Important Instruction to Examiners:-

1) The answers should be examined by key words & not as word to word as given in the model answers scheme.

2) The model answers & answers written by the candidate may vary but the examiner may try to access the understanding level of the candidate.

3) The language errors such as grammatical, spelling errors should not be given more importance.

4) While assessing figures, examiners, may give credit for principle components indicated in the figure. The figures drawn by candidate & model answer may vary. The examiner may give credit for any equivalent figure drawn.

5) Credit may be given step wise for numerical problems. In some cases, the assumed contact values may vary and there may be some difference in the candidate's answers 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.

7) For programming language papers, credit may be given to any other programme based on equivalent concept.
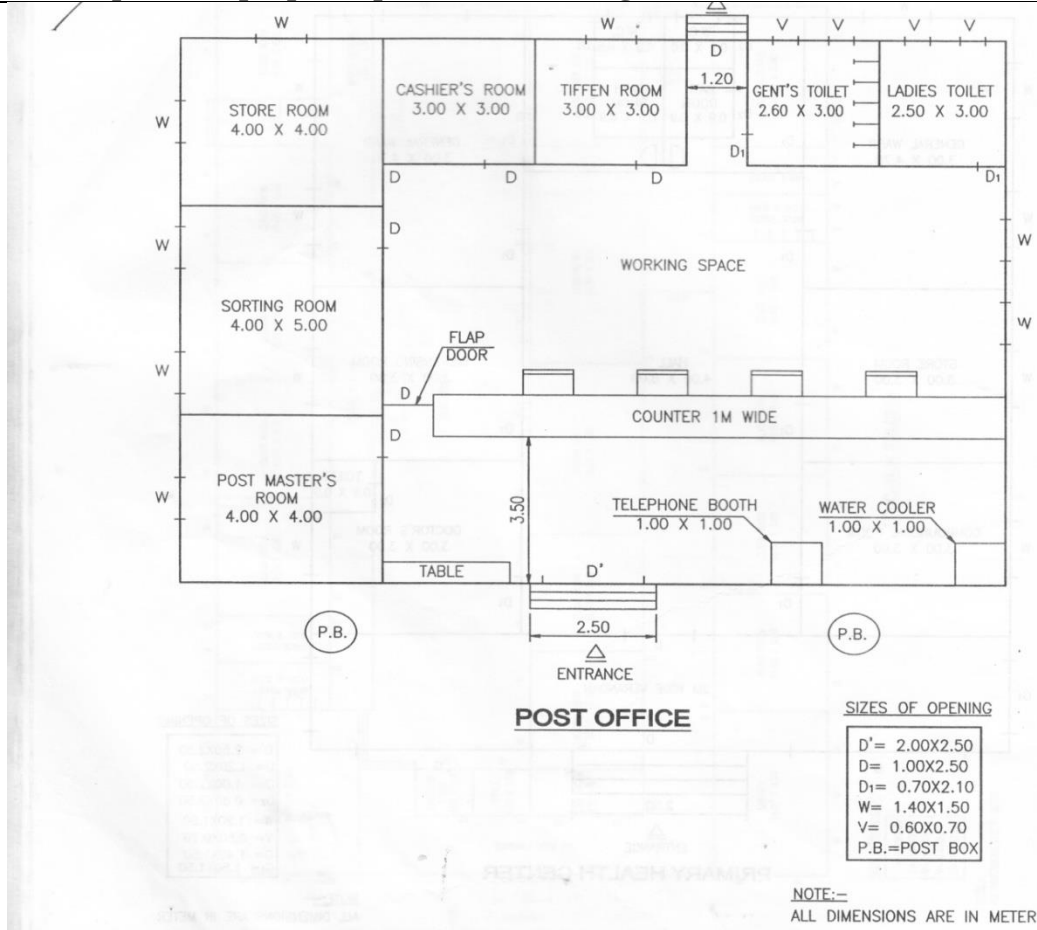
Important notes to examiner

1) **In Question No-2 Section Line AR is not provided in given Plan so student may assume any Suitable section line and draw a section, give proportionate marks to students**

