B.CONSTRUCTION ENGINEERING
SECOND YEAR, 1ST SEMESTER 2019
BUILDING SERVICES

Time : 3 hours   Full Marks : 100

CO1

1 *Answer any one question*
   a) Describe the key parts of an elevator.   5
   b) Describe the components of escalator   5

2 *Answer any one question*
   a) Describe the principle of air conditioning.   10
   b) Describe the main parts and name the type of packaged air conditioner   10

3 *Answer any one question*
   a) The catchment area is 100 hectares and the average coefficient of runoff is 0.60.
      The time of concentration for the design rainfall is 30 min and the relation
      between intensity of rainfall and duration is $I = 1000/(t + 20)$.
      Determine quantity of storm water.   10
   b) What are the differences between separate and combined system of disposal?
      State advantages and disadvantages of separate system.   10

CO2

4 *Answer any one question*
   a) Describe basic requirement for good acoustics of building   10
   b) Describe different sound absorbing system adopted in acoustic design.   10

5 *Answer any one question*
   a) Describe the process of transmission of heat during fire.   5
   b) Describe fire hydrant system.   5

6 *Answer any one question*
   a)   Describe hydel power generation process with flow diagram.   10
   b)   Describe three different domestic electrical wiring system.   10

7 *Answer any one question*
   a)   Compare dead end, grid iron and ring system   10
   b)   Describe different water supply distribution system for multistoried building.   10

CO3

8. a) Define Room Index and Maintenance factor   5

   b)Calculate the number of luminaries required for a class room of size 6m x 9m and height 3.5m.
   Consider the followings:

   - reading table height 1m
   - Average lumen required for class room / sqm = 300 lumen
   - Utilisation factor = 0.66
   - Maintenance factor= 0.8
     Use Philips Green Perform LED Batten Of 40W with following data
   - Lumen/Watt: 4000lm/40w   10

CO4

9. Calculate the domestic water demand of a residential multistoried building with following
   category of dwelling units:
   - 1bed room DU - 10 Nos
   - 2 bed room DU – 8 Nos
   - 3 bed room DU- 15 Nos
   - 4 bed room DU- 9 Nos
   Also calculate the capacity of underground and OH reservoir capacity   10+5

CO5

10. *Answer any one question*

   a) Describe rainwater harvesting and ground water recharging system   10
   b) Design a sewer for a maximum discharge of 650 L/s running half full. Consider Manning's
      rugosity coefficient n = 0.012, and gradient of sewer S = 0.0001.   10