2023 MOCK EXAMINATION BRICK/BLOCKLAYING/CONCRETING PAPER TWO

BRICKLAYING/BLOCKLAYING/CONCRETING

QUESTION 1

A. Apart from ordinary Portland cement, describe two other cements both in use and manufactured

ANSWER

(i) **Rapid Hardening Portland Cement:** This is made by mixing together chalk or limestone, with clay or shale, heating them to a clinker and grinding them to finer powder than that for ordinary Portland cement. The setting time is similar to that of O.P.C. But it develops strength more rapidly. It enables form work to be struck earlier.

(ii) **Extra-Rapid Hardening P.C:** Manufactured by adding an accelerator e.g calcium chloride ($cacl_2$) to rapid hardening Portland cement. It has quick initial set. Hardening much faster than rapid hardening p.c. It is particularly useful in cold weather. Allows concreting to continue during low (not freezing) temperature. It is also useful for marine work in inter-tidal conditions.

(iii) **High Alumund Cement:** Made from chalk and bauxite, black in color. Develops high strength in 24 hours, making it responsibly useful for emergency work and in cold weather. It resists sulphate attack and some weak acids and most organic liquids.

(iv) **Hydrophobic Cement:** Made by adding substances to Portland cement and during the grinding process, which form a water repellant film around each grain of cement. The cement can thus be stored under humid and damp conditions without deterioration. During the mixing process, the film is rubbed off and normal hydration takes place.

(v) **White Cements:-** By special manufacturing process and selection of raw materials, the amount of iron in the Portland cement is considerably reduced. It is used for manufacturing precast concrete products and in a production of cement points.

B. What is the effect of gypsum in cement and what percentage is used.

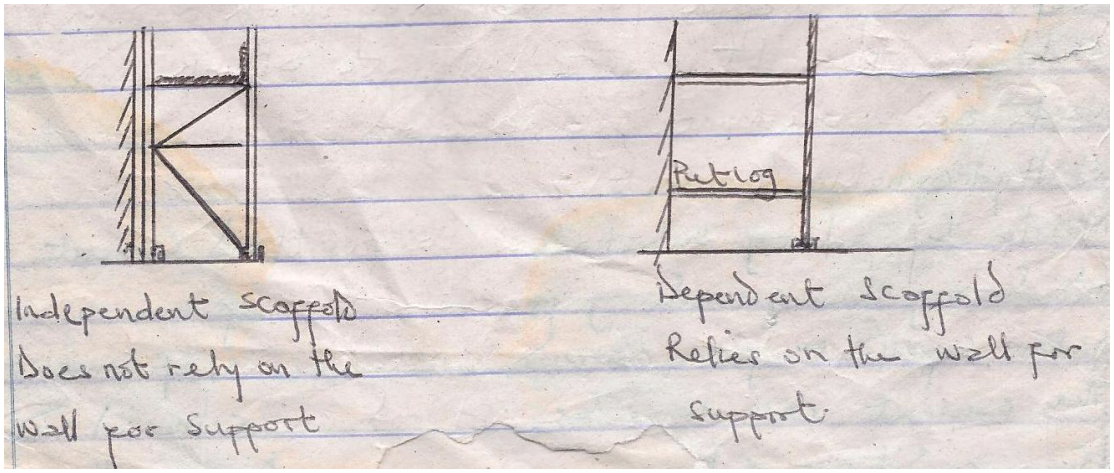
ANSWER:

Gypsum in cement helps to retard the setting time of cement, thus allowing the work for which the cement is required to be done before setting and hardening take place. The percentage of Gypsum used is 2%.

QUESTION 2

a. With neat sketches describe dependent and independent scaffolding.

ANSWER:



Independent scaffold does not rely on the wall for support.

b. Give four (4) reasons why the use of tabular scaffolding in preferred.

ANSWER:

Tabular scaffolding is preferred because

(i) It is lighter in weight.
(ii) It is easier to erect and dismantle.
(iii) It is more durable.
(iv) It is stronger.
(v) It is safer.

