



**UNIVERSITY OF VOCATIONAL TECHNOLOGY**  
**Faculty of Industrial & Vocational Technology**

**Bachelor of Technology in Building Services Technology - 2015 / 2016(B1)**  
**Year I – Semester - I Examination - September – 2015**

**Construction Technology I CT10502**

- Instructions:** Question number 1 is compulsory. Answer any four questions from question number 2 to question number 7  
This is a **closed book** examination  
This paper contains **7 questions on 5 pages**. First question carries **40 marks** and **15 marks** each carry for others  
Answer question No 05 (i) in the given layout sheet  
This examination accounts for 60% of module assessment. The marks assigned for each question and sections are indicated in brackets  
If you have any doubt as to the interpretation of the wording of a question, make your own decision or assumption but clearly state on the answer script

**Duration : 03 hours**

(01)

A)

- I. Write down four site tests which can be carried out to determine the quality of bricks (4 Marks)
- II. Draw a neat sketch of two-brick thick English bond pattern. You are expected to draw plan view for two courses and the elevation (7 Marks)
- III. Give reasons for following two statements
  - Bricks are immersed in water and cement blocks are not (2 Marks)
  - Cement mortar should be used within 45 minutes after adding water (2 Marks)

B) Stair case is a one of vertical circulation systems which provide means for vertical transportation. Fig Q1 (b) below illustrates a section through a stair case of public building. Using the information given:

- I. Calculate the rise, going and pitch of the stair (3 Marks)
- II. State whether or not the stair complies with current standards, giving reasons for your answer (4 Marks)
- III. State minimum permitted dimensions for height of the hand rail and width of the stair case (4 Marks)
- IV. Name two other vertical circulation systems in a tall building (2 Marks)

C)

- I. Write down Three matters for consideration in providing access and facilities for disabled person within a building premise (5 Marks)
- II. Name five types of personal protection equipments (PPE S) (2 Marks)
- III. Comment on the importance of a good health and safety management plan of a construction site (5 Marks)

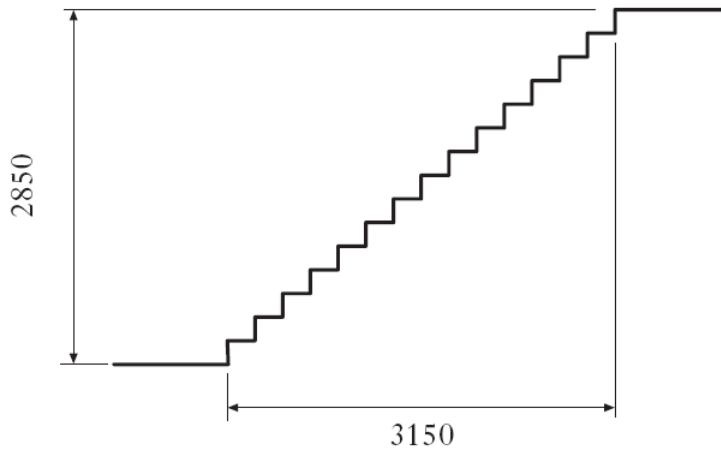


Fig Q1 (b)

(02)

- I. Write short notes on any four of the following (8 Marks)
  - 1 Built Environment
  - 2 Sub Structure
  - 3 Super Structure
  - 4 External building Envelope
  - 5 Framed Structure

Figure Q2 shows a single storied residential building.

- II. Name four tools which help to set out the buildings (2 Marks)
- III. Write down steps for setting out the Random Rubble masonry foundation of the building. Take the center line of the road as the base line (5 Marks)

(03) Concrete is a very popular construction material all over the world. Workability of concrete is a very important property to have a well compacted concrete. Slump test is a means of measure of workability of concrete. It measures behavior of a compacted cone of concrete under the action of gravity.

- I. What are the three main characteristics of workability (3 Marks)
- II. Make sketches on true slump, collapsed slump and zero slump (5 Marks)
- III. Name three factors that affect the slump and validate your answer (5 Marks)
- IV Name another two important properties of concrete (2 Marks)

(04) Geotechnical investigation plays a vital role in feasibility studies.

- I. Write down three information which can be obtained by a soil investigation (5 Marks)
- II. Name three types of shallow foundations with suitable sketches showing plan view and sections (5 Marks)
- III. Briefly describe three factors affecting the selection of a suitable foundation (5 Marks)

(05) Planning the site layout is very important activity which should be completed prior to start the permanent construction to have good security, avoid material double handling, improve the health and safety and ultimately improve the operational efficiency of all construction activities.

