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(REVISION — 2015)

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

BUILDING PLANNING & DRAWING

[Time : 3 hours

(Maximum marks : 100)

- [Note :—1. Question No. II is compulsory.
2. Missing data may be suitably assumed.
3. Drawing shall be neat and fully dimensioned.
4. A2 size drawing sheet to be supplied.
5. Sketches on 4th page.]

PART — A

(Maximum marks : 15)

Marks

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

1. Define Building line.
2. What is meant by Head room of a building ?
3. Define Culvert and list any two types of Culverts.
4. What is meant by Setback ?
5. What is meant by Built-up area ?
6. Give the value of maximum permissible F.A.R. of residential building having maximum permissible ground coverage as 50% of plot area.
7. What do you understand by 10 DT 20 ?
8. List out any three details that should be shown in a Site plan of a building.
9. Give the minimum area, size and height of combined bathroom and latrine as per KMBR.
10. Name any three numbers of sanitary fittings.

(10×1½ = 15)

- II (a) Prepare the Line plan for a residential building according to N. B. C. and K.M.B.R. requirements.

The owner of a 14 m × 16 m residential plot wishes to construct a one bed room house on it. The shorter side of the plot abuts a road of 8 m wide on its northern side. Design the single storey house with the following requirements.

Verandah = 4.5m²

Living room = 13.5m²

Bed room = 10.5m²

Kitchen = 7.5m²

Bath room = 2.7m²

Water closet = 1.8m²

25

- (b) Draw to a scale 1:50 the following views of the Shop building shown in the line plan (Figure -1), from the given specification of work.

(i) Plan

15

(ii) Sectional view on AB.

15

SPECIFICATIONS

- Foundation and basement:** — Firm foundation soil is available at a depth of 1 m below the GL. Assume the suitable base course and footings for the foundation. The shop floor is 45 cm above the GL. The floor level of verandah is 30 cm above the GL.
- Superstructure:**— All walls are of brick in CM 1:6, 30 cm thick and of 360 cm height. The pillars of the verandah are 30 cm × 30 cm with a height of 2.4 m above the verandah floor. RCC beams 30 cm deep are provided for the rolling shutter openings at 270 cm height. Lintels 15 cm deep are provided for window openings. The flooring of PCC 1:5:10 plastered over with CM 1:3
- Roof:**— The shop portion has a hip roof and the verandah portion a lean-to-roof with 30° slope. The roofing is of Mangalore Pattern (MP) tiles over 50 × 30 reepers at 300 centres. The rafters (150 × 50) are supported on Ridge (200 × 80) and wall plate (200 × 125). The hip rafters are (200 × 50) size. The eaves project by 750 beyond the walls. Collars (150 × 50) are used to the rafters at mid height from the wall plate. The rafters on the lean-to-portion (125 × 50) are supported on bressumers (200 × 100). All these dimensions are in mm.

III Draw the cross section of the footing for a 30 cm brick wall. The following details are given.

Basement height and width — 60 cm and 40 cm.

Total depth of foundation — 80 cm

Thickness of base layer of PCC — 20 cm

Successive courses for brick footings for foundation increases by 10 cm. Offset for PCC layer shall be 20 cm.

15

OR

IV Draw a plan and cross section of a RCC half turn stair for a public building.

(i) Floor to floor height — 360 cm

(ii) Width of stair — 1.5 m

(iii) Rise and tread — 15 cm and 30 cm

(iv) Provide a pipe 60 mm diameter for the handrail at a height of 80 cm from the level of the steps.

(v) Balusters are of 25 mm square bars.

15

V Prepare an Electrical Service plan of the given plan Figure - (2). The positions of various electrical fittings and connections should be clearly indicated in the plan.

15

OR

VI A 4m road way RCC slab culvert has the following details :

(i) Span — 1500 mm

(ii) Bed level of stream — + 10.00 m

(iii) Foundation level — + 9.40 m

(iv) Road level — + 11.30 m

(v) Foundation consists of a single layer of CC, M10 to a thickness of 300 mm.

(vi) Thickness of abutment — 400 mm through out the height.

(vii) Thickness of slab — 200 mm

(viii) Thickness of wearing coat — 100 mm

(ix) The returns are square projecting 1200 mm from the earth face of the abutment.