Q .NO	SOLUTION	MARKS
Q No.1 A)	**Attempt <u>Any Three</u>:**	**12M**
a)	**Draw graphical symbols for**	**04M**

	a) Concrete
	
	Concrete
	
	    b) Brickwork
	
	    c) Glass
	
	GLASS
	
	    d) UCR
	
		01M Each

b)	**Define 'Aspect' and 'Prospect' and give one example of each.**	**04M**
	Aspect- Different rooms of the building are placed and located according to the functional utility in such a way that maximum advantage from natural elements like sun, wind can be obtained. Sunlight provides the illumination inside the rooms and there is no need of artificial lighting. It also creates pleasant a cheerful atmosphere inside the room. For example: kitchen is placed to the east direction as morning sun rays kill bacteria and germs. Bedroom is provided towards west as in summer there is plentiful of breeze and evening sun removes dampness. **Prospect-**Prospect means taking advantage of desirable views available from windows, doors, balconies, terraces of features outside the building such as garden, lake, sea, river, hill, etc. and blocking undesirable views such as slum area, gutters, garbage dump, railway track, etc. by providing blank walls. For example: If there is lake towards east side we can provide balconies, terraces and windows towards that direction and if there is slum area towards west direction we can provide a blank wall towards that direction.	**01M Each define and 01 M example each**
c)	**State minimum dimensions required for following:**	**04M**

	a) Kitchen-cum-dining- area 9.5 sq. m with minimum width 2.4 m
	    b) Water closet- area 1.1 sq. m (0.9m x 1.2m)
	    c) Rise and tread for residential building- rise – 175mm to 185mm
	        tread- 250mm
	    d) Mezzanine floor area- min. height-2.75m and min. area 9.5 sq.m.
		01M each

| d)	Draw the following lines used in drawing	04M
	a) Centre line	01M Each
	b) Cutting plane line	
	c) Visible outline	
	d) Dimension line	
B)	**Draw a line plan of a proposed post office building for a town to scale 1:50.**	08M
	Note-: (Line plan 4 marks, Units 2 Marks, Dimensions 2 Marks, Doors and Windows are optional here.) **Note-: students may draw any other plan related to Post office building So accordingly give credit to them.**	