- I. Plan all the temporary works mentioned below in the given layout of Fig Q5. You are required to locate the following with relevant dimensions (8 Marks)  
Security Fence, Hoarding, Gates, Site office, Labour Accommodation, Concrete mixture, Store Area and sanitary facilities
- II. Name three factors consider in storing materials (3 Marks)
- III. Briefly describe how the following materials should be correctly stored in the site. Use sketches where necessary.
  - 50Kg Cement bags (2 Marks)
  - Reinforcement Steel (2 Marks)

(06)

- I. Why roofing angle is varied for different roofing materials of Calicut roof, Asbestos roof and Zn/Al roofing sheets (3 Marks)
- II. Briefly explain three advantages of a reinforced concrete roof slab over a Calicut tile roof (3 Marks)
- III. Draw and name sketches of geometrical forms for three types of roofs for the building in Fig Q 2 (6 Marks)
- IV. Name two functions of a Valance Board (3 Marks)

(07)

- I. What is the difference between a fire protection system and a fire detection system? (2 Mark)
- II. Discuss the function of following fire fighting elements in a building (1 Mark for each)
  - Fire Escape
  - Fire Doors
  - Fire Lift
  - Sprinklers
  - Smoke detectors
- iii Green technology is one of the new trends in Civil Engineering. Describe three green building techniques used in modern buildings to minimize the energy consumption, thus minimizing the impact on the environment (8 Marks)

