**American International University-Bangladesh (AIUB)**

**Faculty of Engineering**

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| **Course Name:** | COMPUTER-AIDED DESIGN AND DRAFTING | **Course Code:** | BAE 2101 |
| **Semester:** | Fall 2020-21 | **Section:** | S |
| **Faculty:** | Md Rabiul Islam | **Assignment No:** | 01 |
| **Assignment Name:** | **OBE Assignment (CO2 & CO4)** | | |
| **Submission Date:** | **25th December** | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Excellent** | **Good** | **Acceptable** | **Secured Marks** |
| Civil Plan | The civil plan is unique and drawn as per requirements with proper dimensions  [7-10] | The civil plan is drawn partially as per the requirement with minor errors  [4-6] | The civil is either copied or very poor with major errors.  [1-3] |  |
| Electric Fittings | The fittings are placed rationally and maintaining BNBC  [4-5] | The fittings are placed rationally but not maintaining BNBC  [2-3] | The fittings are placed randomly and not maintaining BNBC  [1] |  |
| Conduit Layout | The conduit layout is done properly maintaining color code and standard connection practices.  [4-5] | The conduit layout is done maintaining color code but not maintaining standard connection practices  [2-3] | The conduit layout is not done maintaining color code and standard connection practices.  [1] |  |
| Load Calculation | The load calculation is done correctly according to BNBC.  [4-5] | The load calculation is done according to BNBC but with minor errors  [2-3] | The load calculation is done not according to BNBC with major errors  [1] |  |
| Generator Capacity and Generator Room | The generator is chosen properly, and the generator room is designed according to BNBC  [4-5] | The generator is chosen properly but the generator room is not designed according to BNBC  [2-3] | The capacity of the generator chosen is wrong and also the generator room is not designed according to BNBC  [1] |  |
| Comments |  | | Total Marks:  (Out of 30 Marks) |  |

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| **SL #** | **ID** | **Student Name** | **Department** | **Marks** |
| **1.** | **20-43665-2** | **Al Shakib E Elahi** | **CSE** |  |
| **2.** | **20-42273-1** | **Amit Podder** | **CSE** |  |
| **3.** | **20-42000-1** | **Effat Ara Tanzin** | **CSE** |  |
| **4.** | **20-42629-1** | **Humayun Ahmed Niloy** | **CSE** |  |
| **5.** | **20-42261-1** | **Mysara Nur Tanha** | **CSE** |  |

**Question #** Mr. Maradona & his wife have purchased a land of 3 Kathas from **BTi Housing Ltd.** which is located at Bashundhara R/A, Dhaka. Now they want to construct a 6 Storied building (**Ground + 6 Floors**) of having 3 units – A, B & C on each floor. You are asked to design for only B unit flat of having **1700 sqft** (approx.) based on the following specifications:

* *3 Bed Room (size: Bed-1 (master Bed) is 00' x 00'0”, Bed-2 is 00' x 00', Bed-3 is 00' x 0'0”)*
* *3 bath (Size: Attached bath of Bed-2 is 0'0'' x 0', bath of Bed-1 is 0'0'' x 0', Common Bath is 0' x 0')*
* *Living/Drawing (Size: 00' x 00')*
* *Dining*
* *Kitchen (Size: 0' x 0')*
* *3 Veranda (Size: Ver\_Bed-1 is 0'0'' x 0', Ver\_Bed-2 is 0'0'' x 0', Bed-3 is 0' x 0')*
* *Door for kitchen / bathroom / veranda - 2'6'', Door for Bed Room - 3' and Main Door 4' (interior to interior)*

**Considering the abovementioned specifications do the following using AutoCAD 2007 Software:**

1. **Draw the** **Civil Plan** of the flatalong with **stair, lift** and **lobby** **10 points**
2. **Draw** the **proper Electric Fittings (applying BNBC) 5 points**
3. **Draw** the **electric conduit layout (Wiring – applying BNBC)** where **Red, Blue & Yellow color** represents **light load, medium load & heavy load** respectively. **5 points**
4. **Calculate** the **load** for **Unit B** only. Also, **Calculate** the **load** for each **floor** and **load for the building** considering all the flat types are the same and some types of load. **5 points**
5. **Calculate** the **capacity** of the **Generator** based on the load calculation. **Draw** a separate **Generator room** and **show** the connection with the distribution board. **5 points**