Q.No .2	Fig. I shows line plan of a residential building. Draw to a scale of 1: 50 the following views. Show all dimensions. i) Developed plan. ii) Elevation. iii) Section along AR. Use the following data: a) Type of structure - Load Bearing. b) Hard rock is available at a depth of 900 mm below G.L. c) PCC (1:4:8) as bed concrete 200mm thick. d) UCR masonry in plinth in CM (1:6). r e) BBM in superstructure in CM(1:6), 300 mm thick for main walls and 200 mm thick for walls in WC and Bath f) Ceiling height - 3000 mm. g) RCC slab (1:2:4) 120mm thick. h) Assume any other data, if required.	12M 08M 08M
	  DEVELOPED PLAN	12M
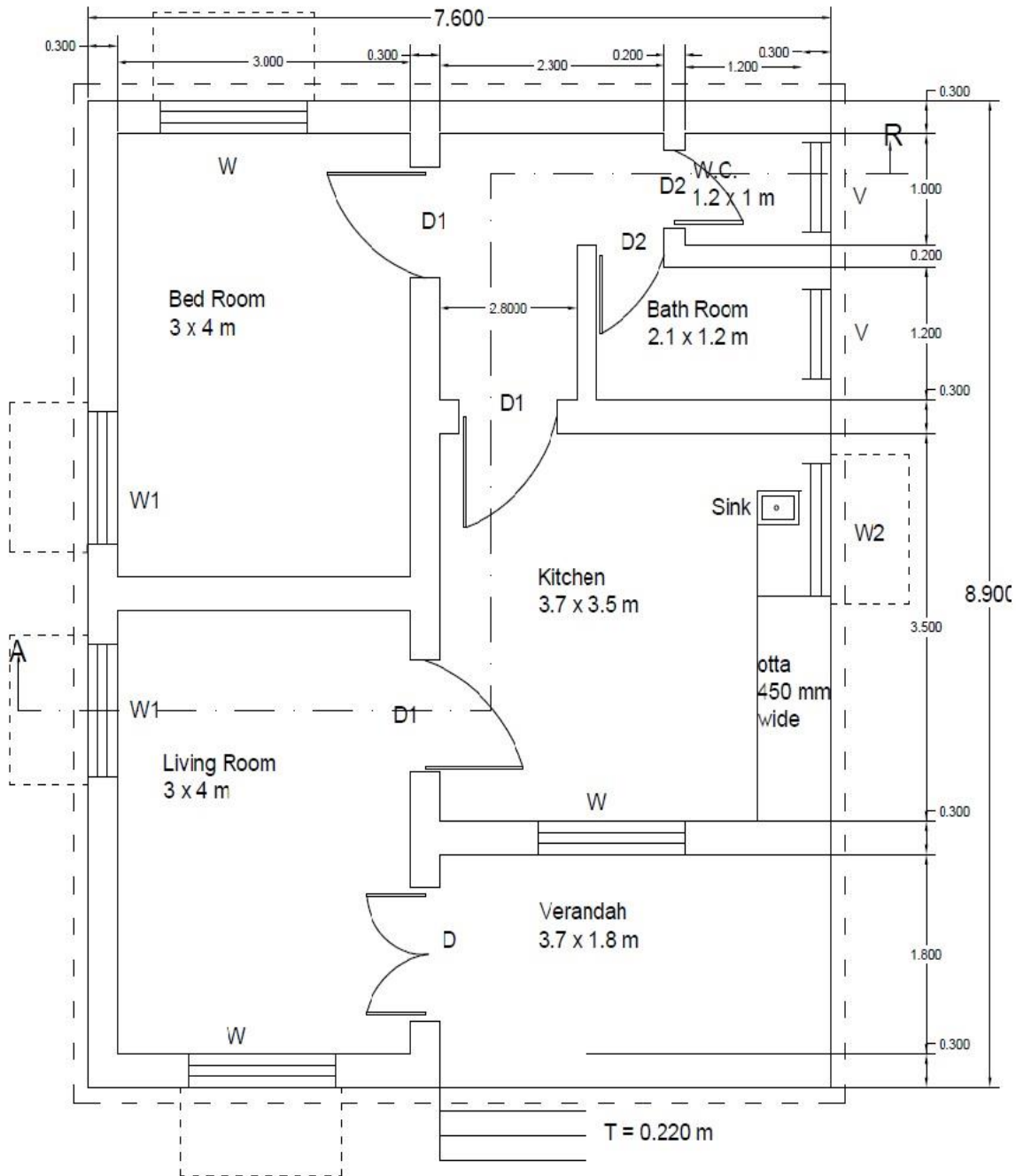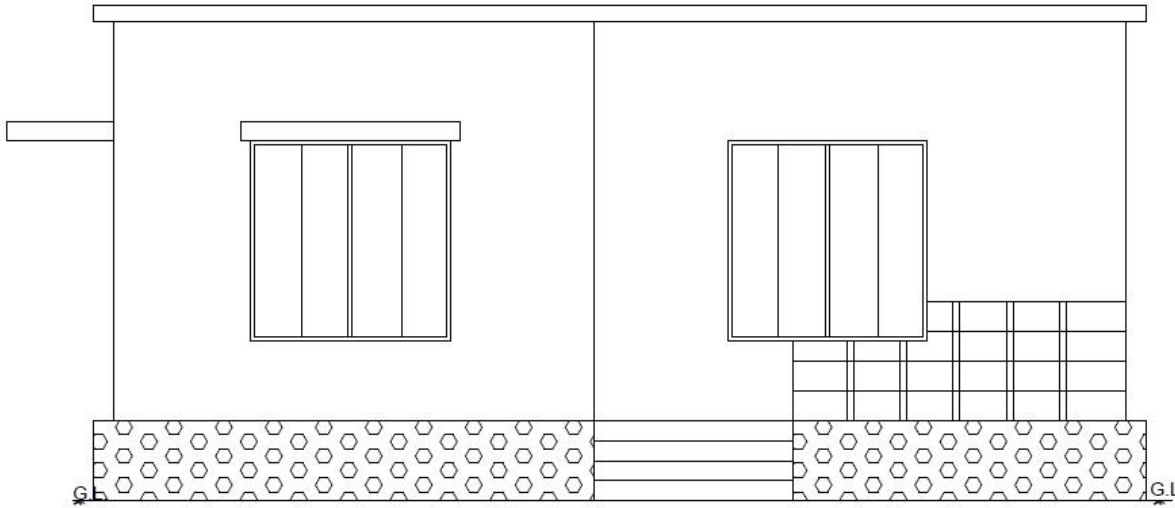
ELEVATION

SECTION ALONG AR

Note: Section Line AR is not provided in given Plan so student may assume any Suitable section line give proportionate marks to students

