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முழுப் பதிப்புரிமையுடையது
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THE WEBSITE OF DOE**

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of Examinations, Sri Lanka

Department of National Botanic Gardens - Open /Limited Competitive
Examination for Recruitment to Posts in the Grade III of the
Sri Lanka Technological Service - 2017 (2018)

**(04) Subject related Knowledge
(Technical officer - Civil)**

Question No.	Marks Awarded
1	
2	
3	
4	
5	
Total	
Marking Examiner :	
Checked by :	

Three hours

Answer all questions on this paper itself.

Index No :

1. (i) Draw the symbols of the following items used on plan drawing, against each of them.

(a) Existing tree -

(b) Water storage tank -

(ii) Name **two** areas in Sri Lanka, where crystalline lime stones are obtained in manufacturing lime powder.

(a)

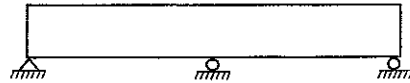
(b)

(iii) Name **two** types of admixtures used in modification the properties of concrete.

(a)

(b)

(iv) Draw the place/s which is/are needed to be reinforced in the following concrete members.



(v) Name **two** defects that can be occurred when taking levels.

(a)

(b)

(vi) What is the name for lines used in checking the accuracy of chain surveying?

.....

(vii) What is the name and the thickness of the metal sheet used to connect angle iron members in assembling mild steel roof truss, which are used very frequently at present.

Thickness :

Name :

(viii) What are the **four** colours used in sign boards displayed in construction sites?

(a) (b)

(c) (d)

(ix). What is the term used to, identify the inner curve of a Semi-circular Arch constructed with Bricks?

.....

(x) What is the name of the pipe accessory which is used to change the direction in 90° and for smooth flow of water?

.....

(02×10=20 marks)



2. (i) Pad foundation are to be used in a proposed quarters for Department of Botanical Gardens. Considering the following data, draw a cross section of a Pad foundation on the graph paper provided.

Scale - one small square - 50 mm

Data

Length/width of the pad - 1400 mm SQ

Height of the pad - 300 mm

Cross-section of the pad - 300×300 mm

Reinforcement details

column foundation pad - 7Y16 - 201 - 200 BW

column - 4Y 12-202

stirrups - Y6-203 - 150

concrete cover - 100 mm

concrete mix - 1:2:4 (20 mm)

Lean concrete blinding - 100 mm

Depth of excavation - 1000 mm

(Draw the column at least 600 mm above the ground level)

(06 marks)

(ii) Draw a centre-line diagram of a Mild steel roof truss, suitable for a span of 12.0 m, to be used in an Auditorium of the Department of Botanic Gardens and mark **four** important members with dimensions.

Covering materials - corrugated Eco-shell sheets

Slope - 30° to the horizontal

(Use the graph paper provided.

Scale - one small square - 200 mm)

(06 marks)

(iii) State the types of sanitary fixtures used in toilet/urinal and bathroom systems with examples and select the fixtures that you are going to use in a unit for a Botanic garden.

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.....

.....

.....

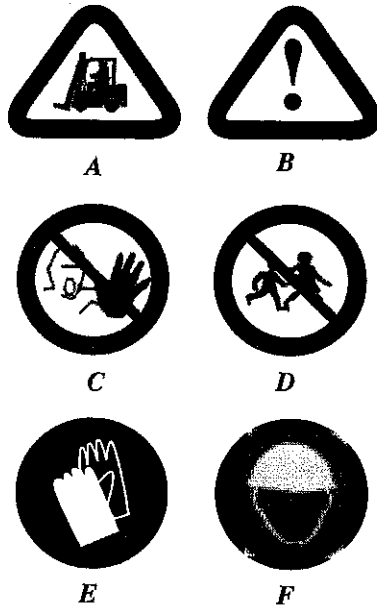
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.....

.....

(04 marks)

(iv) Select any **four** symbols shown in the figure, furnished and state their types, colours and write a sentence each on what they are meant for.



