American International University-Bangladesh (AIUB)
Faculty of Engineering

Course Name:	COMPUTER AIDED DESIGN AND DRAFTING	**Course Code:**	BAE 2101
Semester:	Fall 2020-2021	**Assignment Name:**	**OBE Assignment (CO2 & CO4)**
Submission Date:	**29/04/2021**		

Category	Excellent	Good	Acceptable	Secured Marks
Civil Plan [10]	The civil plan is unique and drawn as per requirements with proper dimensions. [7-10]	The civil plan is drawn partially as per requirement with minor errors. [4-6]	The civil is either copied or very poor with major errors. [1-3]	
Electric Fittings [5]	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 [5]	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 [5]	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 [5]	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]	
			Total Marks: (Out of 30 Marks)	

GROUP NO: 05

SL #	ID	Student Name	Class Serial No.	Department
1.	**20-42908-1**	**Partha Malakar**	**30**	**CSE**
2.	**20-42195-1**	**Nafinur Leo**	**24**	**CSE**
3.	**20-42934-1**	**Md. Oli Ullah Rafi**	**31**	**CSE**
4.	**20-42614-1**	**Ashma Ul Husna**	**27**	**CSE**
5.	**20-42906-1**	**Argho Proshad Singho**	**29**	**CSE**

Question #

Let us assume, you have been working in a group for last two months with your friends. Now, you want to invest in a real-estate business. So as par plan, you have purchased a land of 1 Bigha at Bashundhara R/A, Dhaka where your group will construct a 11 Storied building (**Ground + 10 Floors**) of **having 6 units** – ***A, B, C, D, E & F*** in each floor. **You are asked to design for only "A unit" flat of having 1600 sq-ft** (approx.) based on the following specifications:

- *3 Bedrooms:* ***[size: Bedroom-1 (Master Bedroom) is 17' x 14', Bedroom -2(Kid's Bedroom) is 16' x 13' and Bedroom -3(Guest Bedroom) is 12' x 12']***
- *3 bathrooms:* ***[Size: Attached bath of Bed-1 & 2 is 8'x 8', bath of Drawing (Common Bath) is 7' x 7')***
- *Living/Drawing:* ***(Size: 17' x 14')***
- *Dining:* ***(Size: 15' x 15')***
- *Kitchen:* ***(Size: 12' x 10')***
- *3 Veranda:* ***(Size: 4' x 10' each)***
- *Storeroom:* ***(Size: 8'x8')***
- *Door for kitchen / bathroom / veranda* ***- 2'6'', Door for Bedroom - 3' and Main Door 4' (interior to interior)***

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

i) **Draw the Civil Plan (figure 1)** of the flat along with **stair, lift** and **lobby (Space: 25′ *x* *20′***, *which is excluded from the flat size*). **[*Hints: Brick to interior/exterior Offset distance = 10′′, Stair Offset distance = 6′′]. [10]**

ii) **Draw** the **proper Electric Fittings (applying BNBC) (figure 2)** **[5]**

iii) **Draw** the **electric conduit layout (Wiring – applying BNBC) (figure 3)** where **Red, Green & Blue color** represents **light load, medium load & heavy load,** respectively. You must specify the names of light loads, medium loads and heavy loads beside your diagram, or you can attach the names of all the loads [specifying their type (light/medium/heavy)] in a different page **[5]**

iv) **Calculate** the **load** for **one unit only**. Also **Calculate** the **load** for each **floor** and **load for the building** considering all the flat types are same and same types of load. **[5]**

