning system? Make comparison between window type and split type air conditioning system with respective schematic diagram. **(11 ⅓)**

(b) What are the factors that influence the thermal comfort of a human being? Air enters a heating section at atmospheric pressure, 14°C and 80 percent relative humidity at a rate of 30 m^3/min, and it leaves at 25°C. Draw a psychrometric chart, show the process on it and determine (i) the rate of heat transfer in the heating section and (ii) the relative humidity of the air at the exit. **(12)**

7. An air conditioner supplies air to three rooms in a small office premises. The schematic layout of the duct system and the volume flow rate to each room is shown in Figure for Q. No. 7. The length of each duct-segment is tabulated in Table. (i) Size the duct system using the equal-friction method. The duct shall be of standard round sections with diameters in increments of 25 mm. The air velocity in the first section is not to exceed 8 m/s. (ii) Estimate the static pressure in the index run of the duct network and indicate the amount of dampering in the other branches to balance the flow. Consider a pressure drop of 25 Pa at each of the outlet grilles at G, E and H. In the calculation, consider the resistance due to the elbow and Tee as 10 Pa and 15 Pa respectively. **(23 ⅓)**

Section	A–B	B–C	C–D	D–E	D–H	C–F	F–G
Length (m)	2	5	7	9	2	8	6

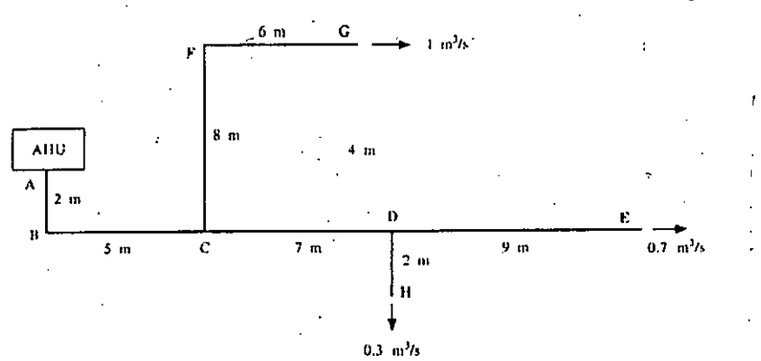


Figure for the Q. No. 7

8. (a) Classify refrigerant and give the name of some common refrigerants. What are the desirable properties of any fluid for use as a refrigerant? **(10)**

(b) Briefly describe the working principle of central air conditioning system with schematic diagram. Make comparison between all air water type central air conditioning system with respective schematic diagram. **(13 ⅓)**

L-3/T-2/ARCH **Date: 14/03/2019**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-2 B. Arch. Examinations 2017-2018

Sub: **CE 271** (Building Services I: Plumbing)

Full Marks: 140 Time: 3 Hours

The figures in the margin indicate full marks

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) Define plumbing and name the two components of a plumbing system. **(9)**
Write a short note on evolution of plumbing system to modern world.
What are the available sources of water supply to a building?
(b) What are factors to be influenced the water demand of an occupancy? **(14⅓)**
How can you estimate the water demand of an occupancy? Describe.
With a neat sketch, show the house water connection and describe its various components.

2. (a) What are the governing principles in designing water supply in a building? Describe. **(8)**
Distinguish between upfeed system and downfeed system of water supply of a building.
(b) Design an underground water reservoir and roof tank for a 1200 sft 9 (nine) storied residential building where ground floor is used for parking and security guard room. Also, determine the height of the base of roof tank above the roof. Assume any reasonable value of missing data if necessary. **(15⅓)**

3. (a) What are the causes of loss of trap seal? Describe with sketches. **(8)**
(b) The problem stated in Q2(b) has the following features: **(15⅓)**
3 toilets and 1 kitchen in each floor except ground floor. The toilets contain 1 wash basin, 1 shower and 1 water closet and kitchen has 1 kitchen sink and 1 water tap. Apart from these, there is a wash basin in dinning space in each floor and one toilet and one water tap in ground floor. Design the water distribution line of this building by down-feed system (Table, Graph and Nomograph are attached).

4. (a) What are the available sanitation technologies in rural areas of Bangladesh? **(11)**
Describe the design consideration of a Pour-flush latrine.
Identify the advantages of Pour-flush latrine over Simple Pit latrine.
(b) Local authority in a village is offering pre-cast concrete rings of 1.0 m diameter and 0.3 m depth at a subsidized price. Design a pit latrine for a family of 7 with maximum design life. The soil is unconsolidated, loose and groundwater table is 5.0 m below ground surface. Assume any reasonable value of missing data if necessary. **(12⅓)**

Contd P/2

CE 271/ARCH

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) What is trap? With diagram explain the different types of traps and mention where those are appropriate for use. **(6⅓)**

(b) Write short notes on (i) stack, (ii) night soil, (iii) vent **(7)**

(c) In diagram show the details of House drain connections and label the various components. Justify the rationale for inclusion of each of those. **(10)**

6. What is septic tank? Why and where is it used? With a diagram explain how septic tank works. **(23⅓)**

In a 6 storied apartment building there are 10 apartments each of 1500 sft. Design the septic tank (assume any data not provided).

