

## MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION

(Autonomous)

(ISO/IEC-270001 – 2005 certified)

## SUMMER -13 EXAMINATION

Subject code: 12037

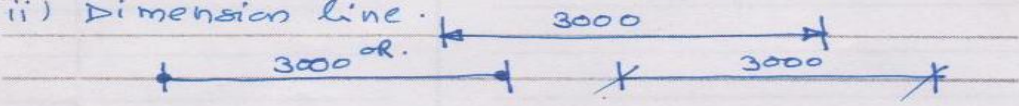

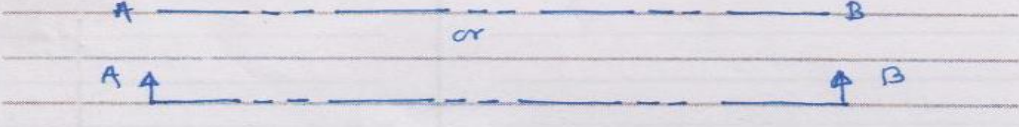


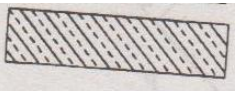
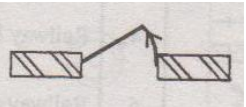
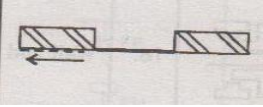
Model Answer

