

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2017**

BUILDING PLANNING AND DRAWING

[Time : 3 hours

(Maximum marks : 100)

- [Note:— 1. Question No. II is compulsory.
2. Missing data can be suitably assumed.
3. A2 size drawing sheet to be supplied.]

PART — A

(Maximum marks : 15)

Marks

I Answer *all* questions in one or two sentences. Each question carries 1½ marks.

1. Define the term set back line.
2. Differentiate lift and loft.
3. Specify the minimum land area required for a Bus depot as per NBC.
4. Define the term Access.
5. Write the side and rear open space to be left around the building when the height of building is 50m.
6. Write the requirements of any two parts of building.
7. Differentiate between culvert and Bridge.
8. Give the conditions regarding lighting and ventilations in residential buildings.
9. Write the classification of building based on occupancy.
10. Define high rise building. (10×1½= 15)

PART — B

(Maximum marks : 85)

- II (a) Prepare the line plan for a residential building to suit for a plot of 17.3 × 20m size based on the rules and regulations of KMBR. The total built up area of the building is 109.6m² and should contain the following facilities.
- (i) Drawing and dining. (ii) Bed rooms -2nos. with attached toilets
(iii) Kitchen (iv) Verandah (v) Porch etc.

A road 6m width passing along the m side of the plot, which is in the north-south direction.

25

(b) The Fig. I shows line plan arrangement of room of a residential building. Prepare its

- (i) plan (ii) section along AA

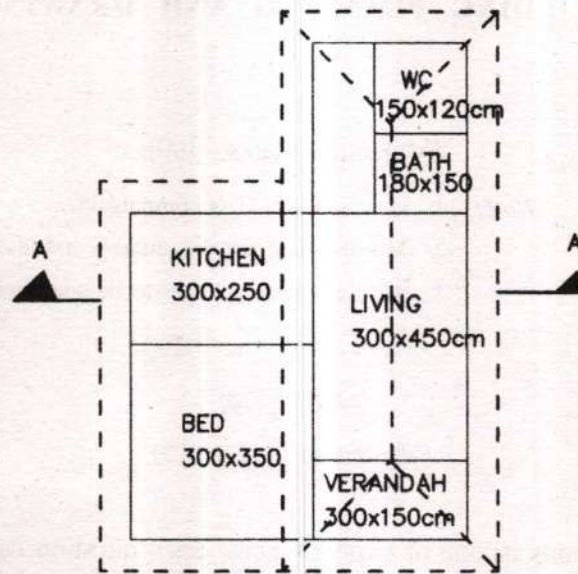


FIG : I

Details :

- (i) Bed concrete for foundation, PCC, 1:5:10 - 70cm × 15cm.
- (ii) R. R masonry in cm 1:8 for foundation and basement — 40cm × 60cm and 30cm × 50cm.
- (iii) Superstructure, 1 brick thick wall in cement mortar 1:6, 360cm height for tiled portion and 300cm for terraced portion.
- (iv) RCC M20 grade, 10cm thickness.
- (v) Details of tiled roofing.

Roofing with MP tiles

Ridge — 5cm × 15cm.

Common rafter — 7cm × 10cm.

Collar — 7cm × 10cm.

Wall plates — 10cm × 7cm

Eave board — 1.5cm × 12cm, All other data such as position and size of doors, windows, ventilators can suitably be assumed.

(15+15 = 30)

III Prepare the detailed drawing of a RCC footing.

Size of column — 30×30 cm.

Size of footing — 160×160 cm.

The depth of the base concrete 10cm, PCC 1:4:8.

The depth of footing at column face — 40cm, at edge — 20cm.

The reinforcement of footing — 10mm dia. 14 nos. in two direction and
Column 16mm dia 4nos.

15

OR

IV Draw the elevation of a single collar roof showing all details:

Wall thickness — 30cm.

Clear span — 5m.

Collar — $4\text{cm} \times 12.5\text{cm}$.

Ridge — $8\text{cm} \times 20\text{cm}$.

Rafter — $5\text{cm} \times 12.5\text{cm}$.

Eave projection — 60 cm

Wall plates — $15\text{cm} \times 10\text{cm}$.

15

V Draw the half sectional elevation along the centre line of the road of a slab culvert across a stream with the following details:

Road way — 4m.

Clearspan — 1500mm.

Bed level of stream — +10.00m.