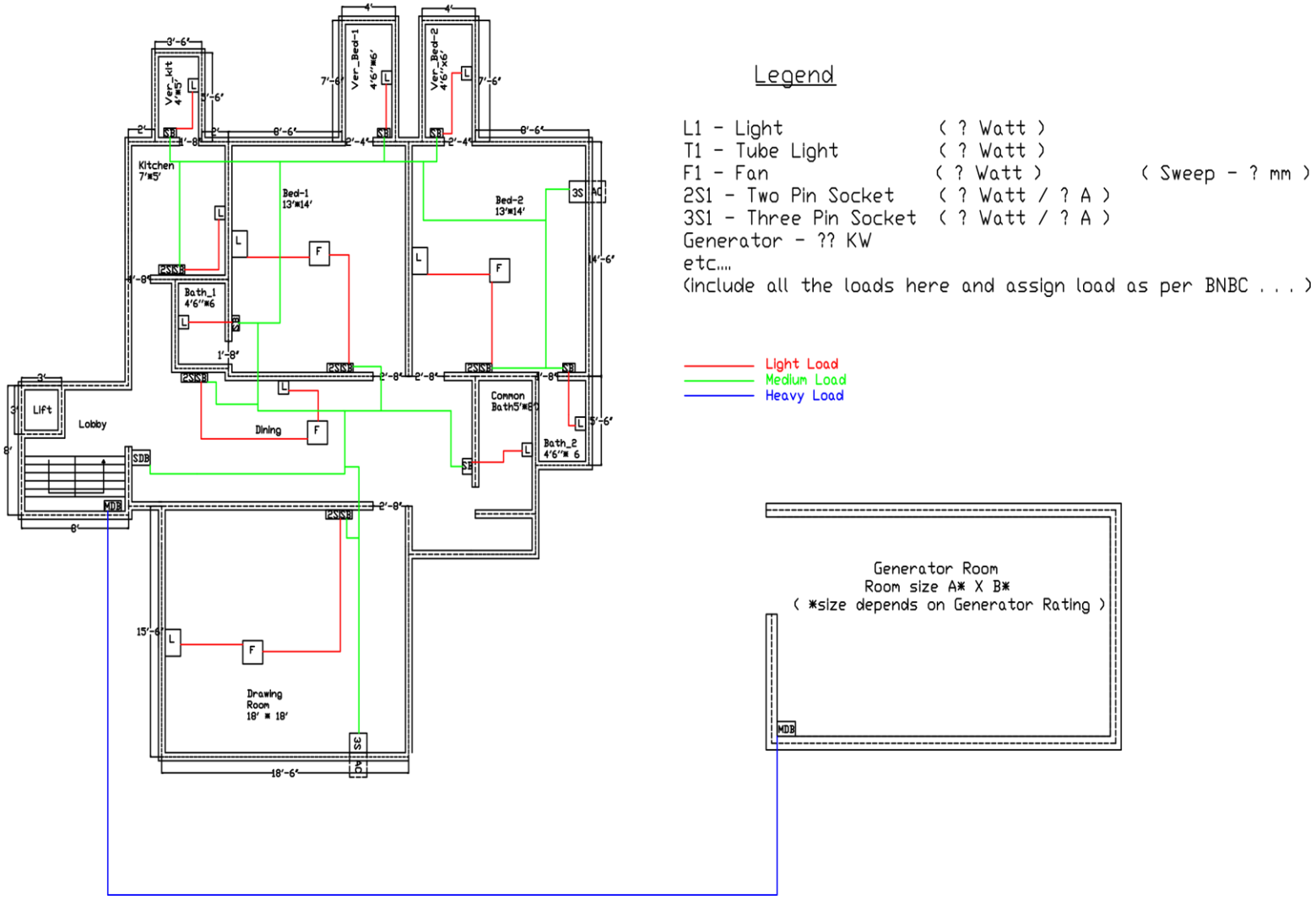
v) **Calculate** the **capacity** of the **Generator** based on the load calculation. **Draw** a separate **Generator room** and **show** the connection with distribution board. **[5]**

Note:

- **Please mention your Names, IDs and Class serial number beside the figure that you will draw.**
- **Please submit "PDF FILE"**
- **Please save the file: "CAD_OBE_GROUP NUMBER"**
- **Please submit in Microsoft Teams Form**

Remember, any indication of cheating will result in final grade 'F' regardless everything.