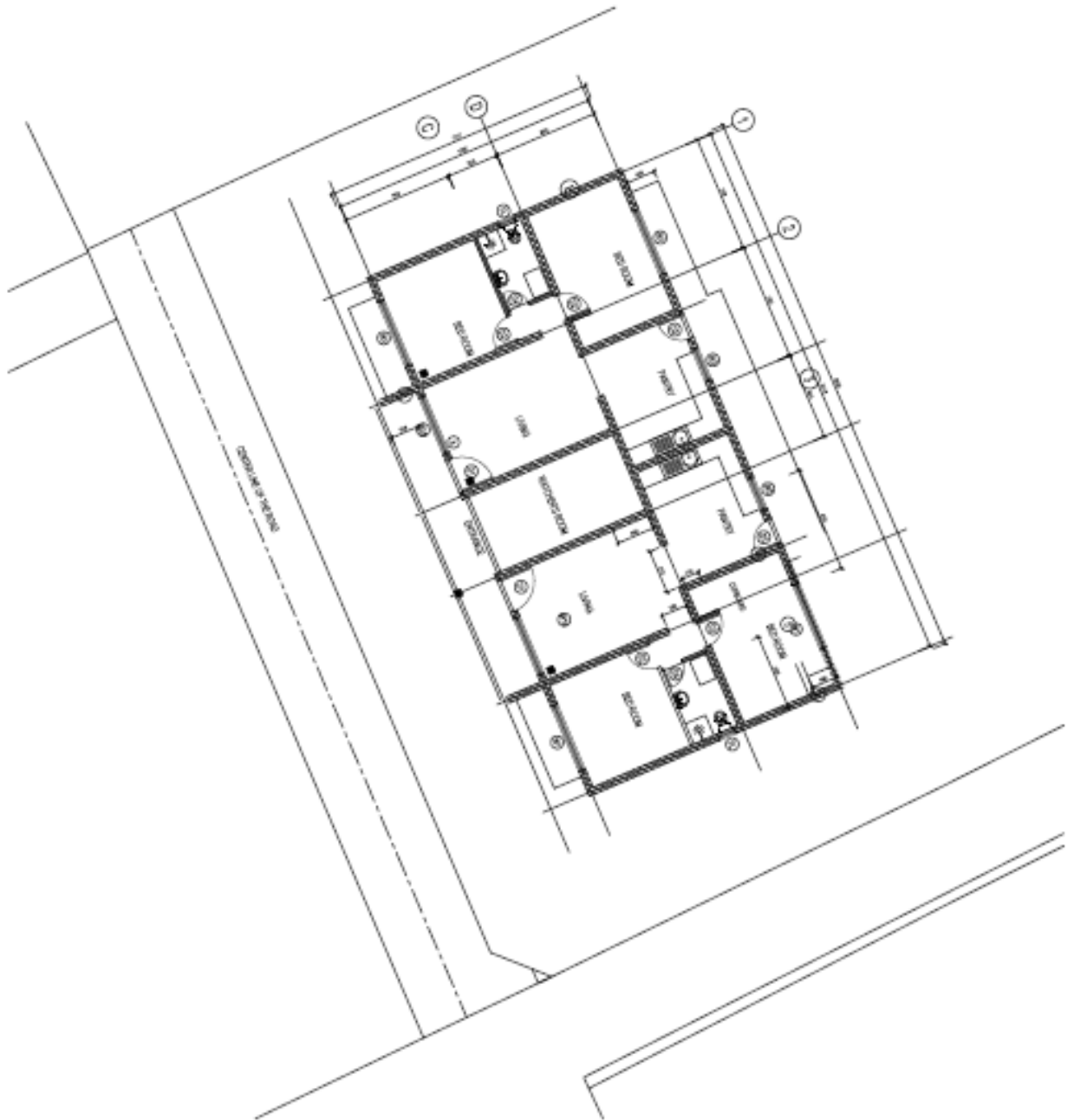


Fig Q2

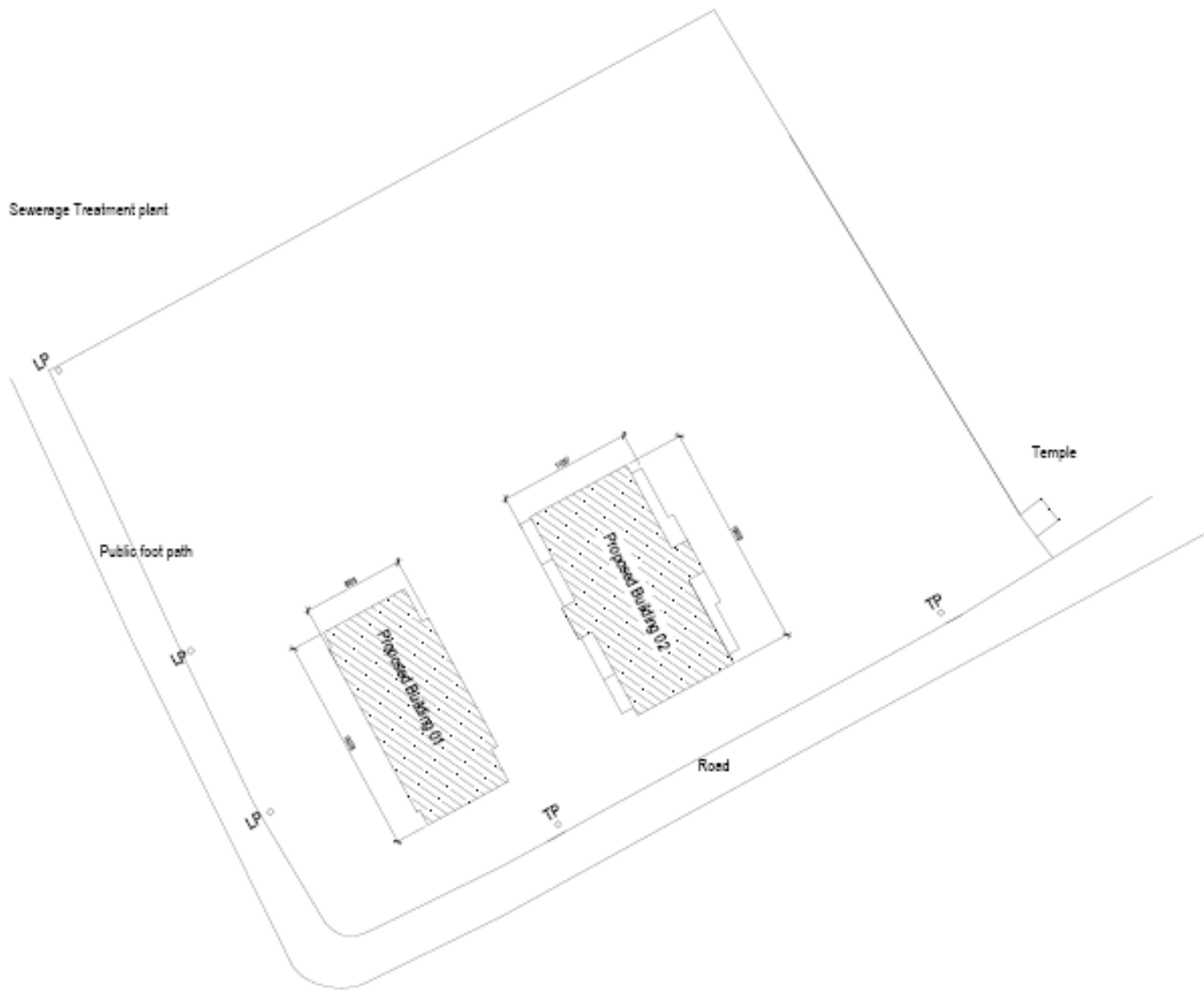


Fig Q5(b)