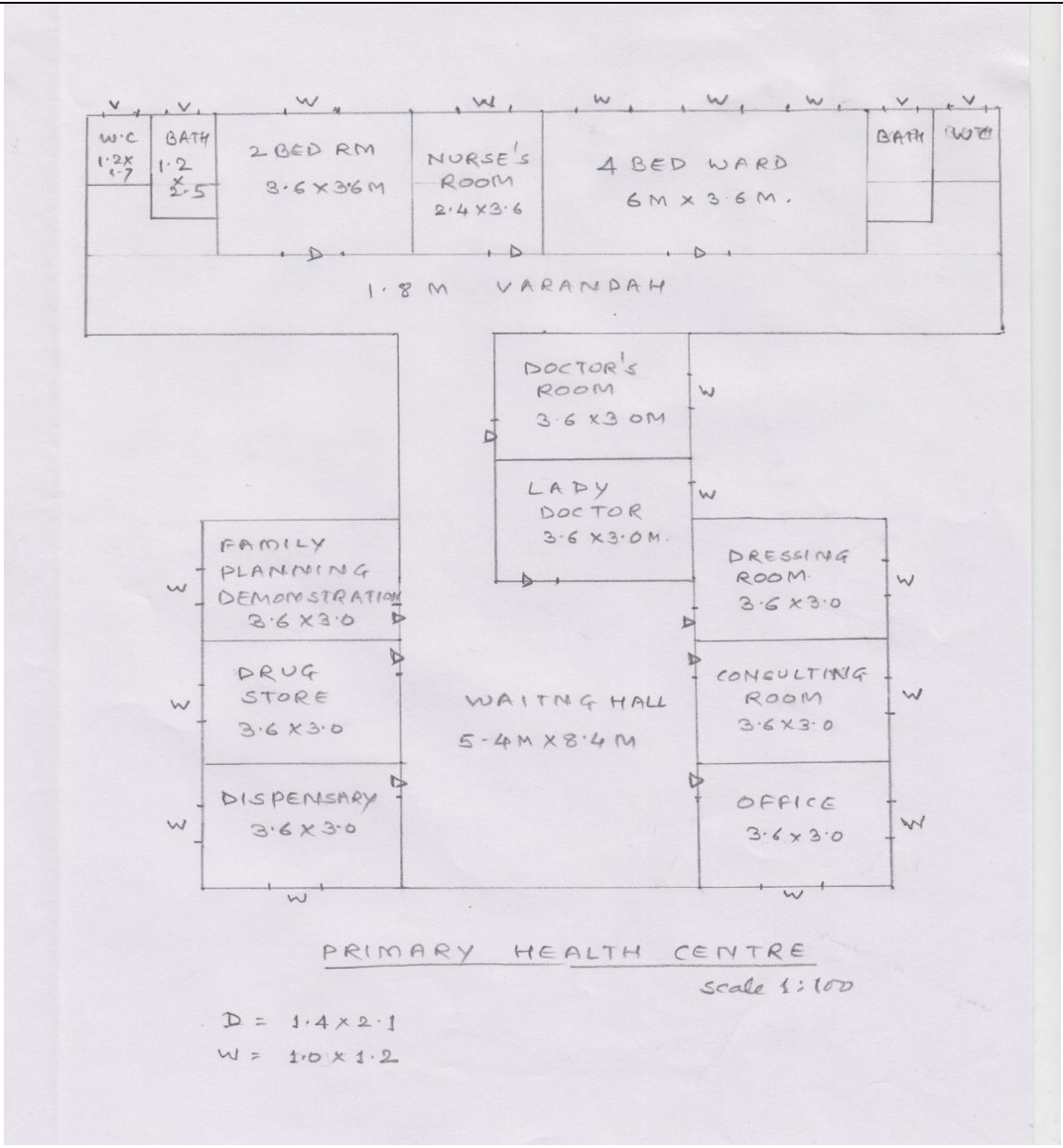
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