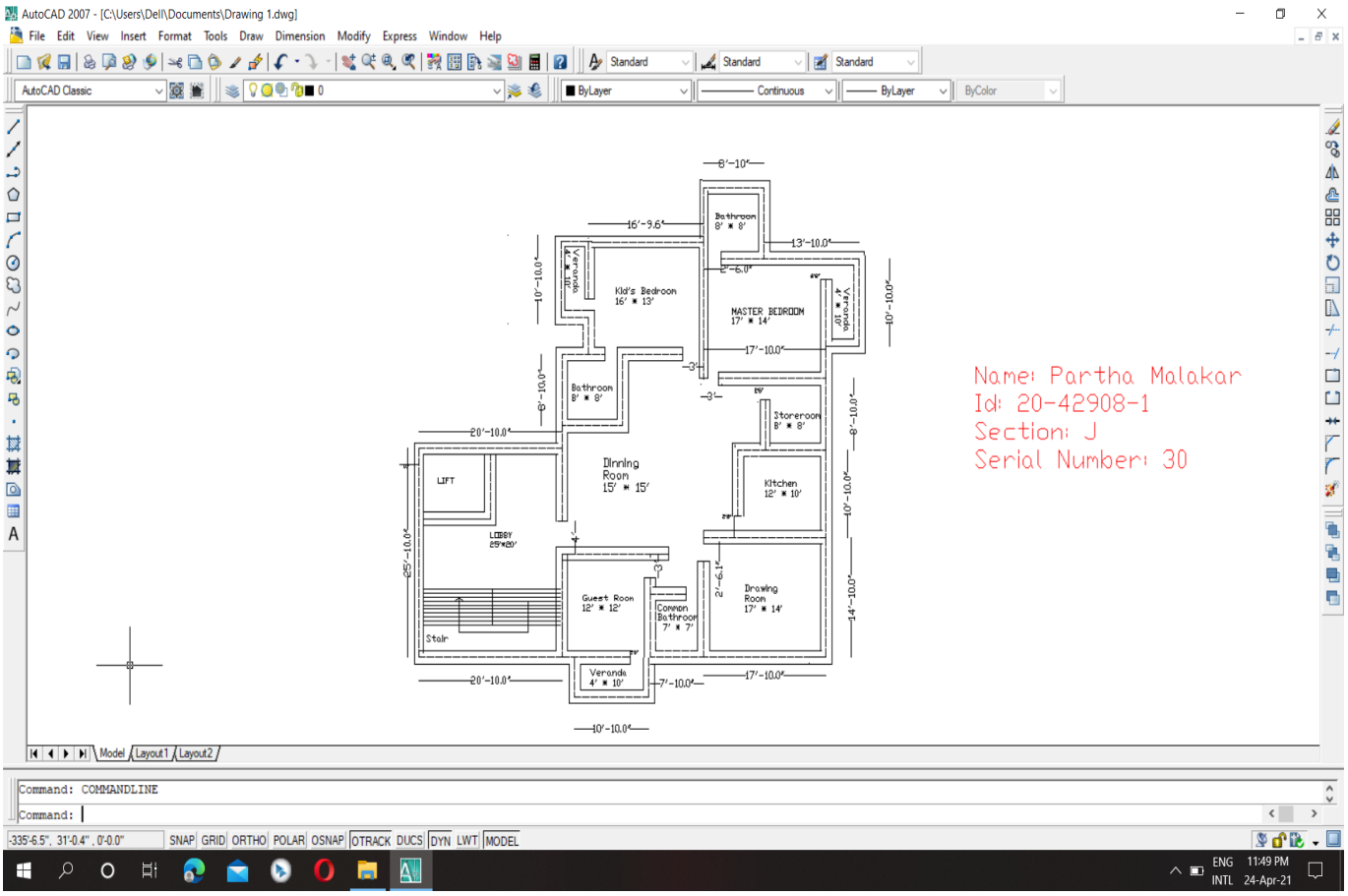
Sample Drawing

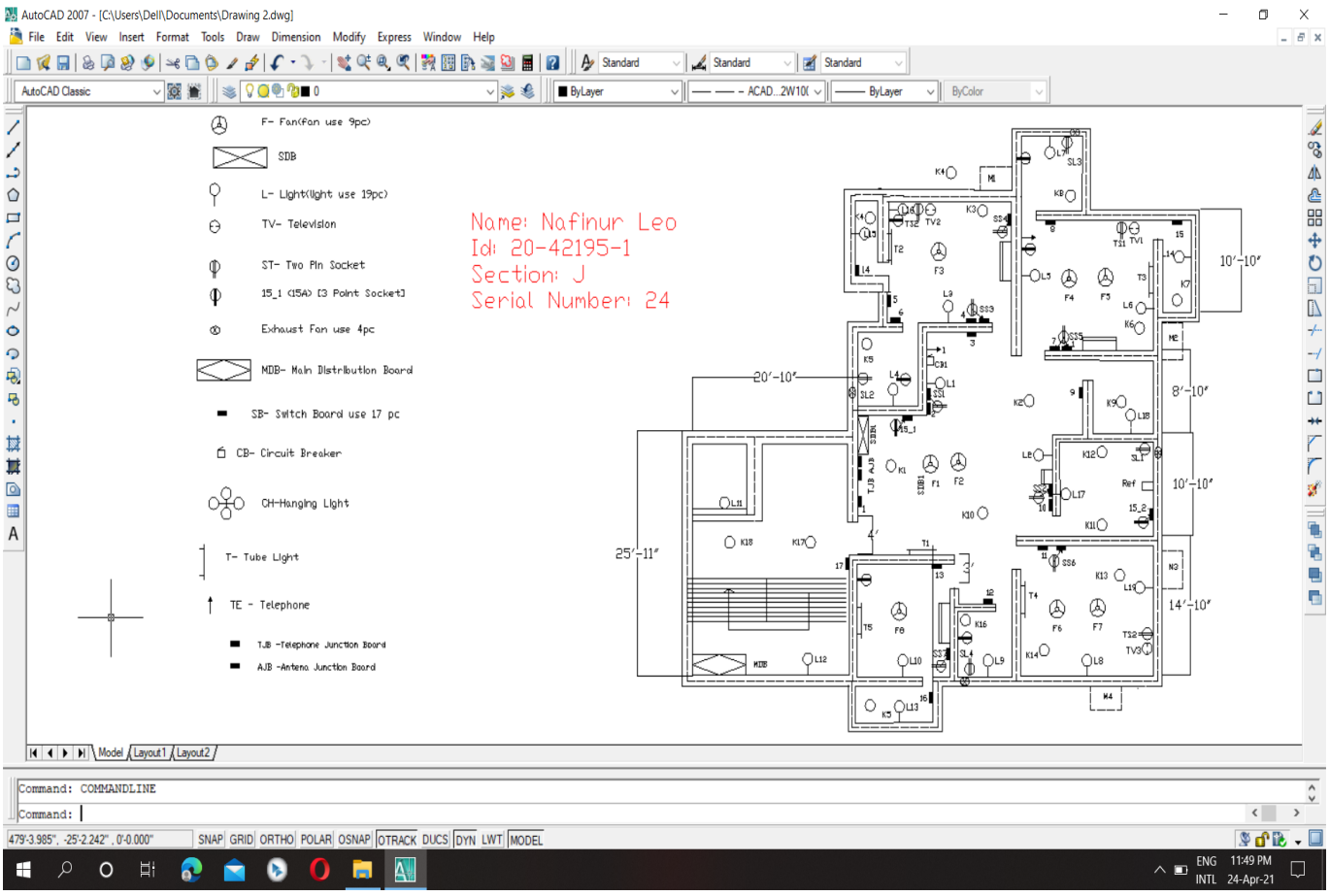


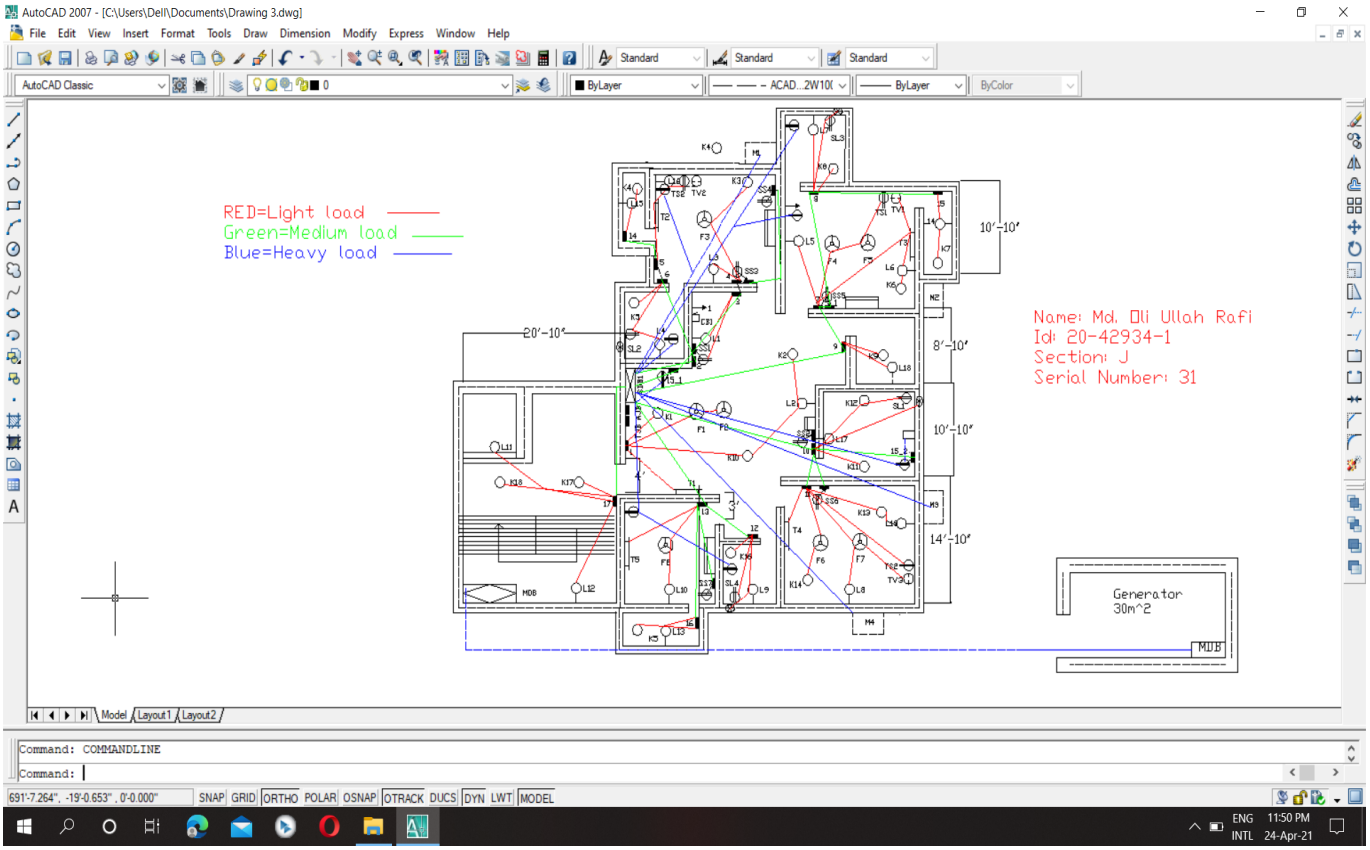
Load Calculation:

Suppose, there are total 5 lights of 40 Watt and 3 Fan of 80 Watt, so total load should be (5 x 40) + (3 x 80) or, 440 Watt. Similarly, include all the loads and calculate the **load** for **one unit**. Then, calculate the **load** for **a floor** just multiplying total loads of one unit with number of units in each floor and calculate **total load** for the **building** just multiplying the number of floors. On the ground floor comprises a small room (for MDB and water pump), garages and one small flat for security guard. So, calculate the load for the ground floor carefully.

**** You can follow the attached sample but don't think you need to design like this. You should use your imagination. Approximately 5 % deviation of total area in sft is acceptable.*


AutoCAD 2007 - [C:\Users\Dell\Documents\Drawing 1.dwg]
Bathroom 8' * 8'
Kid's Bedroom 16' * 13'
MASTER BEDROOM 17' * 14'
Veranda 4' * 10'
Bathroom 8' * 8'
Storeroom 8' * 8'
Dining Room 15' * 15'
LIFT
LOBBY 25'*20'
Kitchen 12' * 10'
Guest Room 12' * 12'
Common Bathroom 7' * 7'
Drawing Room 17' * 14'
Stair
Veranda 4' * 10'
Name: Partha Malakar
Id: 20-42908-1
Section: J
Serial Number: 30
Command: COMMANDLINE
Command:


AutoCAD 2007 - [C:\Users\Dell\Documents\Drawing 2.dwg]
F- Fan(Fan use 9pc)
SDB
L- Light(light use 19pc)
TV- Television
ST- Two Pin Socket
15_1 (15A) (3 Point Socket)
Exhaust Fan use 4pc
MDB- Main Distribution Board
SB- Switch Board use 17 pc
CB- Circuit Breaker
CH-Hanging Light
T- Tube Light
TE - Telephone
TJB -Telephone Junction Board
AJB -Antena Junction Board
Name: Nafinur Leo
Id: 20-42195-1
Section: J
Serial Number: 24
Command: COMMANDLINE
Command:


AutoCAD 2007 - [C:\Users\Dell\Documents\Drawing 3.dwg]
File Edit View Insert Format Tools Draw Dimension Modify Express Window Help
RED=Light load
Green=Medium load
Blue=Heavy load
20'-10"
10'-10"
8'-10"
10'-10"
14'-10"
Name: Md. Oli Ullah Rafi
Id: 20-42934-1
Section: J
Serial Number: 31
Generator
30m^2
MDB
Model Layout1 Layout2
Command: COMMANDLINE
Command:
SNAP GRID ORTHO POLAR OSNAP OTRACK DUCS DYN LWT MODEL
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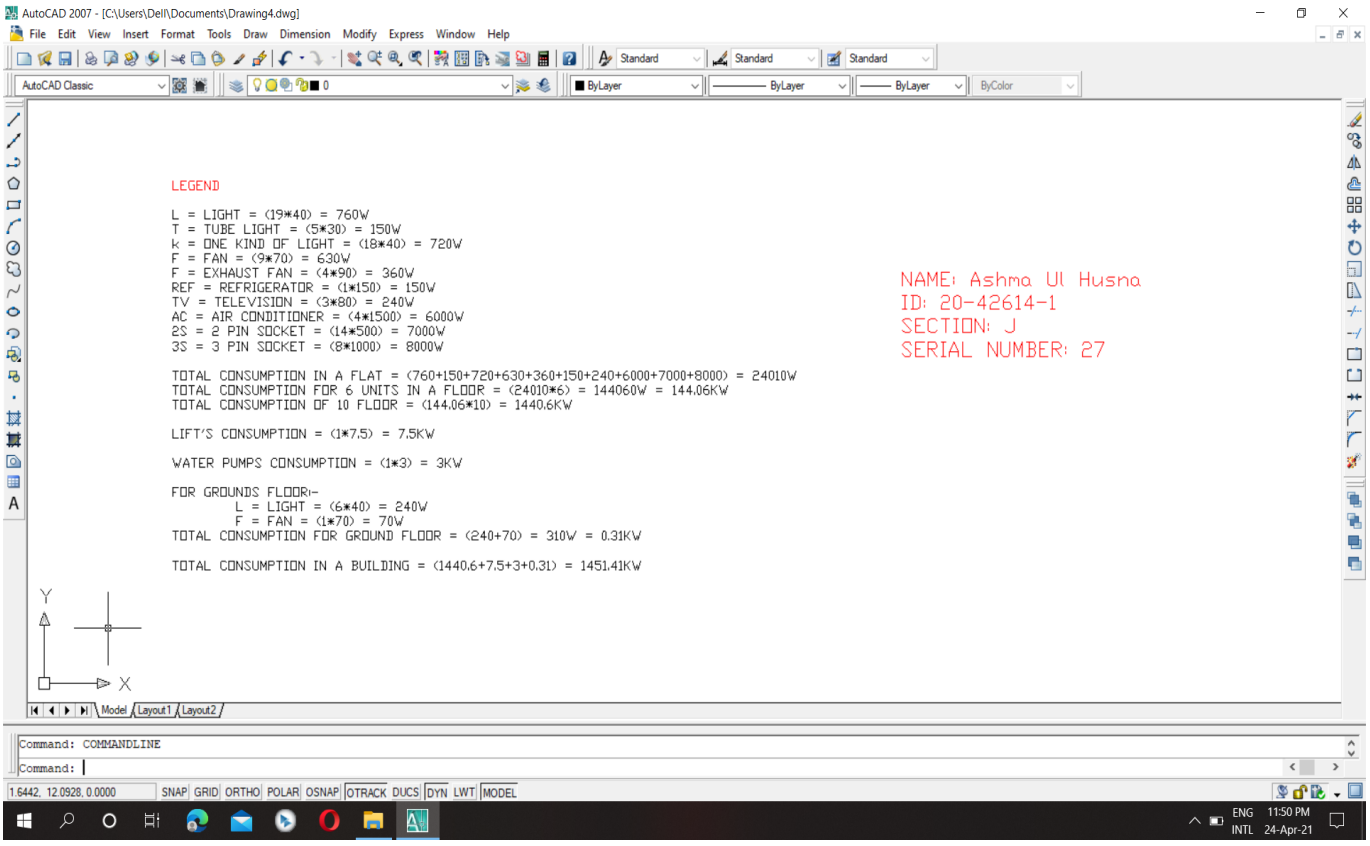
AutoCAD 2007 - [C:\Users\Dell\Documents\Drawing4.dwg]
File Edit View Insert Format Tools Draw Dimension Modify Express Window Help