Foundation level — +9.40m

Road level — +11.30m.

Foundation PCC M10 grade 300mm thickness.

Thickness of abutment 400mm through out the height.

Thickness of slab 200mm. Thickness of wearing coat 100mm. The returns are square projecting 1200mm from the earth face of the abutment.

Height of parapet above slab 800mm, coping 100mm thick with 80mm projections. Flooring consists of stone revetment 300mm thick. Provide adequate kerb.

15

OR

VI Prepare an Electrical layout of the line plan given in figure (I)

15

Oct
2017



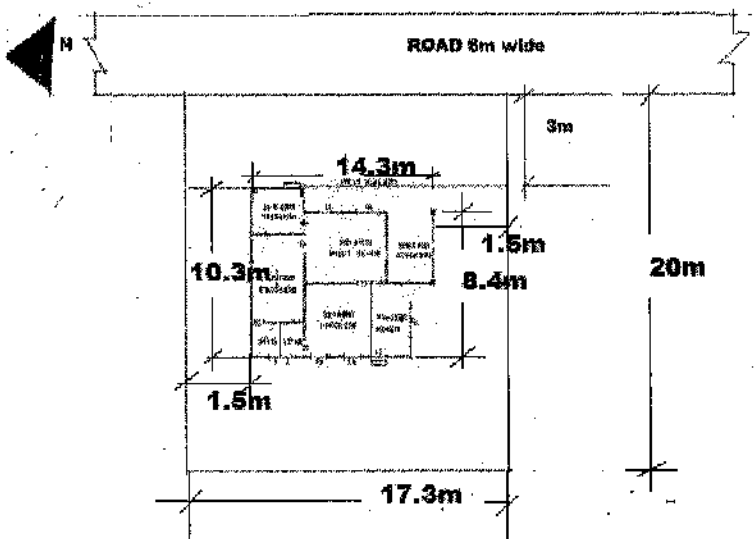
(A)

Scoring Indicators

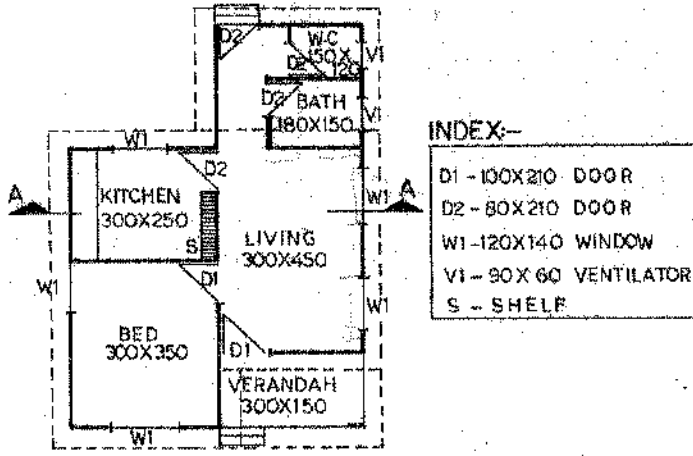
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Version:2015

Qn. NO	Scoring indicators	Split Score	Total score
I (1) (2) (3) (4) (5) (6) (7) (8) (9)	Part A		
	A line usually parallel to the plot boundaries and laid down in each case by the authority beyond which nothing can be constructed.	1/2	
	Lift is an appliance designed to transport person or material between two or more levels in a vertical direction. Loft is a structure provided intermediate storage space in between two floors with a maximum height of 1.5m.	1/2	
	Minimum land required for a bus depot is 2.00ha.	1/2	
	Access is a clear approach to a plot or a building.	1/2	
	(5) When the height of building is 50m, side and rear space to be left around the building is 14m.	1/2	
	(6) i) Plinth: The height of plinth shall be not less than 450mm from the surrounding ground level. ii) Habitable room: The height of all rooms for human habitation shall not be less than 2.75m. iii) kitchen: The height of kitchen shall not be less than 2.75m. Area of kitchen with separate dining area shall not be less than 5m ² with a minimum width of 1.8m. iv) Store room: Height of store room shall not be less than 2.2m, size not less than 3m ² . (any two)	1/2	
	(7) A culvert has a maximum span of about 6m, beyond which it is referred to as a bridge.	1/2	
	(8) Area of opening for lighting and ventilation:- 1/10 of floor area—hot dry climate. 1/6 of floor area – wet hot climate. 1/8 of floor area – Intermediate climate. 1/12 of floor area – cold climate.	1/2	
(9) Residential building, Educational building, Institutional building, Assembly building, Business building, Industrial building	1/2		