Letter	Type of sign	Colour	meaning
A			
B			
C			
D			
E			
F			

(04 marks)

3

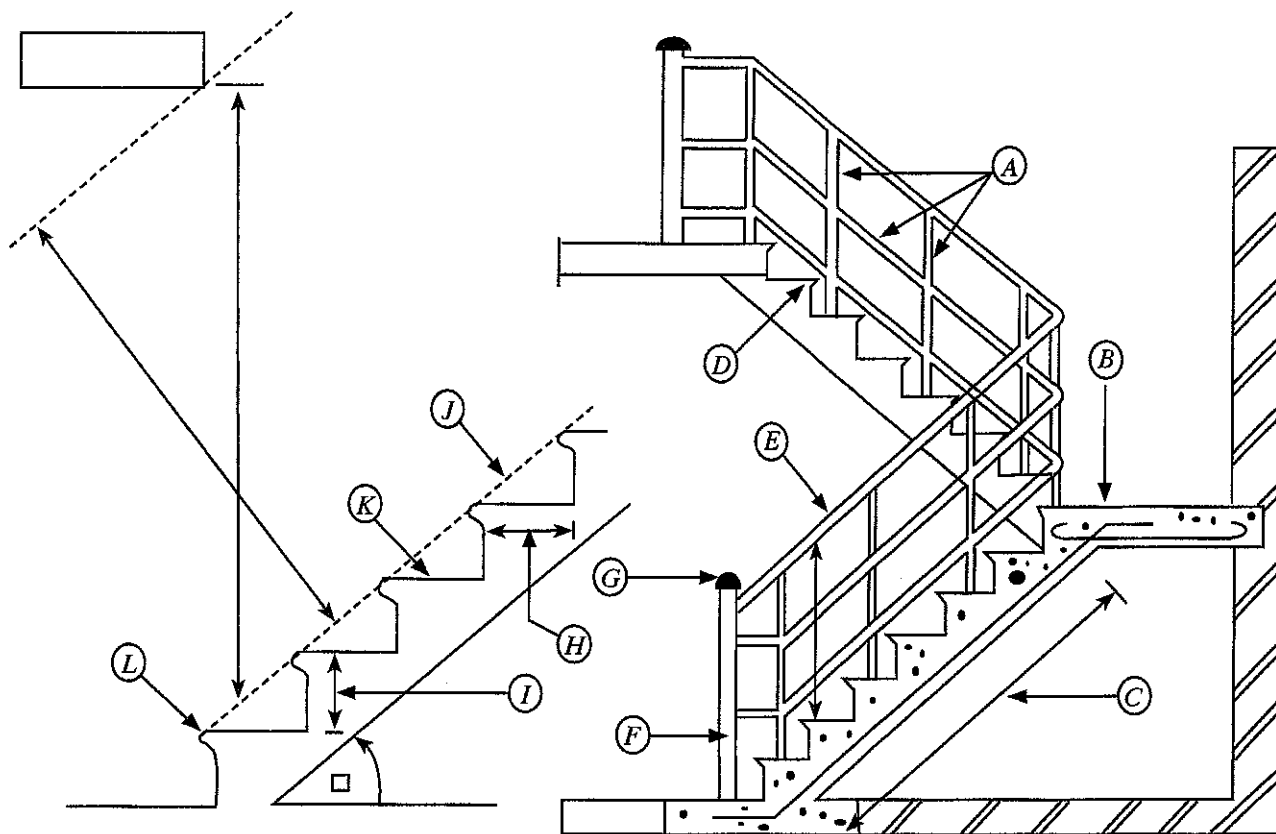
Department of National Botanic Gardens - Open / Limited Competitive Examination for Recruitment to Posts in the Grade III of the Sri Lanka Technological Service - 2017(2018)
(04) Subject Related Knowledge
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Index No. :

3. (i) The cross-sections of a concrete stair is shown below. Note any **ten** members from (A) to (L) marked on it with arrows, in the table given below.

Stair



A		G	
B		H	
C		I	
D		J	
E		K	
F		L	

(05 marks)

(ii) Draw a diagram of a Compaction Factor Test Apparatus, which can be performed in a site laboratory to determine the workability of less workable concrete and explain how it is performed.

.....
.....
.....
.....
.....

(06 marks)

(iii) Name the type of pipe used for hot water supply and state six specific characteristics of them.

Name of the type of pipe :

Specific characteristics.

- (a)
- (b)
- (c)
- (d)
- (e)
- (f)

(04 marks)

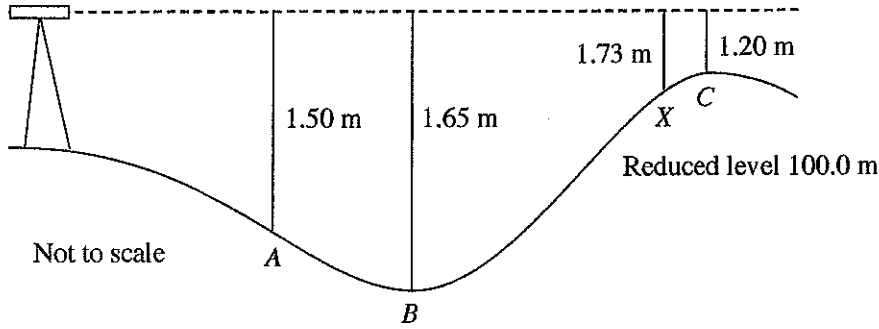
(iv) Painting has to be done on timber garden benches, which are desired to be located under trees of the childrens' park which is under construction. Line-up ten important points that you should consider in selecting a suitable paint.