LEGEND
L = LIGHT = (19*40) = 760W
T = TUBE LIGHT = (5*30) = 150W
k = ONE KIND OF LIGHT = (18*40) = 720W
F = FAN = (9*70) = 630W
F = EXHAUST FAN = (4*90) = 360W
REF = REFRIGERATOR = (1*150) = 150W
TV = TELEVISION = (3*80) = 240W
AC = AIR CONDITIONER = (4*1500) = 6000W
2S = 2 PIN SOCKET = (14*500) = 7000W
3S = 3 PIN SOCKET = (8*1000) = 8000W
TOTAL CONSUMPTION IN A FLAT = (760+150+720+630+360+150+240+6000+7000+8000) = 24010W
TOTAL CONSUMPTION FOR 6 UNITS IN A FLOOR = (24010*6) = 144060W = 144.06KW
TOTAL CONSUMPTION OF 10 FLOOR = (144.06*10) = 1440.6KW
LIFT'S CONSUMPTION = (1*7.5) = 7.5KW
WATER PUMPS CONSUMPTION = (1*3) = 3KW
FOR GROUNDS FLOOR:-
L = LIGHT = (6*40) = 240W
F = FAN = (1*70) = 70W
TOTAL CONSUMPTION FOR GROUND FLOOR = (240+70) = 310W = 0.31KW
TOTAL CONSUMPTION IN A BUILDING = (1440.6+7.5+3+0.31) = 1451.41KW
NAME: Ashma Ul Husna
ID: 20-42614-1
SECTION: J
SERIAL NUMBER: 27
Y
X
Model Layout1 Layout2
Command: COMMANDLINE
Command:
SNAP GRID ORTHO POLAR OSNAP OTRACK DUCS DYN LWT MODEL
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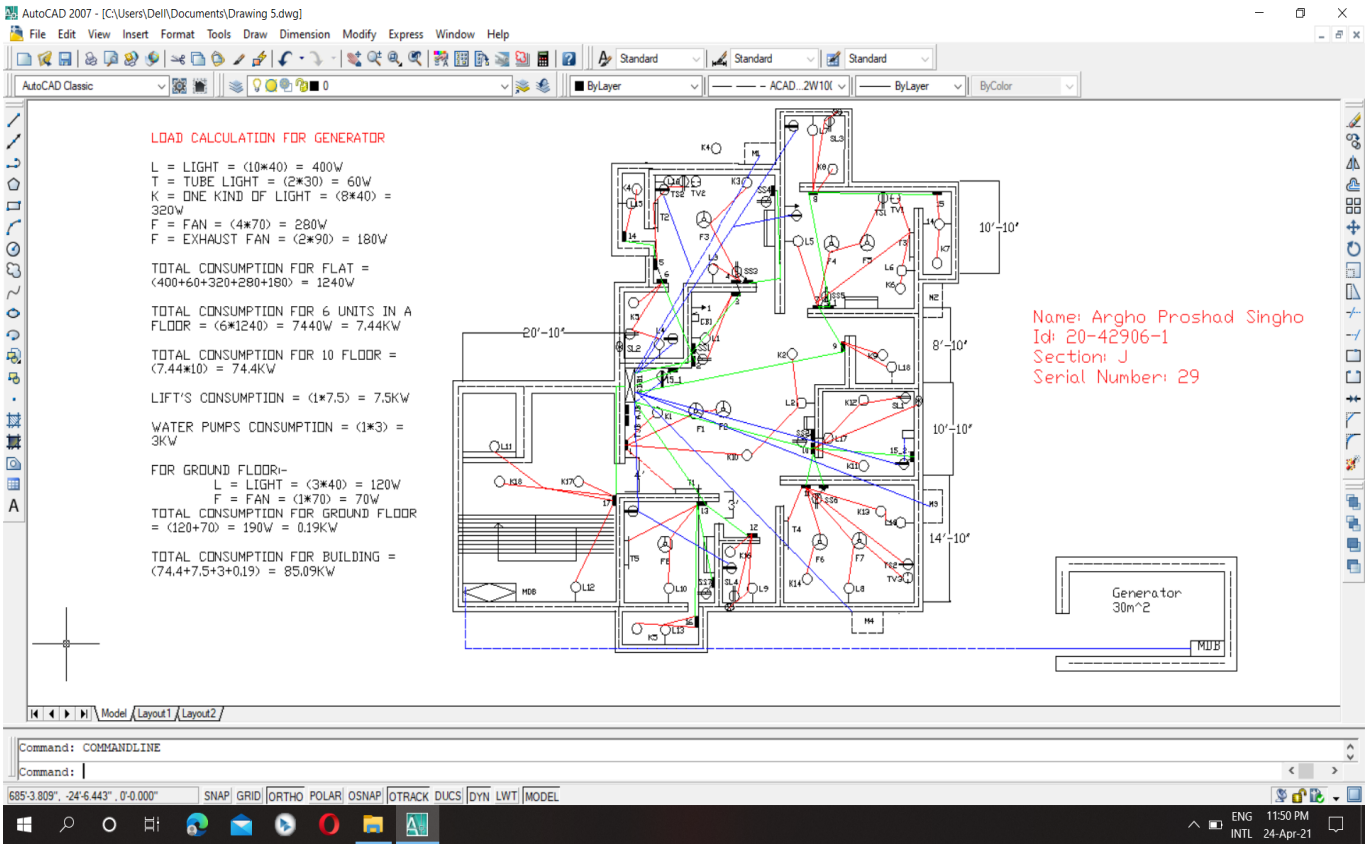