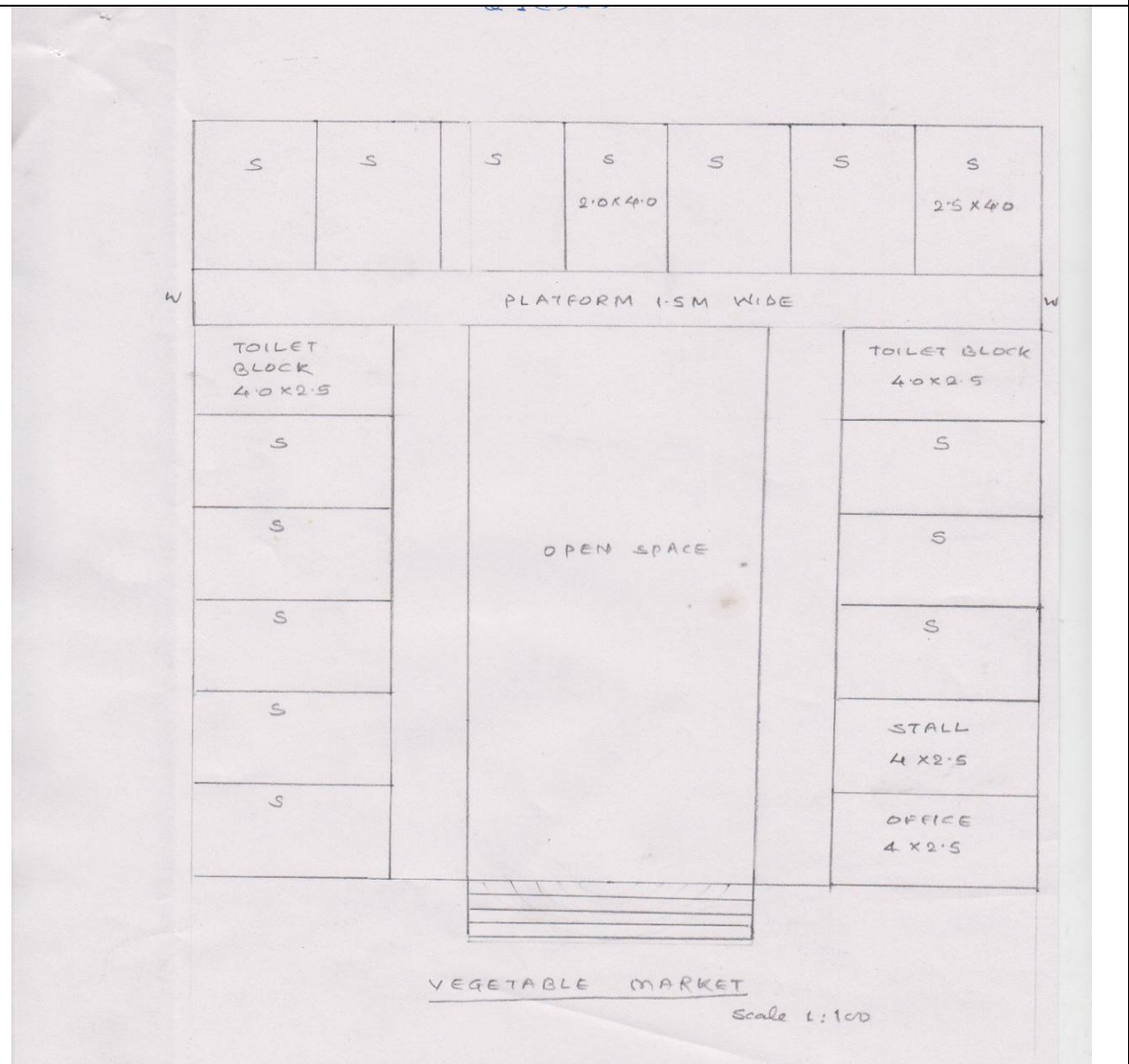
**Important Instructions to examiners:**

