



Tertiary and Vocational Education Commission
Construction Technology- Part I
NCT Equivalence Examination



Part One: Answer all questions

1.0 Answer **One (01)** question out of Two (02) questions given below.

1. i) Solve the equation and find the value of x ; (02 marks)

$$\frac{6x-7}{4} - \frac{3x-5}{7} = \frac{5x+71}{28}$$

- ii) Briefly explain the key components that should be included in a detailed structural drawing. (04 marks)
- iii) Material wastage at sites affects the physical and financial progress of work. Give examples of three (03) materials that are mostly wasted at site and describe briefly how they are being wasted. (06 marks)
- iv) What are the data/ information that you can gather by reading **Doors & windows schedules**? (04marks)

2. i) Solve the equation and find the value of x ; (02 marks)

$$x^2 - 10x + 24 = 0$$

- ii) Site plans are referred for many reasons. What are the information that should be indicated in a site plan? Suggest a suitable scale for a site plan. (04 marks)
- iii) During construction, there are many instances where the environment is harmed. Explain the ways that a site work affects the environment. What are the actions, a Technical Officer can take to minimize such adverse effects? (06 marks)
- iv) What are the data/ information that you can gather by reading **bar schedules**? (02 marks)

2.0 Answer **One (01)** question out of Two (02) questions given below;

1. i) "Ductility" and "Brittleness" are two characteristics of materials that can influence the structural stability of a structure. Describe them with examples. (04 marks)
- ii) How do you explain the load distribution of a fixed beam at two ends and a cantilever beam? Illustrate your answer with sketches. (04 marks)
- iii) Find the reaction at the points of A and B in figure 1 (08 marks)

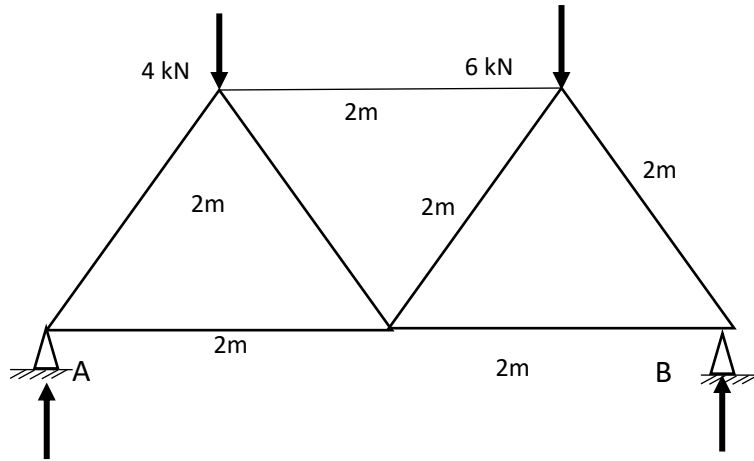


Figure 1

2. i) “Static” and “Dynamic” are the two technical terms for loads used in Structural Mechanics. Describe them with examples found in construction. (04 marks)
- ii) Briefly explain the shear force and bending moment acting on a simply supported beam. (04 marks)
- iii) Find the reaction at the points of A and B in figure 2 (08 marks)

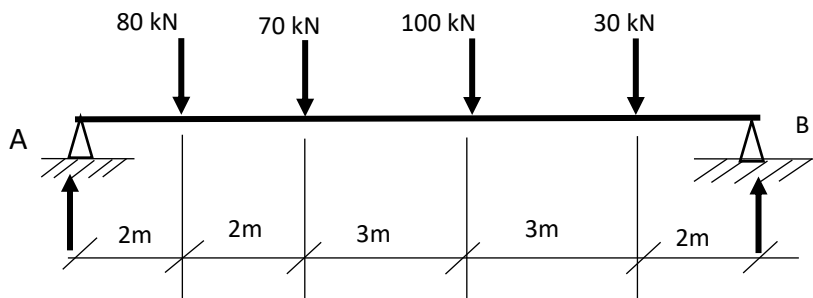


Figure 2

3.0 Answer **One (01)** question out of Two (02) questions given below;

1. i) What do you mean by “Absolute pressure”. Explain briefly. (04 marks)
- ii) What is the Bernoulli Equation? Denote the components. (03 marks)
- iii) Explain in detail, how hydraulic systems and applications are widely used in the construction industry. Give examples of such instances from Sri Lankan experience. (09 marks)
2. i) What do you mean by “Viscosity”. Explain briefly (04 marks)
- ii) Write down the Chezy’ formula. Denote its components. (03 marks)
- iii) Explain the places and instances where the Head loss can be occurred in a large network of a water supply scheme. (09 marks)

4.0 Answer **One (01)** question out of Two (02) questions given below;

1.
 - i) Quality of concrete depends on many factors. Explain two visible defects that can be observed in concrete. What are the main causes for such defects? (05 marks)
 - ii) Lime is used in construction for over thousand years. What are the important properties of lime as a construction material popularly used? (03 marks)
 - iii) Explain two types of materials used in formwork and compare their advantages and disadvantages. (04 marks)
 - iv) Proper storage is one of the ways of maintaining the quality of construction materials. What are the measures you should take to store cement at the site? (04 marks)

2.
 - i) “Admixtures” are mixed with Concrete to gain certain properties. What is the purpose of Admixtures? Give two examples of admixtures and the places of their use. (04 marks)
 - ii) Timber is a popular construction material in the world. Give three examples of defects commonly found in Timber. How do you explain the “Seasoning” of timber? (04 marks)
 - iii) Give examples of two types of roof covering materials and discuss their advantages and disadvantages.
 - iv) Proper storage is one of the ways of maintaining the quality of construction materials. What are the measures you should take to store steel at the site? (04 marks)

5.0 Answer **One (01)** question out of Two (02) questions given below;

There are many surveying and levelling techniques used with the improvement of the Digital technology. However, simple methods are still widely practised and in use.

1.
 - i) Chain Surveying is one of the methods practiced in surveying;
 - a) Explain the procedure of Chain Surveying at a site. (05 marks)
 - b) What are the limitations of Chain surveying? (02 marks)
 - c) What can be the common errors in the Chain surveying? (03 marks)
 - ii) Describe the importance of surveying in roads constructions. (06 marks)

2.
 - i) Geodetic Surveying is also widely used for site work;
 - a) Explain the procedure of Geodetic Surveying at a site. (05 marks)
 - b) What are the limitations of Geodetic surveying? (02 marks)
 - c) What can be the common errors in the geodetic surveying? (03 marks)
 - ii) Describe the importance of surveying in irrigation canal constructions. (06 marks)

6.0 Answer **One (01)** question out of two questions given below.

1.
 - i) Explain the key requirements to fulfill effective communication. What are the barriers in communication at a large work site? (06 marks)
 - ii). Discuss the use of ICT tools/ software packages in information management, communication management and project planning for a construction project. (10 marks)

2.
 - i). Discuss the significance of forecasting techniques in a project. What are the dependent factors that can impact the correctness/ effectiveness of outcome of forecasting in project planning? (10 marks)

ii) Explain the key requirements to fulfill effective communication. What are the barriers in communication at a large work site? (06 marks)