(x) Height of parapet above slab excluding coping — 800 mm, coping 100 mm thick with 100 mm projection.

(xi) Flooring consists of stone revetment 300 mm thick provide adequate kerb.

Draw to a convenient scale half sectional elevation along the centre line of the road.

15

Figure (1)

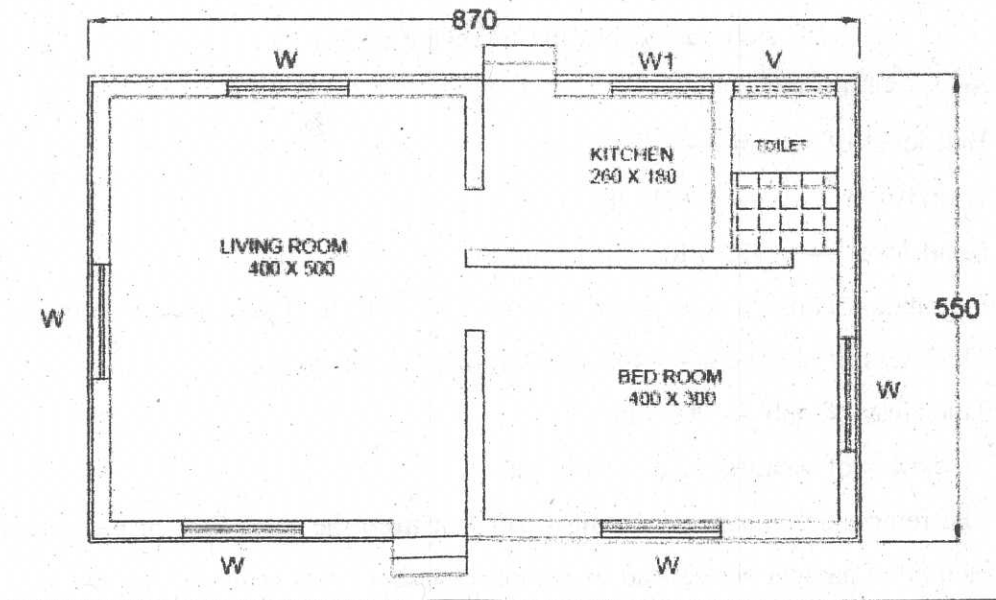
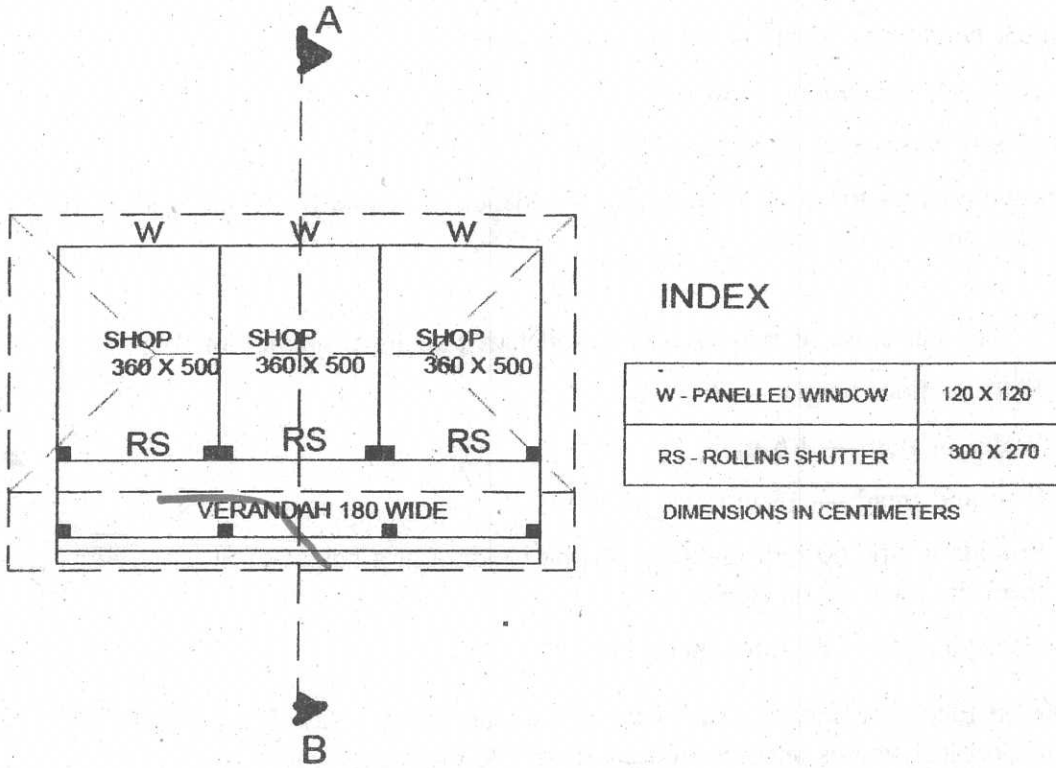
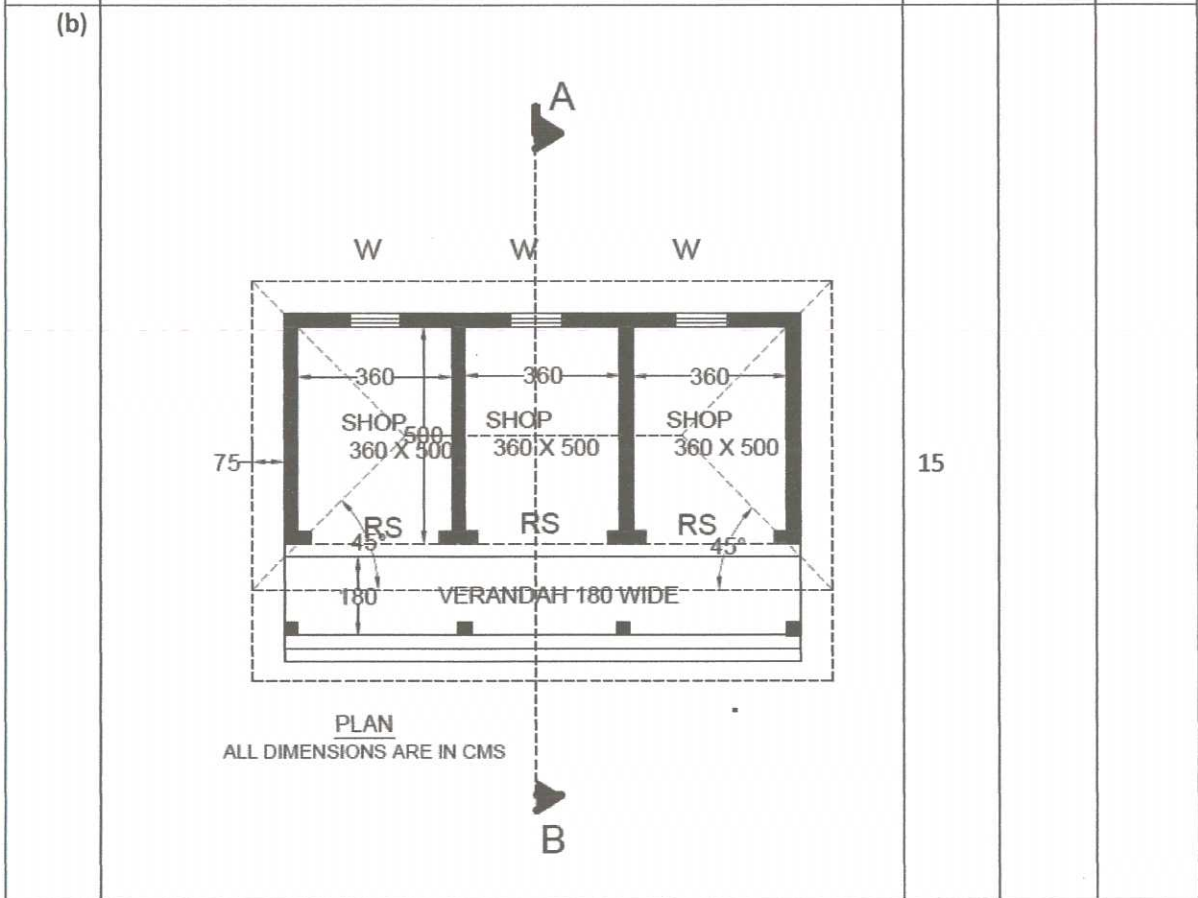
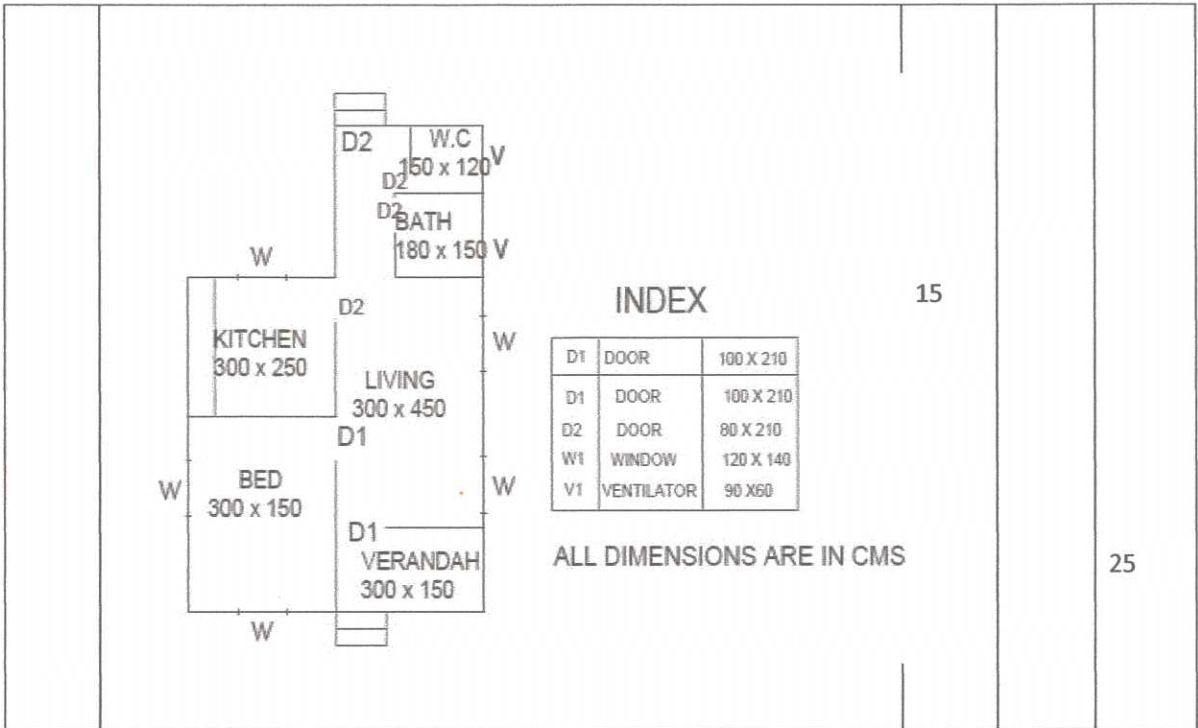