- 1) The answer should be examined by keywords and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language error such as grammatical, spelling errors should not be given more importance. (Not applicable for subject English and communication skill).
- 4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figure drawn by candidate and model answer may vary. The examiner may give credit for any equivalent figure drawn.
- 5) Credits may be given step wise for numerical problems. In the some cases, the assumed constants values may vary and there may be some difference in the candidates answer and model answer.
- 6) In case of some questions credit may be given by judgment on part of examiner of relevant answer based on candidates understanding.

Q1)a)i)Enlist two purpose of IS 962	4
Purpose of IS 962-1967 are	
i) It gives sizes (Scales) of drawing and lettering.	2
ii) Dimensioning method, symbols and abbreviations.	2
iii) Methods of projections	
iv) Units of measurement in drawings.	
(Note- Give two marks for each purpose, student can write any two purposes of above)	
Q1)a)ii)Draw neat sketches of following lines: Dimension line ,Extension line, Section line and pointers.	4

<p>(ii) Dimension line.</p>  <p>Extension line.</p>  <p>Section line.</p>  <p>pointers OR</p> 	1
<p>Q1)a)iii) Draw graphical symbol for :i)Wood    ii) Un Coursed Rubble masonry iii)single leaf swing door   iv)sliding door</p>	4
<p>i)Wood</p>  <p>ii) Un Coursed Rubble masonry</p>  <p>iii)Single leaf swing door</p>  <p>iv)Sliding door</p> 	1 1 1 1
<p>Q1)a)iv)Give the values of minimum requirement for: I) Height of headroom for stair ii) Riser and tread for residential bldg. iii)Width of stair for residential bldg. iv)Size of W. C.</p>	4
<p>I)      Height of headroom for stair-2.2m</p>	1