08M

08M

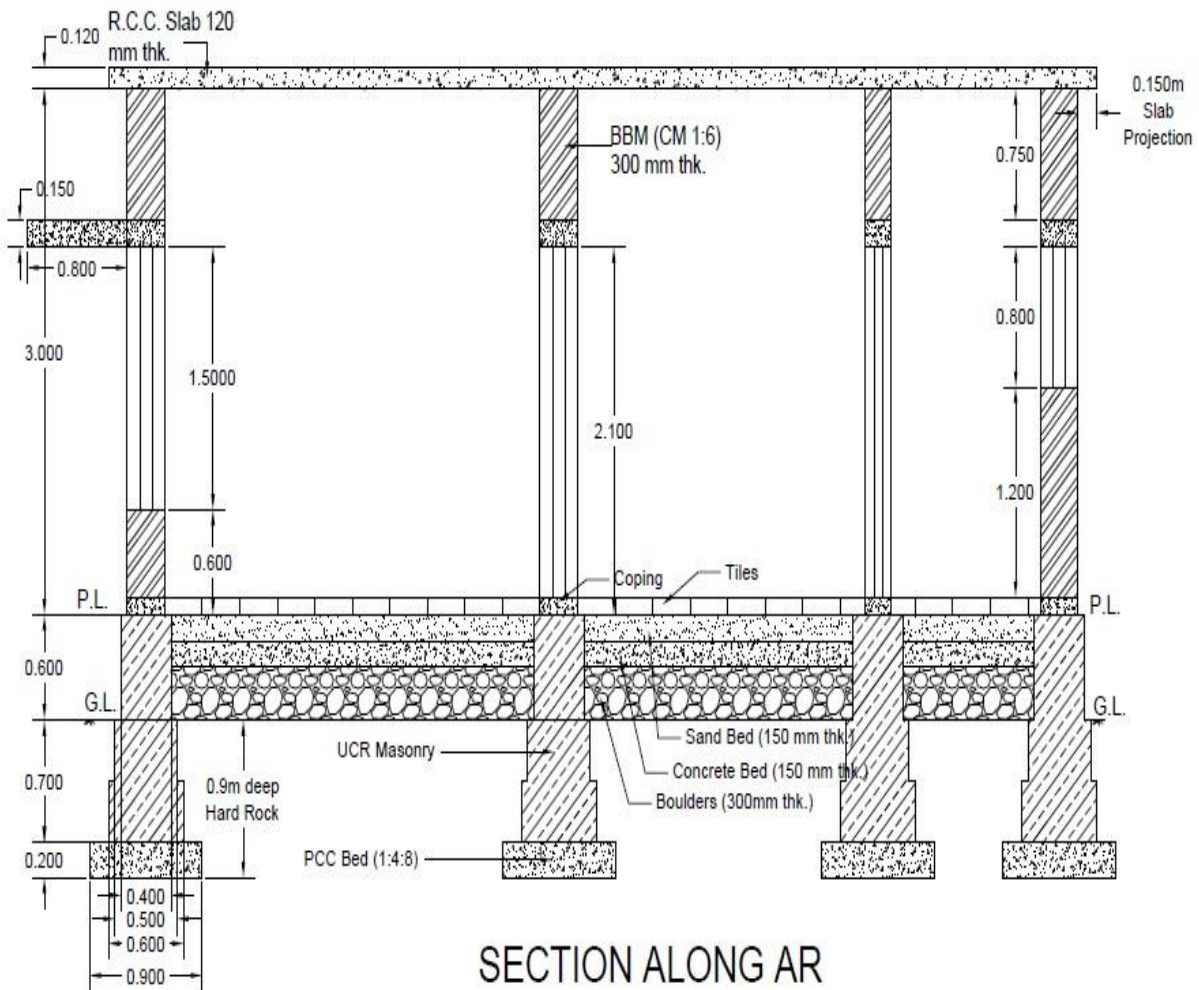| Q. 3	Answer any Three:	24M
a)	**Define the following terms and state their values for the residential building in Q.2.**	**08M**
	1) **Built up area**-It is the area covered by all floors of the building. It covers everything under roof but excludes balconies, staircases, etc. It is area covered by building on all floors. It includes floor area of all rooms plus wall thickness.	**01 M**
	Built up area for Q.2- 7.6 * 8.9 = 67.64 **sq. m.**	**01 M**
	2) **Carpet area**- this is the floor area of the usable rooms at any floor. Actually it is the area where carpet can be laid. It excludes area of sanitary accommodation, verandah, corridor and passages, kitchen and pantries, stores, entrance and porches, staircase and mumties, shafts for lifts, barsaties, garages, canteens, air conditioning ducts and plant room	**01M**