7. Show the following plumbing systems of drainage with diagram: **(23⅓)**

(i) Single stack, (ii) One-pipe system, (iii) Two-pipe system, (iv) Partially ventilated one pipe system

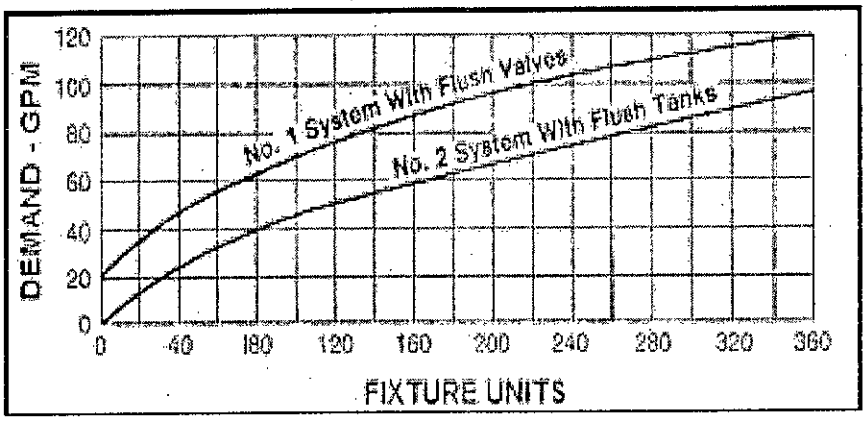
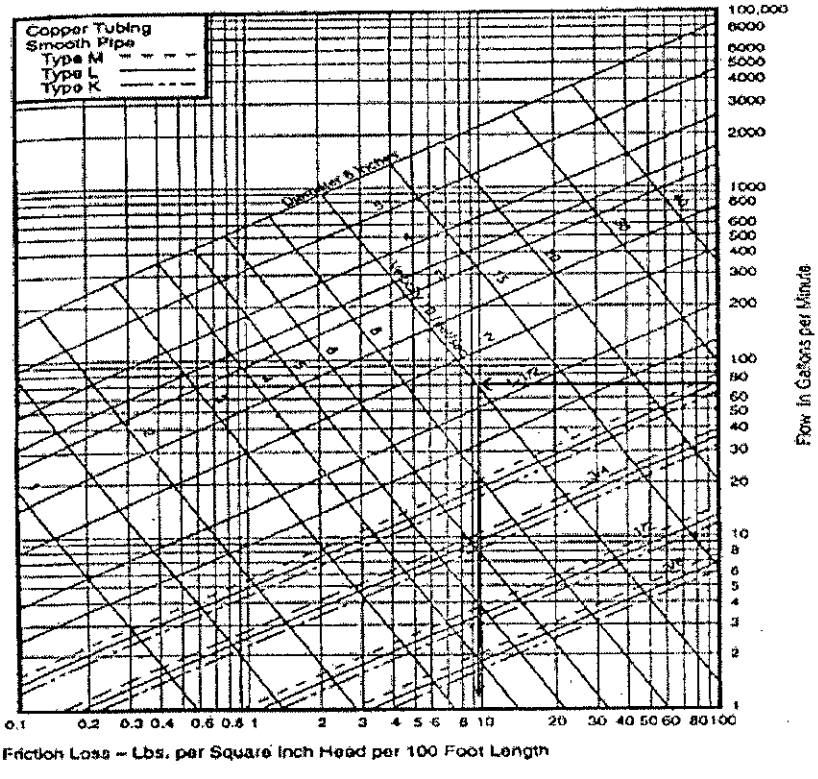
Mention the salient features, advantages and disadvantages of each of the systems.

8. (a) Write short notes on: **(10)**

(i) Sullage, (ii) Sewage, (iii) Night Soil.

(b) What is anti-siphonage pipe? Why anti-siphonage pipe is required? What sort of situation might arise in a building due to the absence of anti siphonage pipe in the system? **(13⅓)**

CE 271

Table, Graph and Nomograph for Question 3(b)

Type of Fixtures	Unit value as Load Factors
Water Closet (Flush Tank System)	3
Water Closet (Flush Valve System)	6
Shower	2
Wash Basin (Domestic)	1
Kitchen Sink	2
Ablution tap	1