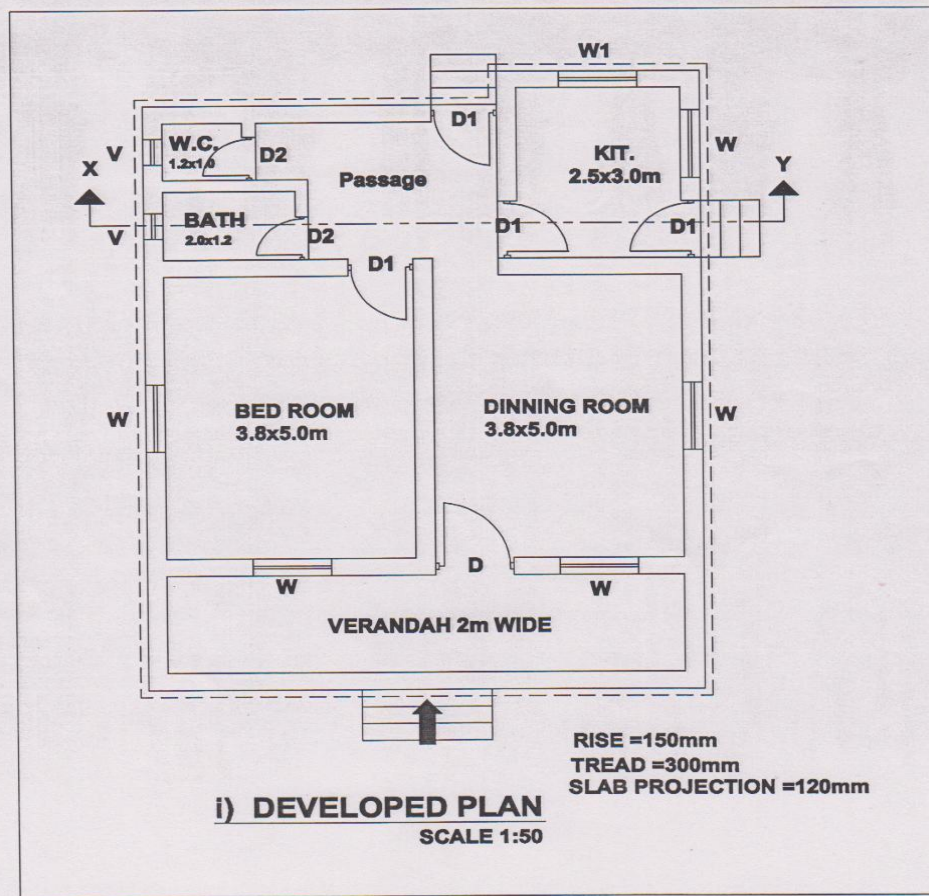
II)	Riser and tread for residential bldg.-Rise -17.5cm to 18.5 cm Trade-25cm	1
III)	Width of stair for residential bldg.-1.00 m	1
IV)	Size of W. C.-0.9 m or 1.0 m x 1.2 m	1
Q1)b)i)Draw to a suitable scale line plan of Primary Health Centre (PHC) showing different units. Show position of door and windows.		10
 <p>Hand-drawn floor plan of a Primary Health Centre (PHC) showing various rooms and their dimensions. The plan includes a 2-bed room, nurse's room, 4-bed ward, doctor's room, lady doctor room, dressing room, consulting room, office, waiting hall, drug store, dispensary, family planning demonstration, bath, and W.C. A 1.8m verandah runs along the top. Dimensions are given in meters. Scale 1:100.</p> <p>Scale 1:100</p> <p>D = 1.4 x 2.1 W = 1.0 x 1.2</p>		*
*(Note- For neat and suitable plan 6 marks and two marks for door and window position and 2 marks for labeling)		

Q1)b)ii)Draw to a suitable scale a line plane of vegetable market showing different units. Also show position of doors and windows.	10
 <p style="text-align: center;">VEGETABLE MARKET</p> <p style="text-align: right;">Scale 1:100</p>	*
<p style="text-align: center;">*(Note- For neat and suitable plan 6 marks and 2 marks for door and window position and 2 marks for labeling)</p>	05
<p>Q2) a) Explain principal of planning 'circulation'.</p> <p>Circulation:-It means the provision for the access between various parts of the building. It is the consideration for the easy movement of the person from one place to another. It is of two types- i) Horizontal circulation</p> <p style="padding-left: 40px;">ii) Vertical circulation</p> <p>i) Horizontal circulation-It is the movement between rooms on the same floor</p>	02       1 ½

<p>Passages, corridors, Halls and lobbies are provided for the horizontal circulation.</p> <p>ii) Vertical circulation-It is the movement from one floor to another floor in vertical direction. For vertical circulation stairs ,lifts ramps, escalators are provided. Stairs should be sufficiently wide and well ventilated.</p>	1 ½
Q2) b) Define plot area ,floor area, carpet area , B/U area ,plinth area.	05
i) Plot area-It is the total area of plot as per the dimensions of the plot on ground or as per record.	1
ii) floor area-It is the usable covered area of the building at any floor level. Floor area is calculated by deducting wall area from the plinth area.	1
iii) Carpet area-It is the actual usable area of the room at any floor level. It is the area where carpet can be laid. It is calculated by deducting area of sanitary block , verandah, corridors ,stairs, store, duct etc. from floor area.	1
iv) B/U area-It is the area covered by all floor of the building.	1
v) Plinth area –it is the built up covered area measured at the plinth level of a building.	1
Q2) c) State any five purpose of side margins.	05
1) To control the built up area of the building as per building rules and bye-laws.	1
2) To provide sufficient light and ventilation around the building.	1
3) To provide space for laying drainage line and inspection chambers on it.	1
4) To maintain the external privacy of the building from adjoining buildings.	1
5) To avoid the disturbance due to road traffic front margin is provided.	1
Q3) a) A line plan of rest house is show in fig-1. Draw to the scale of 1:50 the following views.	
i) Developed plan	12
ii) Section along X-Y	10
iii) Elevation (front)	8
<p>Use following construction notes:</p> <p>1) Hard Strata is available at 1000 mm below GL.</p> <p>2) Concrete bed P. ( 1 : 4 : 8 ) 150 mm thick and 900 mm width</p> <p>3) Foundation UCR masonry 600 mm in width in CM 1 : 6</p>	