<p>10.</p> <p>II</p> <p>(a)</p>	<p>High rise building is the building whose height is more than 15m.</p> <p>Part B</p> <p>Size of plot = 20.5 17.3×20 m, 33.0 m,</p>  <p>i) Drawing and Dining—24m²,</p> <p>(ii) Bed rooms -2nos—42.4m²,</p> <p>(iii) Kitchen—12m²</p> <p>(iv) Verandah—9.6m²</p> <p>(v) Porch—14m²</p> <p>(vi) Toilets—7.6m²</p> <p>Total -- 109.6m²</p> <p>Planning as per KBR & NBC</p> <p>Line sketch</p> <p>Dimensioning and detailing</p>	<p>1/2</p> <p>1/2 x 10 = 15</p> <p>-5-</p> <p>15</p> <p>-5-</p>	<p><u>15</u></p> <p><u>25</u></p>
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(b)



ALL INSIDE DIMENSIONS DIMENSIONS IN CENTIMETRES

PLAN

Plan:

Position of Doors, Windows and Ventilators:

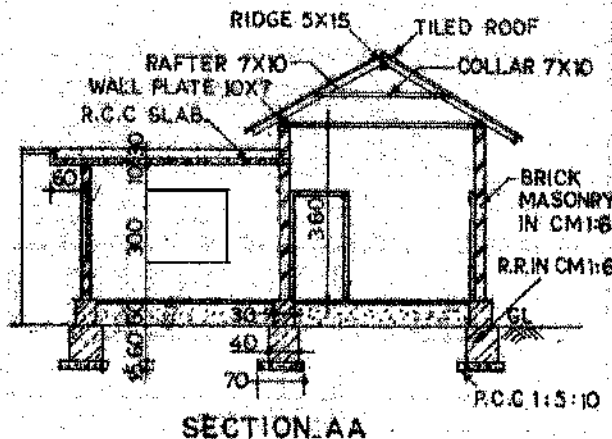
Scale, dimensioning and detailing:

10

2 1/2

2 1/2

15



SECTION A-A

SECTION ON A-A

Section:

Position of doors, windows, ventilators, Roof:

Scale, dimensioning and detailing :

