THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

071 BUILDING CONSTRUCTION

(For Both School and Private Candidates)

Time: 3 Hours **ANSWERS** **Year: 2004**

Instructions

1. This paper consists of sections A, B and C with total of fifteen questions

2. Answer all questions in section A and B, and two questions in section C.

i. the strength of a wall is the product of the strength of

a. foundations and floor of a building
b. type of plaster and rendering applied to the wall
c. brick or block units and mortar joints of a wall
d. number of brick or block courses and wall junctions
e. units of brick or block and the mortar from which it is built

c. brick or block units and mortar joints of a wall
the strength of a wall depends on the quality of the bricks or blocks and the strength of the mortar used to bond them together. the combination of these two factors determines the wall's load-bearing capacity and resistance to external forces.

ii. fixing pieces in timber flat roofs are used to

a. stiffen the roof joints
b. provide a slight fall of the roof
c. distribute rainwater drainage into the room
d. reduce tile span on the roof
e. act as fixing medium for ceiling boards

e. act as fixing medium for ceiling boards
fixing pieces, such as noggins, provide a secure surface for attaching ceiling boards, ensuring they remain in place and preventing sagging.

iii. the sanitary appliance designed to receive human excreta is known as

a. wash basin
b. sink
c. bath
d. urinal
e. water closet

e. water closet
a water closet (wc) is a plumbing fixture designed specifically for the disposal of human waste. it consists of a bowl, a flushing mechanism, and a drainage system that directs waste to the sewer.

iv. which of the following are used mostly for sheds and outhouses

a. panelled doors
b. flush doors
c. match boarded doors
d. glazed doors

e. wooden doors

c. match boarded doors
match boarded doors are constructed from vertical timber boards joined together, making them durable and suitable for external structures like sheds and outhouses.

v. the vertical member of a traditional casement window is called

a. muntin
b. mullion
c. transom
d. stile
e. rail

b. mullion
a mullion is the vertical structural member dividing window panes in a casement window, providing support and stability.

vi. the space in which the stairs and landings are housed is called

a. stairs
b. flight
c. string
d. step
e. stair well

e. stair well
a stair well is the vertical space in a building that accommodates a staircase, often extending through multiple floors.

vii. 1 m^3 of concrete with mix ratio of 1:3:6 requires _____ m^3 of sand

a. 0.3
b. 0.4
c. 0.2
d. 0.6
e. 0.5

b. 0.4
in a 1:3:6 mix ratio (cement:sand:aggregate), the proportion of sand is 3/10 of the total volume, which equals 0.4 m^3.

viii. a length of pipe laid to remove soil/waste water from a building situated within one boundary is called

a. private sewer
b. public sewer
c. vent pipe
d. drain
e. junction box

d. drain
a drain is a pipe that carries wastewater from a building to a sewer or septic system. it is different from a sewer, which serves multiple properties.

ix. a vertical member of a structure used to carry the loads and transmit them to the foundation is called

a. beam
b. footing
c. column
d. lintel
e. truss

c. column
a column is a vertical structural element that transfers loads from the roof or floors to the foundation, providing stability and support.

x. the purpose of a d.p.c. is to

a. block the passage of rising ground water into the structure
b. prevent water from penetrating the wall through a window sill
c. reduce the retention of the building dampness
d. stop water from flowing into the toilet
e. prevent running water from flowing into the waste sink

a. block the passage of rising ground water into the structure
a damp-proof course (d.p.c.) is a barrier, usually made of bitumen, plastic, or cement, that prevents moisture from rising through walls and floors, protecting buildings from damp-related damage.