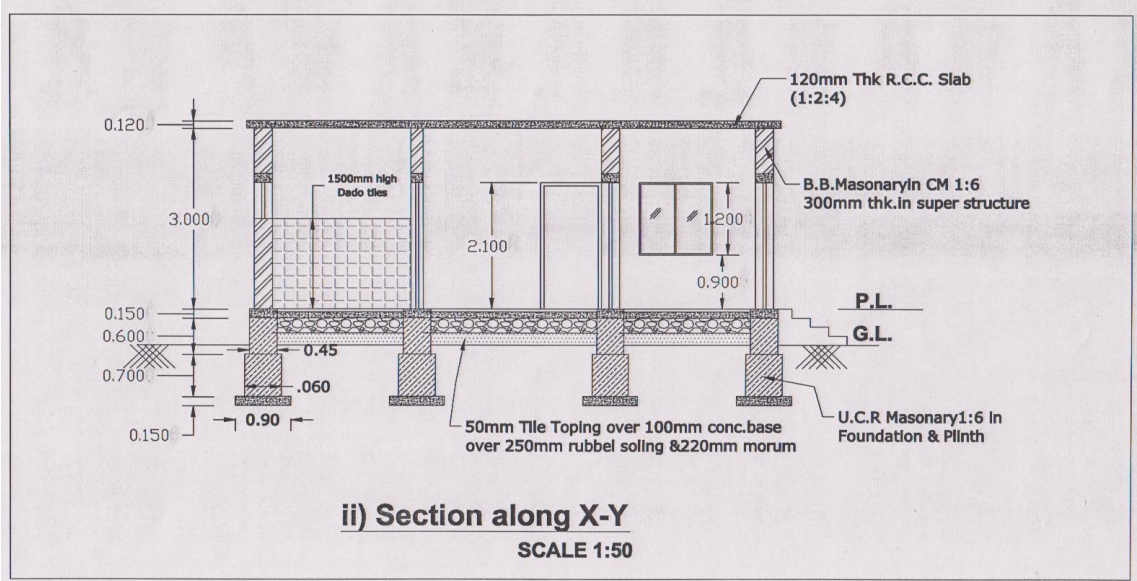


- 4) UCR masonry in plinth, width 450 mm and height 600 mm above GL in CM 1: 6.
- 5) Superstructure consist of BB masonry in CM 1 : 6300 mm thick main walls and 200 mm thick walls of sanitary block.
- 6) Ceiling height is 3000 mm .
- 7) R.C.C. Slab (1 : 1 ½ : 3) 120 mm thick.
- 8) Dado up to 1500 height in EC and bath.
- 9) Assume Additional data if necessary.



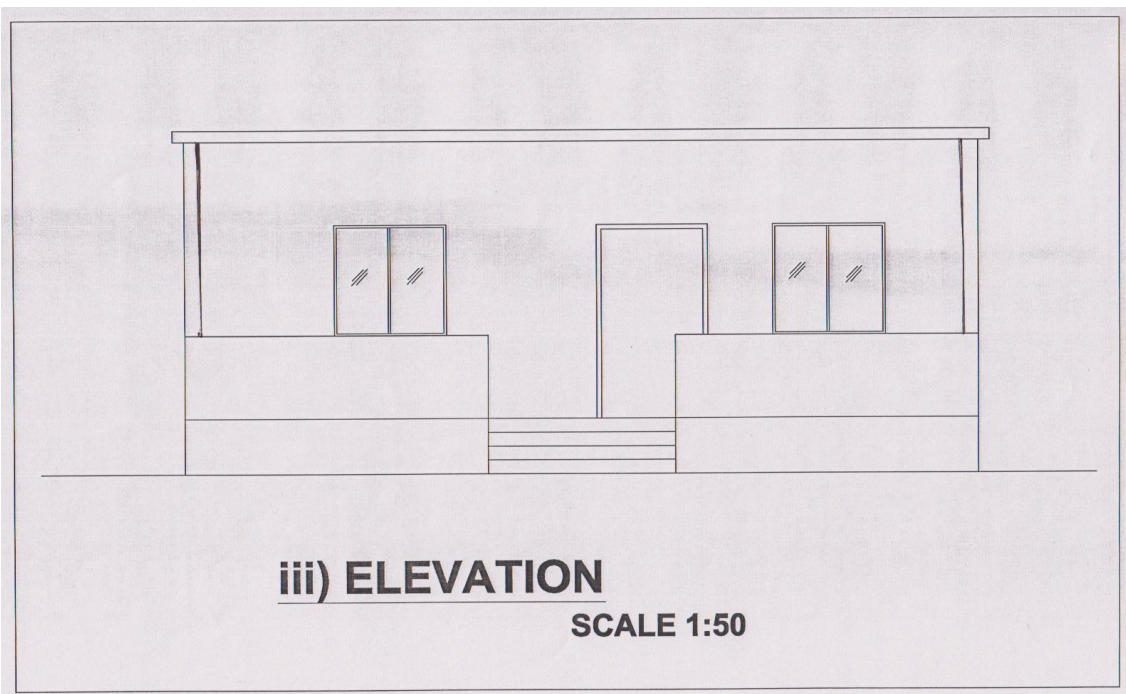
(Fig. Develop plan)