	Carpet area for Q.2-
	Carpet Area = Built up Area- Area of W.C., Bath & Kitchen & Verandah
	            = 67.64 – (1.2*1.0 + 2.1*1.2 + 3.7*3.5 + 3.7*1.8)
	            = 67.64 –(1.2+2.52+12.95+6.66)
	            = **67**.64-23.33
	            = **44.31 Sq. m.**
		01M

	3) **Plinth area**- the area of the building including area of all units with wall thickness at plinth level is called as plinth area. This is built up covered area measured at the floor level of the basement or any storey.	**01M**

	Plinth area for Q.2-
	Plinth Offset Assumed = 0.05 m
	Plinth Area = (7.6+0.05+0.05) * (8.9+0.05+0.05)
	            = **7.7 * 9.0**
	            = **69.30 Sq. m.**
		01M

	4) **FAR**- it is defined as ratio of total built up area to the area of plot. It is also called as floor space index (F.S.I)	**01M**

	FAR for Q.2-
	Assumed Side Margins on all sides = 3m
	Therefore, Plot Area = (7.6+3+3) * (8.9+3+3)
	            = **13.6 * 14.9**
	            = **202.64 Sq. m.**
	FAR = Total Built up Area/Total Plot Area
	     = **67.64/202.64**
	FAR = 0.334
		01M

b)	Prepare a schedule of openings for Q.2.					08M
	Sr. No.	Item	Symbol	No.	Size (mm)	Description	08M

Sr. No.	Item	Symbol	No.	Size (mm)	Description
1	Door	D	01	1200 x 2100	Paneled Door with T.W.
2	Door	D1	03	1000 x 2100	Fully paneled in T.W. single shutter
3	Door	D2	02	700 x 2100	Darth paneled single shutter
4	Window	W	03	1500 x 1500	Fully glazed window
5	Window	W1	02	1200 x 1500	Fully glazed window
6	Kitchen Window	W2	01	1200 x 1200	Fully glazed window
7	Ventilator	V	02	800 x 8000	Pivoted at Centre horizontally

Note:- Student can assume their own data Accordingly give credit to them

c)	Draw a neat labeled section of a typical RCC chajja.	08M
		08M

R.C.C. lintel with chajja :