**10 points**

**Load Calculation:-**

|  |  |  |
| --- | --- | --- |
| **Location in design** | **Type of Fitting** | **Ratings in Watts** |
| **Master Bedroom** | Incandescent lamp(L) | 100 x 2 =200 |
| Dim Light | 20 |
| Ceiling fan | 80 |
| TV( avg 42”) | 120 |
|  | AC(1 Ton) | 3500 |
|  | 15A socket outlet(3S) | 1000 x 2 = 2000 |
|  | 5A socket outlet(2S) | 200 |
|  |  | **Total = 6120** |
|  | | |
|  | Incandescent lamp(L) | 100 x 2 =200 |
|  | Dim Light | 20 |
|  | Ceiling fan | 80 |
| **Bedroom 2** | AC(1 Ton) | 3500 |
|  | 15A socket outlet(3S) | 1000 x 2 = 2000 |
|  | 5A socket outlet(2S) | 200 |
|  |  | **Total = 6000** |
|  | | |
|  | Incandescent lamp(L) | 100 x 2 =200 |
|  | Dim Light | 20 |
|  | Ceiling fan | 80 |
| **Bedroom 3** | AC(1 Ton) | 3500 |
|  | 15A socket outlet(3S) | 1000 x 2 = 2000 |
|  | 5A socket outlet(2S) | 200 |
|  | **Total = 6000** |
|  | | |
| **Bathroom 1** | Incandescent lamp (L) | 100 |
|  |  | **Total = 100** |
|  | | |
| **Bathroom 2** | Incandescent lamp (L) | 100 |
|  | **Total =100** |
|  | | |
| **Bathroom 3** | Incandescent lamp (L) | 100 |
|  | **Total = 100** |
|  | | |
| **Living Room** | Incandescent lamp (L) | 100 x 3 = 300 |
| TV( avg 42”) | 120 |
| 5A socket outlet(2S) | 200 |
| Ceiling Fan | 80 |
| 15 A socket outlets(3S) | 1000 |
|  |  | **Total = 1700** |

|  |  |  |  |
| --- | --- | --- | --- |
|  | | | |
| **Dining room** | | Incandescent lamp (L) | 100 x 2 = 200 |
| Ceiling Fan | 80 |
| 15 A socket outlets(3S) | 1000 |
| 5A socket outlet(2S) | 200 |
|  | **Total = 1480** |
|  | | | |
| **Kitchen** | | Incandescent lamp (L) | 100x 2= 200 |
| Ventilator(avg 8”) | 40 |
| Two 15 A socket outlets(3S) | 1000x 2= 2000 |
|  | **Total = 2240** |
|  |  | |  |
|  | **Veranda 1** | 15 A socket outlets(3S) | 1000 |
| Incandescent lamp (L) | 100 |
| 5A socket outlet(2S) | 200 |
|  | **Total=1300** |
|  |  | | |
| **Veranda 2** | | 15 A socket outlets(3S) | 1000 |
| Incandescent lamp (L) | 100 |
| 5A socket outlet(2S) | 200 |
|  | **Total=1300** |
|  | | | |
| **Veranda 3** | | 15 A socket outlets(3S) | 1000 |
| Incandescent lamp (L) | 100 |
| 5A socket outlet(2S) | 200 |
|  | **Total=1300** |
|  | | | |
| **Lobby** | | Incandescent lamp (L) | 100 x 1 = 100 |
|  | **Total = 100** |

Total load for Unit B = {(6120+6000+6000+100\*3+1700+1480+2240+1300\*3+100) / 1000} kW

= (27840/1000) kW

= 27.84 kW

Since each floor holds three units, total load for each floor is = (3 x 27.84) = 83.52 kW

Electric Motor = 4.6 kW

So, Total load for the building is = {(6 x 83.52) + 4.6} = 505.72 kW = 506 kW

So, according to this calculation, the generator room will be 56m2 which has a capacity of 1x500 kW