- (a)
- (b)
- (c)
- (d)
- (e)

- (f)
- (g)
- (h)
- (i)
- (j)

(05 marks)

4. (i) State the reduced levels at points A, B and C in metres.



Reduced level:

- A :
- B :
- C :

(04 marks)

(ii) It is stated that a 30 m long metal tape has to be used at 25 °C, but it was used at 35 °C. If the linear co-efficient of expansion is 0.000 0035 °C⁻¹, Calculate the refined reading of the related steel tape.

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.....

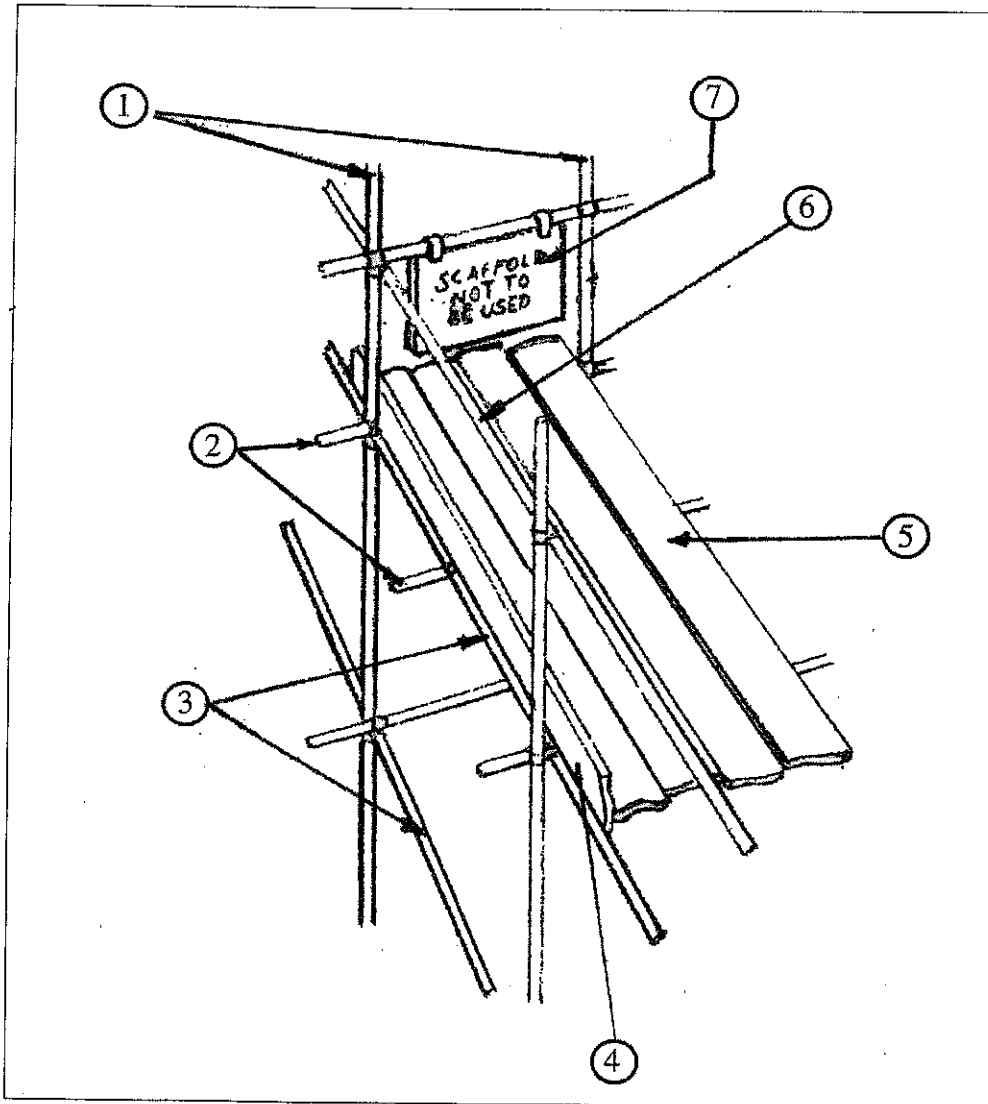
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(04 marks)