(Note- For neat and suitable plan 10 marks and 2 marks for labeling)



(Fig. Section along X-Y)

(Note- For neat and suitable plan 8 marks and 2 marks for labeling)



(Fig.Elevation )

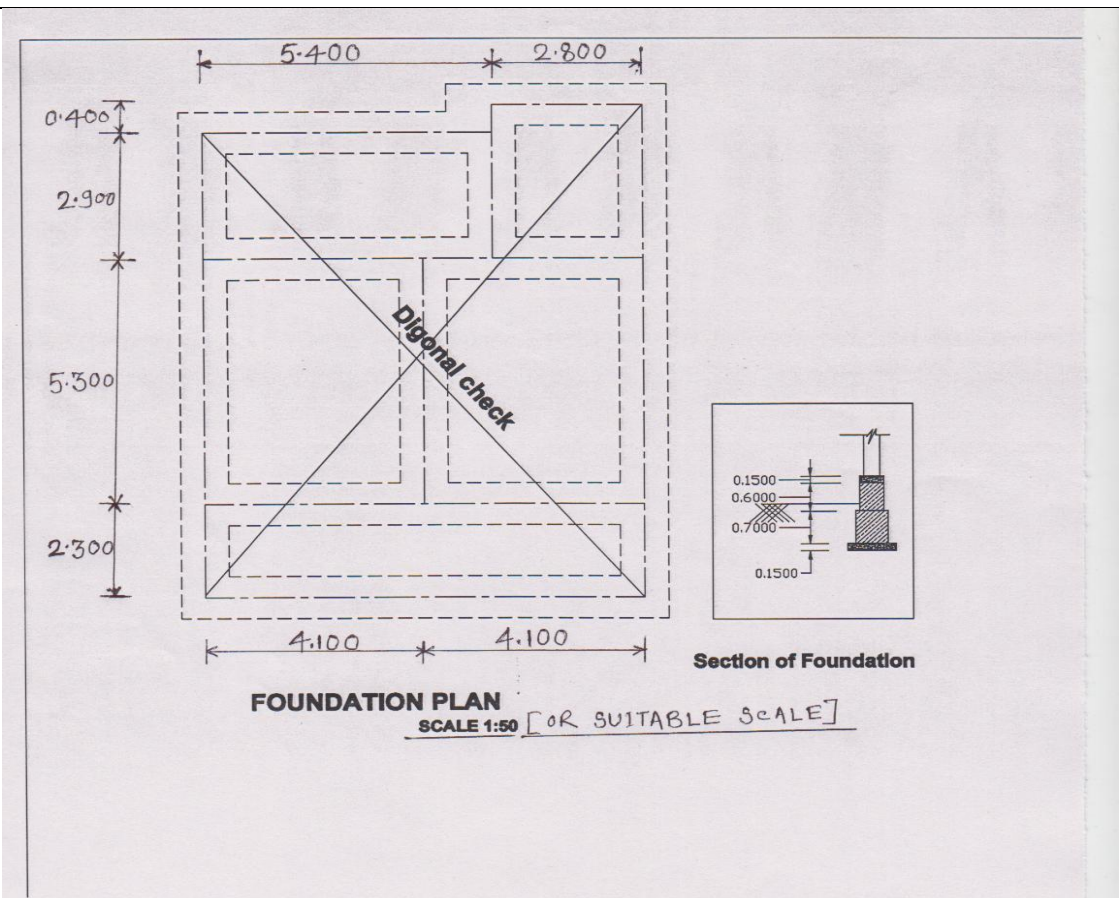
Q4) i)Prepare schedule of opening for Q.3 above.							06
schedule of opening-							06
	Sr. no	Symbol	Size	Nos	Type	Remark	
	01	Door-D	1200 x 2100	1	CCTW Fully paneled door single shutter door.	External door	2& 1/2
		D1	1000 x 2100	4	Single shutter flush door		
		D2	750 x 2000	2	Single shutter PVC door	Internal door WC & bath	
	02	Window- W	1200 x 1200	5	Fully Glazed aluminum Window	All window	2& 1/2
		W1	1200 x 900	1	Fully Glazed aluminum Window	Kitchen Window	
	03	Ventilator -V	450 x 600	2	Louvered window	IN WC & bath	01
Q4) ii)Prepare area statement and calculate total built up area for Q.3 above.							06