Labels in figure: STIRRUPS, LINTEL, 8-ø MILD STEEL BARS, 6-8ø MILD STEEL BARS, CHAJJA, 8-10ø MILD STEEL BARS, 150, 300, 750, 60, 100, ALL DIMENSIONS ARE IN mm
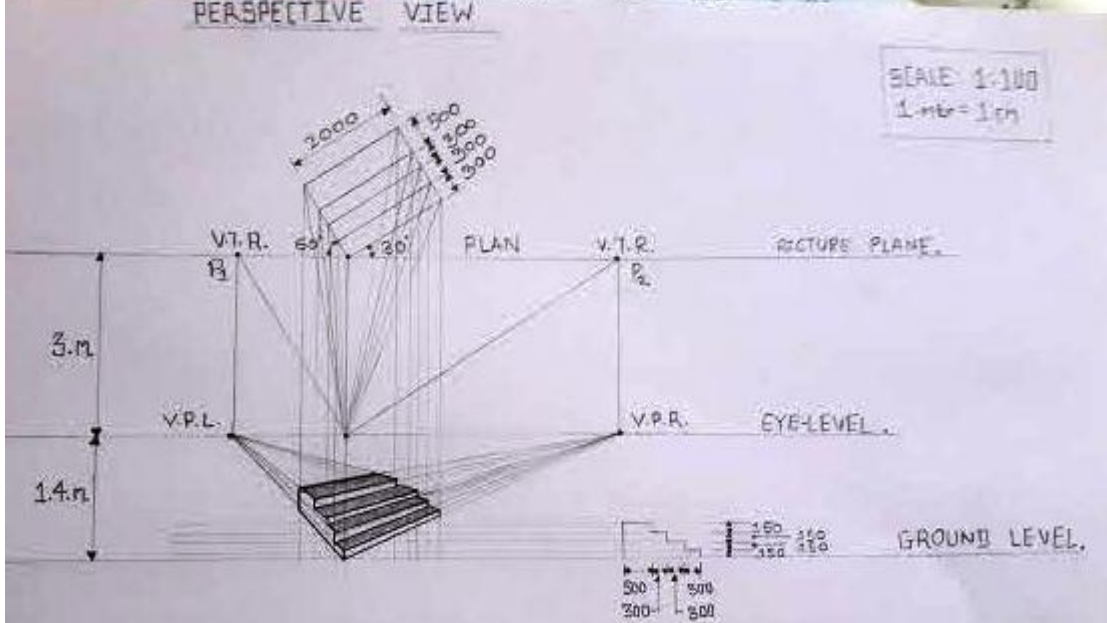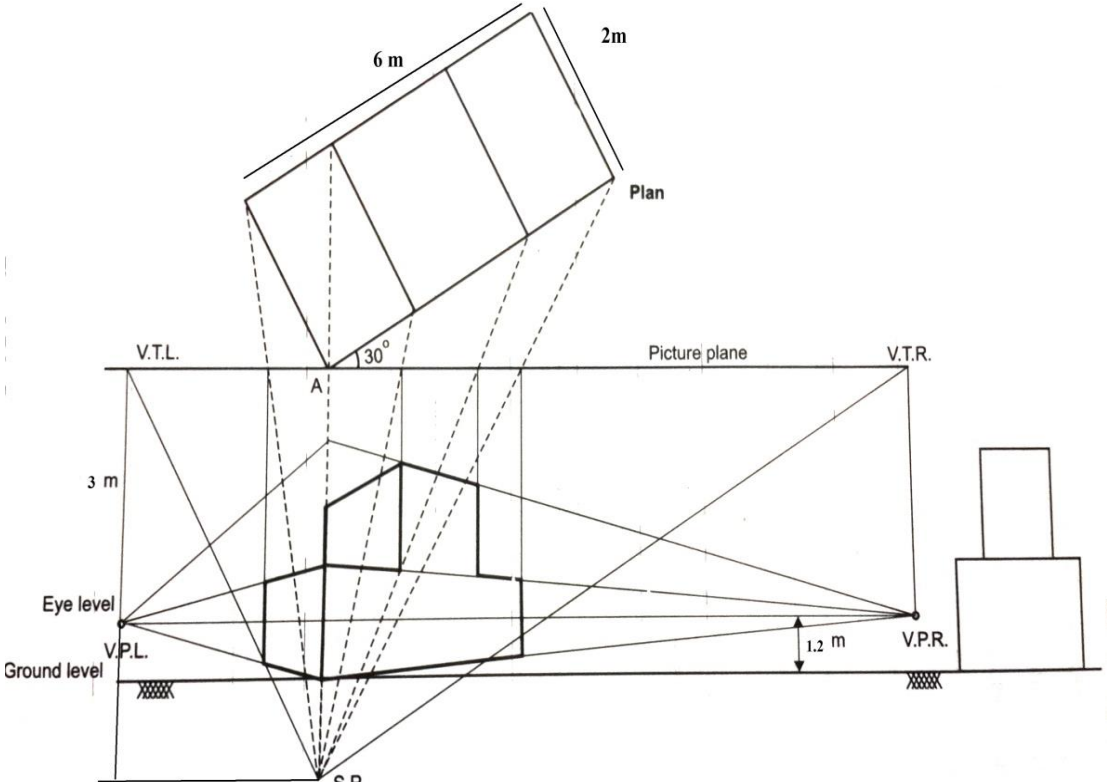
d)	**i) State common scales used for develop plan, foundation plan, and section and site plan.**	**04M**
	a) Scales for developed plan- 1:50 or 1:100 b) Scales for foundation plan-1:50 or 1:100 c) Scales for section-1:50 or 1:100 d) Scales for site plan-1:200, 1:500 or 1:1000	**01M each**
	ii) Define vanishing point. State and define the types of perspective drawings based on the number of vanishing points.	**04M**

	Vanishing point- The point in which system of parallel lines of object inclined to picture plane appears to converge is called vanishing point. It is the point at which all lines converge.
	Types of perspective drawings-
	  a) **One point perspective-**It is also called as parallel perspective. It consists of only one vanishing point from which lines originate or radiate. One or more faces are parallel to the picture plane; these drawings are useful for road views, railway track, row-housing scheme, interior designing, etc.
	  b) **Two point perspective**s- The viewer is at an angle to the building or space in front of him. There are two vanishing points for all lines of object or building, one right and one left. This is most general case of perspective drawing.
	  c) **Three point perspective-**This type is important when height or depth is prominent. Picture plane is tilted so that all three sets of planes and lines are at angle to picture plane. There are three vanishing points, two on horizon and one above or below the horizon. This type of drawing is used to show skyscrapers or view from top of very tall building or view from aero plane.
		01M define and 03 M types