AutoCAD 2007 - [C:\Users\Dell\Documents\Drawing 5.dwg]
File Edit View Insert Format Tools Draw Dimension Modify Express Window Help
LOAD CALCULATION FOR GENERATOR
L = LIGHT = (10*40) = 400W
T = TUBE LIGHT = (2*30) = 60W
K = ONE KIND OF LIGHT = (8*40) = 320W
F = FAN = (4*70) = 280W
F = EXHAUST FAN = (2*90) = 180W
TOTAL CONSUMPTION FOR FLAT = (400+60+320+280+180) = 1240W
TOTAL CONSUMPTION FOR 6 UNITS IN A FLOOR = (6*1240) = 7440W = 7.44KW
TOTAL CONSUMPTION FOR 10 FLOOR = (7.44*10) = 74.4KW
LIFT'S CONSUMPTION = (1*7.5) = 7.5KW
WATER PUMPS CONSUMPTION = (1*3) = 3KW
FOR GROUND FLOOR:-
L = LIGHT = (3*40) = 120W
F = FAN = (1*70) = 70W
TOTAL CONSUMPTION FOR GROUND FLOOR = (120+70) = 190W = 0.19KW
TOTAL CONSUMPTION FOR BUILDING = (74.4+7.5+3+0.19) = 85.09KW
20'-10"
10'-10"
8'-10"
10'-10"
14'-10"
Generator
30m^2
MDB
Name: Argho Proshad Singho
Id: 20-42906-1
Section: J
Serial Number: 29
Model Layout1 Layout2
Command: COMMANDLINE
Command:
685'-3.809", -24'-6.443", 0'-0.000"
SNAP GRID ORTHO POLAR OSNAP OTRACK DUCS DYN LWT MODEL
ENG INTL 11:50 PM 24-Apr-21