MANIPAL ACADEMY OF HIGHER EDUCATION

SEVENTH SEMESTER B. ARCH. DEGREE EXAMINATION – NOVEMBER 2018

SUBJECT: ARC-14-409.3 - ADVANCED BUILDING SERVICES
(2014 SCHEME)

Monday, November 05, 2018

Time: 10:00 – 13:00 Hrs.   Max. Marks: 50

✍ Answer any FIVE of the following questions.

✍ Support the answers with neat sketches.

✍ Mention assumed data (if any).

1.   Define the following:

1A.   British Thermal Unit (btu)

1B.   Latent Heat Gain

1C.   Thermal Transmittance

1D.   Wet Bulb Temperature

1E.   Space Heat Extraction rate

(2 marks × 5 = 10 marks)

2A.   Determine the number of lifts required for an office building of square plan. G+ 8 floors, Single occupancy, floor to floor height is 3 meters, area per floor is 1600 m.sq. Occupancy: 12 m.sq/person, RTT for 20 capacity car is 120 sec (estimated). Handling capacity shall not be less than 15% as per Standards.

2B.   List the various lift traffic control arrangements and explain any two.

(6+4 = 10 marks)

3A.   Explain the various firefighting systems that can be employed in a high rise building.

3B.   Write short notes about refugee area.

(7+3 = 10 marks)

4.   For a residential building of G+8 floors high, Calculate the capacity for the transformer required. Considerations: floor to floor height is 3m, 3 units per floor, each unit is a 2BHK of 1250sq.ft. area.

(10 marks)

5.   Discuss on the basic components processes of the sewage treatment plant.

(10 marks)

6.   A high rise building (residential) of G+10 floors, has 3 units in each floor and area per unit is 1200 sq. ft. Consider a family size of 5, calculate the following:

a)   Over-head water tank and Underground water tank

b)   Types of Pumps used and their capacities

c)   Suggest a suitable firefighting system to be employed

(6+2+2 = 10 marks)