Q No.4	**Answer <u>ANY TWO :</u>**	**16M**
a)	**Define the following and state their types:** **i) Privacy ii) Circulation. Give example of each type.**	**08M**

	i) **Privacy-**Privacy means isolating building or room from surrounding. It is of two types.
	  a) **Internal privacy**-It means isolating room from adjacent rooms or corridor/passage by proper placement of rooms, doors, and passage.
	  e.g. Use of screens, partitions, proper arrangement of furniture increases internal privacy.
	  b) **External privacy**- It means isolating building from adjacent building, roads, etc. It can be achieved by providing compound wall, planting trees around building, creepers on fencing, providing open space around building, etc.
	  e.g. Proving compound wall of height 1.35m-1.5m.
		04M

	ii) **Circulation-**It means movement from one place to another. It is of two types:
	  a) **Horizontal circulation**- It refers to movement of person from one room to another with the use of doors, corridors, passages, etc.
	  e.g. Passage can be used to go from one classroom to another.
	  b) **Vertical circulation-**It refers to movement of person from one floor to another with the use staircase, lift, ramps, escalators, etc.
	  e.g. Generally staircase and lifts are provided in building for vertical circulation.
		04M

b)	**State the units required for a school building. Also state their minimum dimensions.**	**08M**
	Units required for school building are : a) Entrance or reception- 3m x 6m, 4m x 5m, 7m x 8m, 8m x 10m b) Office and administration block- 4m x 5m, 7m x 8m, 8m x 10m c) Classroom- 4.5m x 6m, 5.5m x 6.5m, 6m x 7.2m, 6m x 7.8m, 7m x 10m d) Teacher's room- area 14 sq. m e) Drawing hall- area 3-4 sq. m per student f) Laboratories- area 3-4 sq. m per student g) Assembly hall- area 0.5-0.6 sq. m per student h) Circulation- 1m- 2m i) Library- area 80 sq. m – 95 sq. m for 1500 students j) Sanitary block	**01 M each write any 8 points**

Description	Area	Male	Female
W.C.	0.9m x 1.2m	1 for 40	1 for 25
Urinals	0.9m x 0.75m	1 for 20	--
Wash basin	--	1 for 40	1 for 40
Water taps	--	1 for 50	1 for 50

	k) Parking space and cycle stand- Cars-20 sq.m./ vehicle
	           Scooter/ Motorcycle- 3 sq.m./ vehicle
	           Cycle- 1.2 sq.m./ cycle	

c)	**State the importance of site plan and foundation plan in submission drawings.** **(At least 4 points each)**	**08M**
	Site plan- a) It shows location of structure with respect to some permanent features like temple. b) It shows drainage lines and water supply lines c) It shows road with width near plot d) It includes shape of building with external dimensions and size of plot e) It shows survey number, adjoining plots, north direction, marginal distances front, rear and side from plot boundary, compound wall, main gate, etc. **Foundation plan-** a) It shows excavation that is carried out for laying foundation of building. b) According to foundation plan, line out is given on the site by marking lines with white lime and according to that pits are dug c) Diagonal measurements are given on foundation plan for checking accuracy. d) Foundation plan shows the top view or layout of footings or foundation walls required to support the structure, showing their area and location by distance Between center lines and by distance from reference lines or boundary lines. e) Foundation plan for load bearing and framed structure is different.	**04M** **04M**

Q .NO	SOLUTION	MARKS
Q5. a)	Attempt the of following	12M
(i)	Draw to a suitable scale two point perspective drawing of steps shown in Fig. 2.Thestation point is 3 m from picture plane and eye level is atl.4mabove G.L.	12M
		1- Marks for Plan, 1-Marks for elevation, 1-Marks for construction line, 1-Mark for eye level, 8-Marks for correct object
	OR	
(ii)	Draw to a suitable scale two point perspective drawing for the object shown in Fig3. Assume eye level at 1.2 m from GL and station point 3 m from PP.	12M
		1- Marks for Plan, 1-Marks for elevation, 1-Marks for construction line, 1-Mark for eye level, 8-Marks for correct object