Q5) i) Draw foundation plan for the building in Q.3 above .Assume suitable data.

07

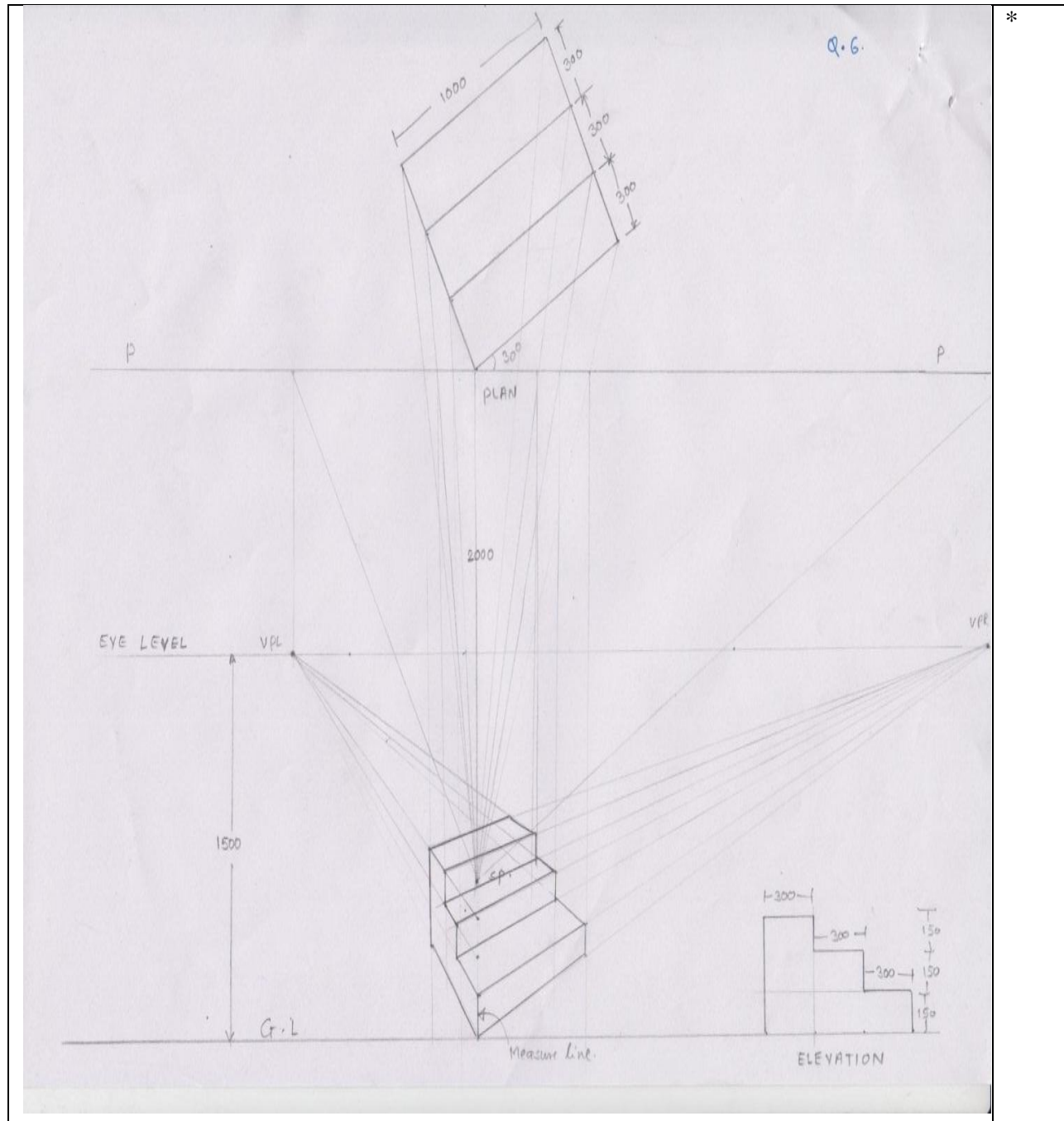


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\*(Note- For neat and suitable plan 05 marks and 2 marks for dimensions and labeling)

Q5) ii) Explain principal of planning (Any seven) with respect to plan in Q.3 above.		07
i)	Aspect- It is related with the placing of rooms to particular direction and provision of windows to enjoy the natural gifts such as air, sunlight, wind (breeze). For eg. in above plan in Q3. Kitchen is planned to the east direction for the entry of sun rays early in the morning so that ultraviolet rays kill the bacteria develop in the kitchen. Bed room is planned to the west direction to enjoy the wind (breeze) in the evening or night.	1
ii)	Privacy- It is of two types a) Internal privacy b) External privacy a) Internal privacy - It is the privacy of one room from the other part of the building. In above plan in Q3. Bed room is kept isolated from the other rooms and passage is provided to avoid disturbance to the bed room. b) External privacy- It means privacy of entire building from surrounding buildings. In the above plan in Q.3 Verandah is planned in the front side to maintain the external privacy of the building from road. Side margins are provided to maintain external privacy.	1
iii)	Circulation- It means movement of the user from one place to another place inside the building. In the above plan in Q3. horizontal circulation is achieved by using passage in front of the W/C and bath. Verandah is provided separate entry to the bed room and dining hall.	1
iv)	Grouping- It means grouping of the various rooms together according to their functions. In the above plan in Q3. Dining room is planned near the kitchen to serve food from the kitchen W/C and bath are planned near the bedroom.	1
v)	Roominess- It means the psychological feeling about the bigness or smallness of space or room or better roominess rectangular rooms preferred than square rooms. In the above plan in Q3. bed room dining room kitchen are rectangular rooms.	1
vi)	Elegance- It is the effect produce by elevation and general layout of the plan. In the plan in Q3. verandah is situated in front side to achieve the elegance.	1
vii)	Economy- It is related to cost of the building. The dimensions of the room should be minimum to achieve the function of the room. Unnecessary extra sizes should be avoided. In the above plan in Q3. kitchen is planned small but it	

is sufficient for the function of it. Other dimensions of the room for their function.	
Q5) iii) Write construction note /General specifications for the building from question 3.	07
a) Type of structure- load bearing structure b) Depth of foundation-1.0m below average ground level c) Plinth height-0.6m above average ground level d) UCR masonry in plinth 0.45m wide in CM 1:6 e) BB masonry in CM 1:6 in superstructure, main walls 300mm thick and walls of sanitary block 200 mm thick f) Ceiling height is 3.0 m. g) Roofing is RCC slab 120 mm thick in RCC(1:1 ½ :3) h) Finishing -External plastering sand face in CM 1:4 and internal plastering neeru finish in CM 1:4. i) Flooring- Spartex tiles in various rooms bed concrete PCC (1:4:8) and 150mm thick. j) Dado up to 1.5 m height in W/C bath. <i>(Note- Write any seven and 1 mark for each)</i>	1 1 1 1 1 1 1 1
Q6) Draw the two point perspective view of a small object shown in fig.2. Retain all construction lines. Take eye level at 1.50 m above G.L. All dimensions are in mm. Assume any data if required.	12



\*(Note-Give 2 marks for plan,2 marks for elevation,1 marks for construction and 1 mark for eye level 6 marks for perspective view )