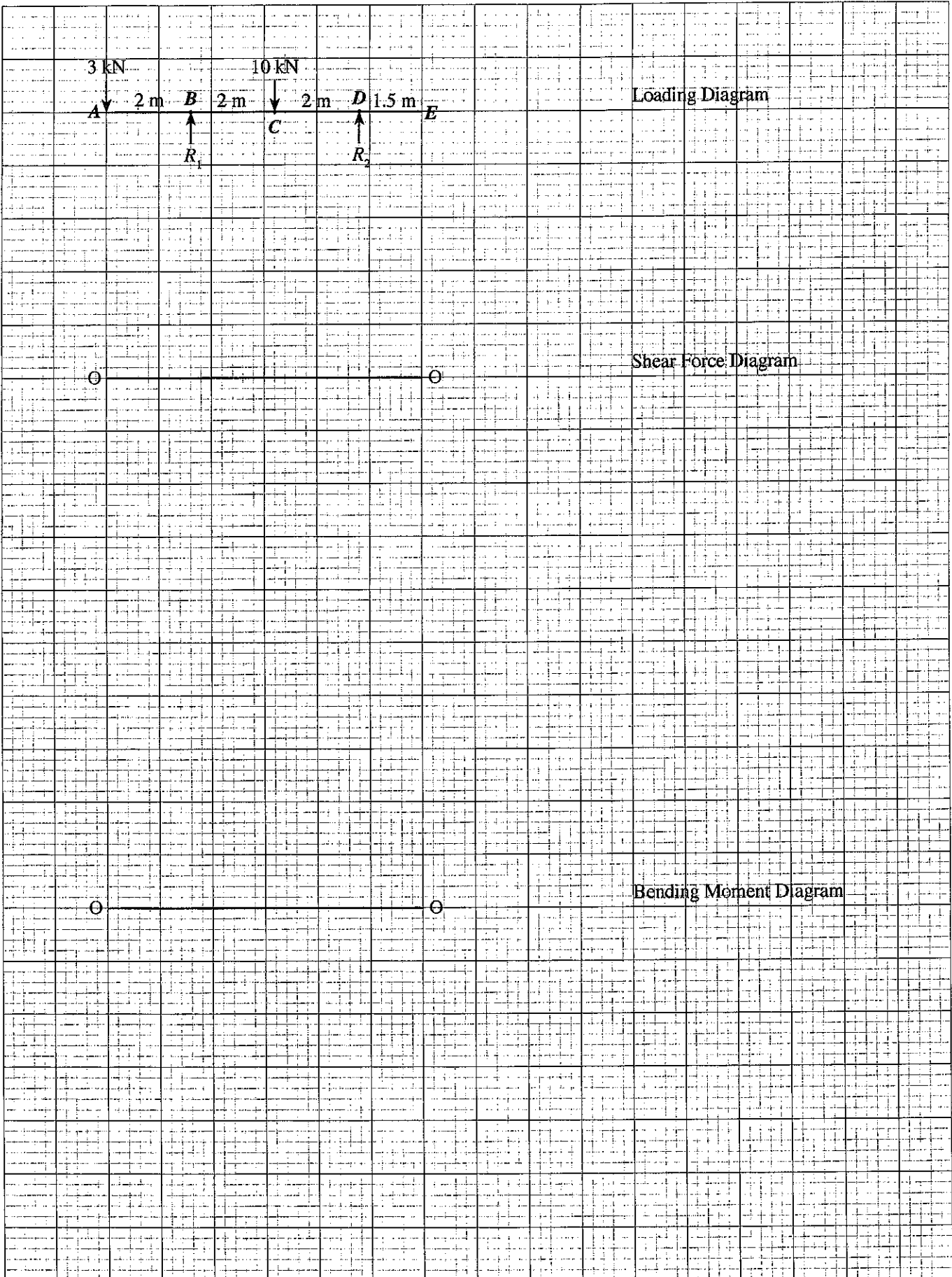
(iii) The picture shows a sketch of an isometric view of a scaffolding erected at a site. Name any **five** elements, against their numbers at the space provided.



①	
②	
③	
④	
⑤	
⑥	
⑦	

(05 marks)

(iv) Calculate the reactions R_1 & R_2 and draw the Shear Force and Bending Moment Diagrams.
(Scale - small square = 250 mm and 250 newtons)



(07 marks)

[See page ten.]

