Answer any 4 questions out of the 5 below

Q1.

We have discussed many building projects during lectures. Most of them are actually doing somethings against the nature, such as consuming or even wasting huge amount of energy or resources during the construction or operation.

a) Give two examples of things that are against the nature during construction or operation of a building? (10 marks)
b) What can we do to lessen the extent of the damage to our environment for the items you indicated above. Give one suggestion for each item you list down. (15 marks)

Q2.

A lot of professional guidelines and assessment schemes are available for intelligent buildings or green buildings.

a) What are these assessment schemes for and their ultimate aims? (15 marks)
b) Who are the various stakeholders involved and what are their different interests? (10 marks)

Q3.

Various renewable energy technologies have been promoted in many green building projects.

a) Why are we so interested in promoting these technologies? (10 marks)
b) Give three issues that hinder the development of these technologies? (15 marks)

Q4.

According to the electricity tariff from CLP Power (HK Ltd.), the residential tariff will be the aggregate of the following items:

(1) Energy Charge

Total Bimonthly[a] Consumption Block	Rate (Cents[b]/ Unit[c])
Each of the first 400 units	85.5
Each of the next 600 units	98.9
Each of the next 800 units	114.7
Each of the next 800 units	145.5
Each of the next 800 units	168.4
Each of the next 800 units	178.8
Each unit over 4200	180.0

(2) Fuel Cost Adjustment
A fuel clause adjustment of **21.0 cents per unit** will be made when the composite fuel price is above or below $700 per 44 gigajoules.

(3) Energy Saving Rebate

The rebate (calculated as the following rate) is only applicable to a bill with total **bimonthly** consumption of **400 Units or less**.

Total Bimonthly Consumption Range	Rebate Rate (Cents/Unit)
1 – 200 units	17.2 cents per unit on total consumption
201 – 300 units	17.2 cents per unit on total consumption
301 – 400 units	17.2 cents per unit on total consumption

Note: In all rate tables,

[a] **"Bimonthly" means the period of approximately two months between a meter-reading (including estimations) and the next one. Assume there are 60 days between bimonthly meter-reading in this case**

[b] **100 cents = 1 HKD**

[c] **"Unit" means one kilowatt-hour (kWh=10^3 Watt-hour) of electricity. Kilowatt-hour is the amount of energy consumed in one hour**

A tenant lives in a flat under the electricity tariff scheme from CLP as above. He recorded his usage in last two months (60 days in total): a refrigerator rated 200 W operated continuously; an air-conditioner rated 1.5 kW operate 8 hours daily; 3 LED light bulbs rated 10.5 W operated 10 hours per day; and all other consumptions was 100kWh.

a) Calculate the total units consumed for the tenant in last two months. (10 marks)
b) Assume the composite fuel price is now **above** $700 per 44 gigajoules so that the fuel cost adjustment should be considered as positive. How much was he charged in last two months? (15 marks)

Q5.

Maintaining a good indoor air quality condition in buildings could enhance occupant comfort and health.

a) What are the differences between comfort issue and health issue? Cite one example for each to support your explanation. (15 marks)
b) What is the conflict between maintaining good indoor air quality in buildings and energy consumption? What can we do to achieve both? (10 marks)