10

2 1/2

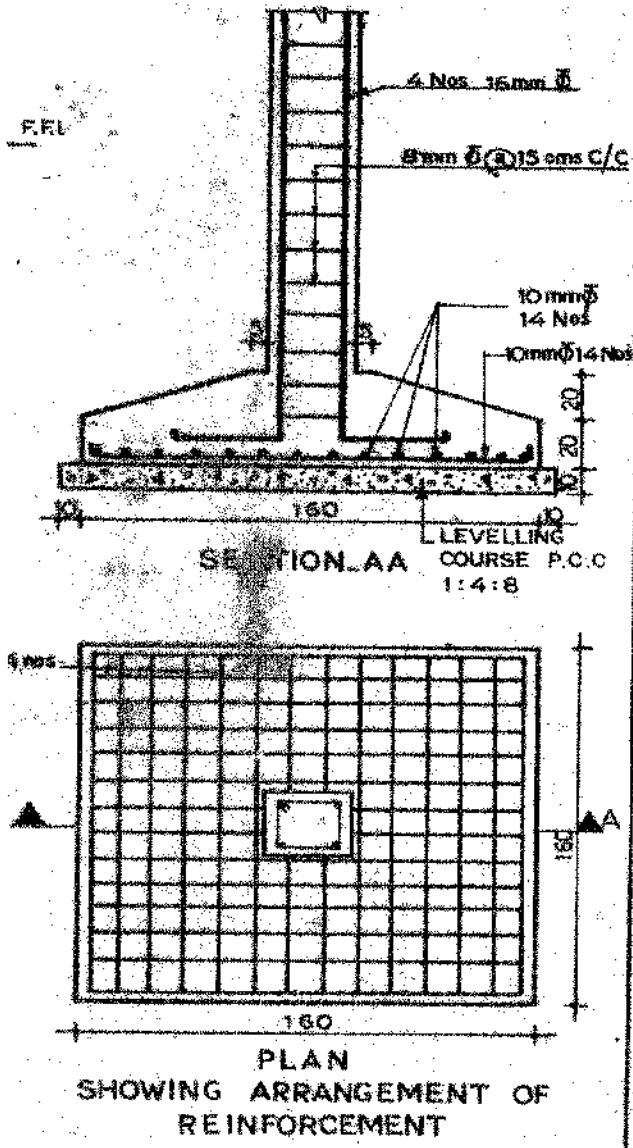
2 1/2

15

15+15=

30

III



Sectional Plan

-5-

Position of column and reinforcement

-1-

Scale, Dimensioning and detailing

1 1/2

Sectional elevation

-5-

Position of Reinforcement

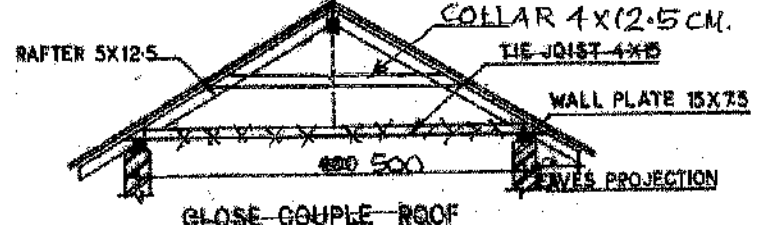
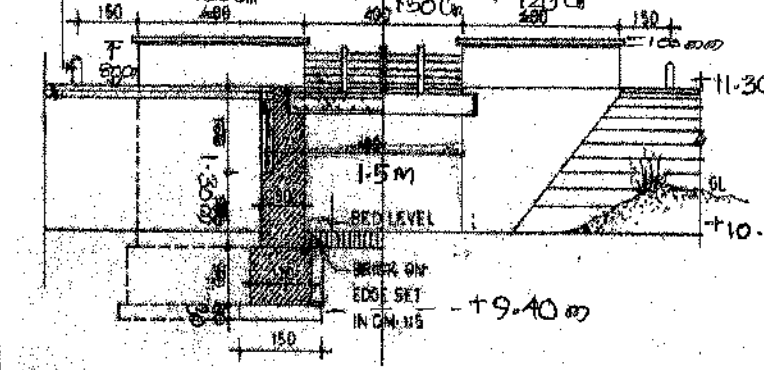
-1-

Scale, Dimensioning and detailing

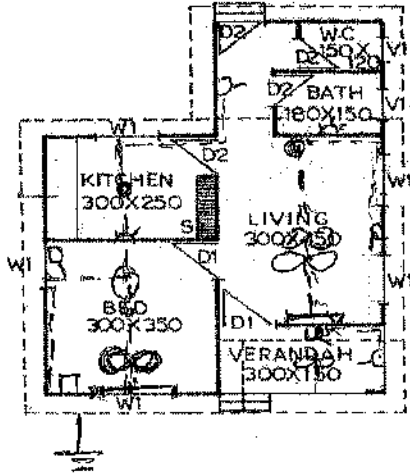
1 1/2

OR

$$7 \times \frac{1}{2} + 7 \times \frac{1}{2} = 15$$

<p><u>IV</u></p>	 <p>COLLAR 4x(2.5 CM.) TIE JOIST 4x5 WALL PLATE 15x75 EAVES PROJECTION 500 GABLE ROOF Single Collar Roof.</p>	<p>10</p>	
<p>Rise calculation & correct position of Collar</p>	<p>2 1/2</p>		
<p>Scale, dimensioning and detailing</p>	<p>2 1/2</p>	<p><u>15</u></p>	
<p><u>V</u></p>	 <p>GUARD STONE 150 120cm 150cm 120cm 150 1.5m BED LEVEL BRICK ON EDGE SET IN CM. US -+9.40m +11.30m +10.00m SECTION THROUGH ABUTMENT-B B</p>	<p>10</p>	
<p>Half sectional elevation of slab culvert</p>	<p>5</p>	<p><u>15</u></p>	
<p>Scale, Dimensioning and detailing</p>			
<p>OR</p>			

VI



Electrical service plan:

10

Details of various fittings:

-5-

15

- 16 AMP 4 - DPIC Switch

- Ceiling fan - 4/40

- Ceiling fan.

- 40 W tube fittings

- Earthing

- Oneway switch.

- Warning Circuit.