2. Matching items

List A
i. admixture
ii. centering
iii. base course
iv. filtration
v. induces an adequate flow of combustion to fire in fireplaces

vi. expansion joint
vii. cornice
viii. needle
ix. clerk of works
x. the loads on foundations

List B

a. the designation of quality, as of logs or plywood
b. a decorative member, usually moulded, placed at or near the top of a wall
c. the opening in a chimney through which smoke can pass
d. monolithic concrete
e. a bituminous fibre strip used to separate blocks or units of concrete to prevent cracking due to expansion caused by temperature changes
f. the lowest course of masonry in a wall
g. masonry units which do not meet the standards or specification and have been rejected
h. temporary formwork for the supports of masonry arches or lintels during construction
i. the process of protecting concrete against loss of moisture during the earlier stages of setting
j. transferring loads of the wall to the shore legs in dead shoring
k. a system of conveying portable water to a point of disposal
l. adhesives
m. the accumulation of dead loads of a building, imposed loads and wind loads
n. do not require any intermediate support such as purlins
o. flue
p. a technical term used to describe pumping of water from deep wells
q. represents an architect on large sites
r. one of the water treatment processes through sand
s. useful to carry both foul and surface water in the same pipe work to a disposal unit
t. materials added to mortar as a water repellent or colouring agent or to retard setting

Answers

i - t
ii - h
iii - f
iv - r
v - c
vi - e
vii - b
viii - j
ix - q
x - m

3. (a) what is meant by the term site clearing

site clearing is the process of preparing a construction site by removing obstacles such as trees, rocks, vegetation, and debris. it ensures a clean and level surface for foundation work and prevents any interference with construction activities.

(b) define the term strip foundation

a strip foundation is a type of shallow foundation that consists of a continuous strip of concrete placed under load-bearing walls. it distributes the building's weight evenly over a wider area of soil, providing stability and preventing settlement.

4. what are the functions of a ground floor

a. to support the weight of occupants, furniture, and equipment inside the building
b. to provide a level surface for movement and activities
c. to prevent moisture from rising into the building by acting as a barrier
d. to distribute loads to the foundation, ensuring structural stability

5. define the following terms

a. main pipe – a main pipe is a large-diameter pipe that carries potable water from the main supply to different areas of a city or town. it serves as the primary source for distribution networks.

b. service pipe – a service pipe is a smaller pipe that connects an individual building to the main water supply, providing water for domestic or commercial use.

6(a) name the three types of stairs commonly used in tanzania

a. straight stairs – stairs that follow a continuous straight line without changing direction
b. dog-legged stairs – stairs with a 180-degree turn, usually divided into two flights connected by a landing
c. spiral stairs – stairs that curve around a central support column, forming a circular pattern

(b) describe briefly the two main systems of erecting tubular scaffolding

a. independent scaffolding – consists of vertical and horizontal members that are free-standing and not attached to the building, providing stability and flexibility
b. putlog scaffolding – uses putlogs that connect the scaffold to the building for support, making it more suitable for bricklaying and maintenance work

7. draw and label the ledged and battened door

a ledged and battened door is made of vertical battens held together by horizontal ledges. it is commonly used for sheds, cottages, and utility rooms. the sketch should include battens, ledges, and hinges.

8(a) what are the functions of a roof

a. to provide protection against weather elements such as rain, sun, and wind
b. to enhance the aesthetic appearance of the building
c. to provide insulation, keeping the interior cool in hot weather and warm in cold weather
d. to act as a structural component, supporting loads such as ceiling fixtures and water tanks

(b) name the two types of walls
a. load-bearing walls – walls that carry structural loads from the roof and upper floors to the foundation
b. non-load-bearing walls – walls that serve as partitions but do not support structural loads

9. what are the uses of the following ironmongeries with respect to joinery works

a. butt hinges – used to attach doors, windows, and cabinets, allowing them to swing open and close smoothly
b. barrel bolts – used to secure doors and windows by sliding a metal bolt into a socket, providing extra security

10. what is the purpose of the following window frame parts

a. trans – horizontal members in a window frame that provide structural support and divide the window into sections
b. catcheting window sills – designed to channel rainwater away from the wall, preventing water penetration and damage

11. (a) what part of a stair provides a means of changing direction of flight

a landing provides a resting space and allows stairs to change direction in multi-level buildings

(b) name four parts of a stair which make a balustrade

a. baluster – vertical posts that support the handrail
b. handrail – the horizontal rail that provides support while using the stairs
c. newel post – a large post at the beginning or end of a staircase that supports the handrail
d. base rail – a horizontal rail that holds the balusters in place

12 where is each of the following used in the construction of buildings

a. damp proof course – installed between walls and floors to prevent moisture from rising into the structure
b. damp proof membrane – used under concrete slabs to create a barrier against ground moisture, protecting floors from dampness