Figure (2)

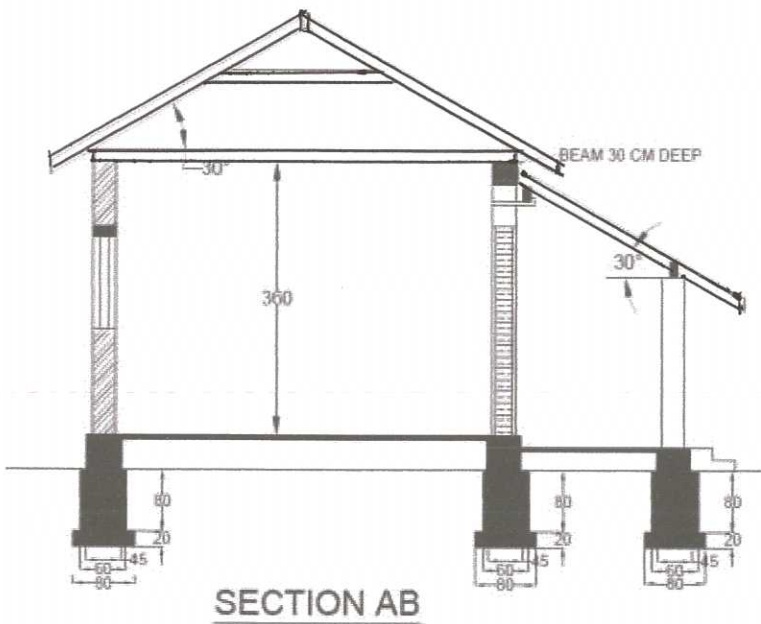
	road, a river or other stream, a shore or flood plain, or any other place which is deemed to need protection.	1½		1½
5	Built-up area means the covered area at any floor, covered by roof other than cornice, roof or weather shades permissible.	1½		1½
6	Maximum permissible FAR = 1.50	1½		1½
7	The sizes of doors are specified in ISI, are in multiples of the basic module of 10 cm. 10 DT 20 means 100 cm wide, 200 cm high and two leafed door.	½ ½ ½		1½
8	The site plan shows the location of a building in an area. The site plan should show the following details. 1. The boundaries of the plot and the north direction. 2. The position of the proposed building in the plot and the clearances from the boundaries. 3. The positions of septic tank soak pit, well and access. 4. The service lines such as water mains and electric lines.	Any three ½ ½ ½		1½
9	The area of combined bathroom and latrine shall not be less than 2.2 square meters with one side not less than 1.1 meters . The height of bathroom or latrine shall be not less than 2.20 meters .	½ ½ ½		1½
10	Water closet, Plain kitchen sink, Urinal, Bath tub, Lavatory basin etc.	1½	Any three	1½
II.	PART -B			
(a)	<p style="text-align: center;">ALL DIMENSIONS ARE IN CMS</p>			10



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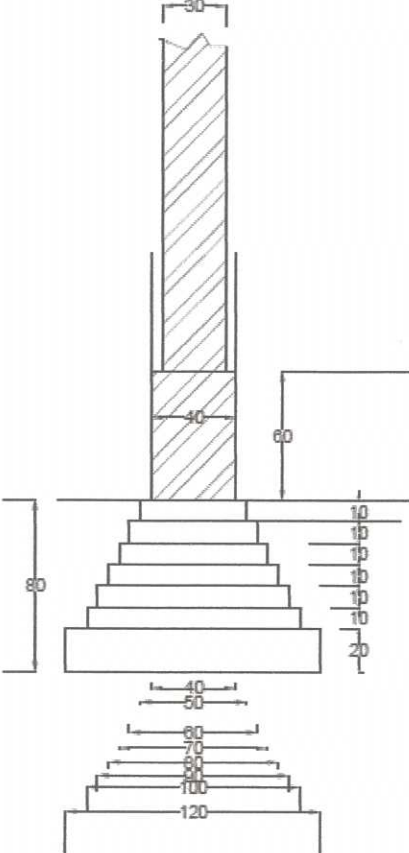
W - PANELLED WINDOW	120 X 120
RS - ROLLING SHUTTER	300 X 270

DIMENSIONS IN CENTIMETERS



15

30

<p>III.</p>	 <p>Technical drawing of a stepped shaft assembly. The shaft has a total height of 80. The top section has a diameter of 30 and a height of 60. Below it is a section with a diameter of 40 and a height of 10. The shaft is mounted on a base with a total height of 80. The base has a diameter of 120 at the bottom and tapers to 40 at the top. The base is divided into five sections with heights of 20, 10, 10, 10, and 10 from bottom to top.</p>	<p>15</p>		<p>15</p>
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<p>IV</p>	<p style="text-align: center;"><i>60 mm ϕ Pipe hand rail</i></p>	<p>7 ½</p>		
<p>V</p>		<p>7 ½</p>		<p>15</p>

7

SYMBOL	NAME
	16 AMPH DPIC SWITCH WITH 2 WAY DISTRIBUTION BASE
	CEILING FAN
	40 WATT TUBE FITTINGS
	SINGLE LIGHT BRACKET
	SINGLE LIGHT PENDANT
	SINGLE LIGHT BATTEN HOLDER
	WATER TIGHT FITTING
	5 AMPS 3 PIN PLUG
	WIRING CIRCUIT
	EARTHING
	ONE WAY SWITCH

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