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SEMESTER 6th

SECTION :- B

SUBJECT :- Architecture & Town planning

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MID TERM PAPER

Q.No 1

A)

Architecture:-

Architecture is the art, science and profession of planning, designing and ~~managing~~ supervising the construction of new buildings, landscapes, communities and furnishing in their totality, examining their environment in accordance with the principles of utility, strength, and aesthetics.

Town Planning:-

The planning and control of the construction, growth, and development of a town or other urban area.

Difference between Architecture and Town planning:-

Town planners decide what can be built where and how outdoor areas will be used; architects create the actual design. Town planners focus on the big picture of community needs and the impact on surrounding areas while architects are primarily concerned with their clients needs.

Frome Structure:-

The frame structure usually consists of a skeleton of beams and columns. The load is transferred from beams to the columns and column intern transfer the load directly to the sub soil through footing

Framed structures are often used for multistory building subjected to variety of extreme loads like compressive, tensile torsion, shear along with moment there are often blank spaces in the skeleton which are to be filled with brick walls or glass panels.

Load Bearing Structure :-

These type of structures takes loads from roof slab or trusses and floors and transmit them through walls to the firm soil below the ground.

Which one is least expensive and more suitable for a 3 story building:-

When the depth of foundation does not exceed more then 1 m to 1.2m and the bricks used in load bearing structure are cheap as compared to concrete used in beam and column for frame structure then the load bearing structure is less expensive as compared to framed structure.

A load bearing structure has the component of a building which carries and transfers the load safely to the ground. This can guarantee stability of the building hence it is more suitable for a 3 story building.

Q2 Building design process:-

Building design process consists of the following components.

Programming
Schematic design
Design Development
construction Documents
Bidding
construction Administration
Final certificate

Programming:-

Programming is the activity of determining the "program", or set needs that a building needs to fulfill or project needs of the user

It consists of the following:-

1 Initial Discussions:-

i) Client meeting

ii) Building program:- Building program are the specific uses intended for the building. It also includes nature of the project the current state of the building market.

iii) Project scope:- The client provides the architect with a list of what spaces are going into the building

iv) selection of project team.

2. Site Analysis:

i) Advice regarding the selection site based on the clients needs

ii) zoning permits

iii) legal requirements

They are classified as follows.

Macro site Analysis:-

i) location and distances from different areas
ii) Population
iii) climate and weather
iv) Humidity
v) temperature

Meso site Analysis:-

i) Key plan
ii) Latitude, longitude
iii) Area
iv) Geological zone
v) Altitude
vi) Height of Neighboring buildings.

3. Pre-Design studies:-

i) Architectural Brief
ii) Feasibility Report: The main objective of a project feasibility report is to ensure that project is legally and technically feasible economically justifiable.

2. Schematic Design :-

During schematic Design, the focus is on the "scheme", or overall high-level design. Here, minor details are ignored to focus on creating a coherent solution that encompasses the project as a whole. Schematic is where we figure out more or less how the building will look and operate. It includes rough drawings of site plan, floor plans, elevations and often illustrative sketches.

(i) Orientation :-

orientation, volumetric composition, location and protection of glazing will determine both the energy consumption and the overall feel of the building. selecting the right design at the concept stage will improve energy performance

It consists of the following :-

i) Space Relationship Diagram.
ii) Bubble diagram
iii) Conceptual plan

(iv) initial floor plan

(v) study model

3. Design Development:-

During Design Development special attention is required to each aspect, each space and every minut detail of the project.

(a) It consists of the following

i) Final Model.

4. Construction Document:-

On this phase the focus shifts from design to communicating the design by providing all the suitable information and then sending or referring it to a specialist and the design is finalized including HVAC systems, plumbing, electrical, gas, energy calculation etc.

5. Bidding :-

It consists of tendering and negotiation

i) In the construction industry, the process of selecting a contractor is generally referred to as "Tendering"

ii) If you have an exact amount of money in mind. one can start the process without negotiation

6. Construction Administration :-

This phase is the construction Phase. The building will be built under a contract between client and contractor.

- Architects perform multiple progress inspections and special inspections during construction.

7. Final Certificate :-

After the building is constructed the architect still remains at the site in case there are some modifications required. once the client is happy a final certificate is signed the contractor takes the money and the client obtains a certificate of occupancy.

QNO3 A

Given data

Plot size = 10,000 sft

F.A.R = 1 : 0.1

Required data

Total area of all floors = ?

Area of each floor = ?

Sol:

Extended Area = Plot size × F.A.R

= 10,000 × 0.1

= 1000 ft²

Remaining Built-up Area = 9000ft²

i- Set backs :

2 kanal and above so

Front = 20' sft

Back = 15' sft

Sides = 2 × 10' = 20' sft

So Area = ~~1000~~ - ~~120~~ 1000 - (20+15+20)

= 945 sft.

i- Basement Provision :

100% G-coverage thus no change

Area = 9000 sft

i- Foot print :

60% of the Plot area

So $\frac{60}{100} \times 10,000$

$= 6000$ sft

Plot to floor area = $10000 \times 0.1 = 1000$ sft

ii- Mumty Provision:

$= 240$ sft

So Area = 6000 - 240

G.F = 5760 sft

Now Plot to floor area

1 : 1.25

$\frac{1}{1.25} \times 5760$ = 4608 sft

Q3-b

Given data :

Area = $35' \times 40' = 1400 sft$

Marla = $\frac{1400}{272.25} = 5.142$

So Building Foot print = 75% - 10% void

Right sides consists of 3 rectangles

Ist rectangle = $15' \times 1' = 15 sft$

2nd rectangle = $9' \times 15' = 135 sft$

3rd rectangle = $5 \times 14 = 70 sft$

Total right side area = $15 + 135 + 70$

$= 220 sft$

left side consists of 1 rectangle

Area = $35' \times 1' = 35 sft$

Total Foot print area = $220 + 35 = 255 sft$

Remaining Area (Build-up) = $1400 - 255$

$= 1145 sft.$