QUESTION 3

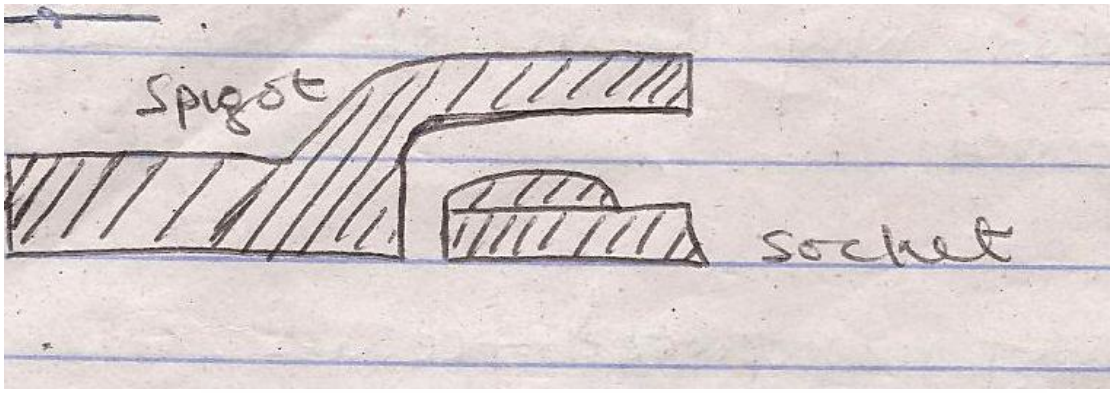
a. Define the following sewage/drainage terms:-
   (i) Manhole
   (ii) Benching
   (iii) Half channel

ANSWER:

(i) A manhole is an inspection chamber exceeding 900mm in depth. There are iron steps or ladder built in the manhole wall at 300mm height to provide access into the manhole where the depth is.
(ii) Benching is a weathering construction made at the sides of the invert of a manhole or inspection chamber to control the flow of sewage and to allow a man to stand.
(iii) Half Channel is a pipe cut along its length either in half and used at the internal bottom of the inspection chamber or manhole. It may also be formed with concrete.

b. Sketch a pipe showing spigot and socket ends.

ANSWER:



c. Give two (2) advantages of separate system of drainage.

ANSWER:

(i) Reduction in the cost of pumping/evacuation
(ii) Reduction in the cost of sewage treatment

QUESTION 4

A. Describe in sequence the method of rendering an old neglected wall.

ANSWER

The sequence is as follows:

(i) The brick joints should be raked out to form a key for the under coat
(ii) The surface of the wall should be made free of dirt and other things that will impair bonding.
(iii) Wet the surface with water
(iv) Apply rich mix mortar under coat
(v) Scratch the under coat to form key for the final coat.

B. Specify the correct mortar in external wall and internal wall surface furnishing.

ANSWER

For the external wall surface:

1 part of Portland cement

½ part lime; 44 ½ parts of sand by volume.

1:1:5 to 6 parts cement, lime and sand OR

1 part cement to 6 parts sand.

For Internal wall Finish:

1:0: ¼ of cement lime and sand.

C. List two advantages of rendering.

ANSWER:

Advantages of Rendering:

(i) It prevents water penetration.
(ii) It improves appearance.
(iii) Weather proof.

QUESTION 5

Two floors are to be tiled. The size of each floor is 20m x 150mm. Allow 5% of cutting and wastage calculate:

(i) The number of tiles to be used for the whole floors and
(ii) The cost of tiles to be used if a crate of 80 tiles cost 1250.00naira.

ANSWER

Area to be tiled: (25m x 16m) x2= $800m^2$

Area of one tile: $(0.2 \times 0.15)m^2 = 0.03m^2$

No of tiles to be used = $800m^2/0.03m^2$ = 26666.6 tiles= 26667 tiles

Allowance of 5% = 5/100 x 26667=1333tiles.

Total no of tiles needed = 26667+1333=28000 tiles.

(ii) The cost of 1 crate of tile =1250.000naira

1 crate contains 80tiles, therefore 28000 tiles will be contained in $\frac{28000}{80}$ =350 crates

→350 crates will cost 1250 x 350 = 437,500naira (₦437,500:00)

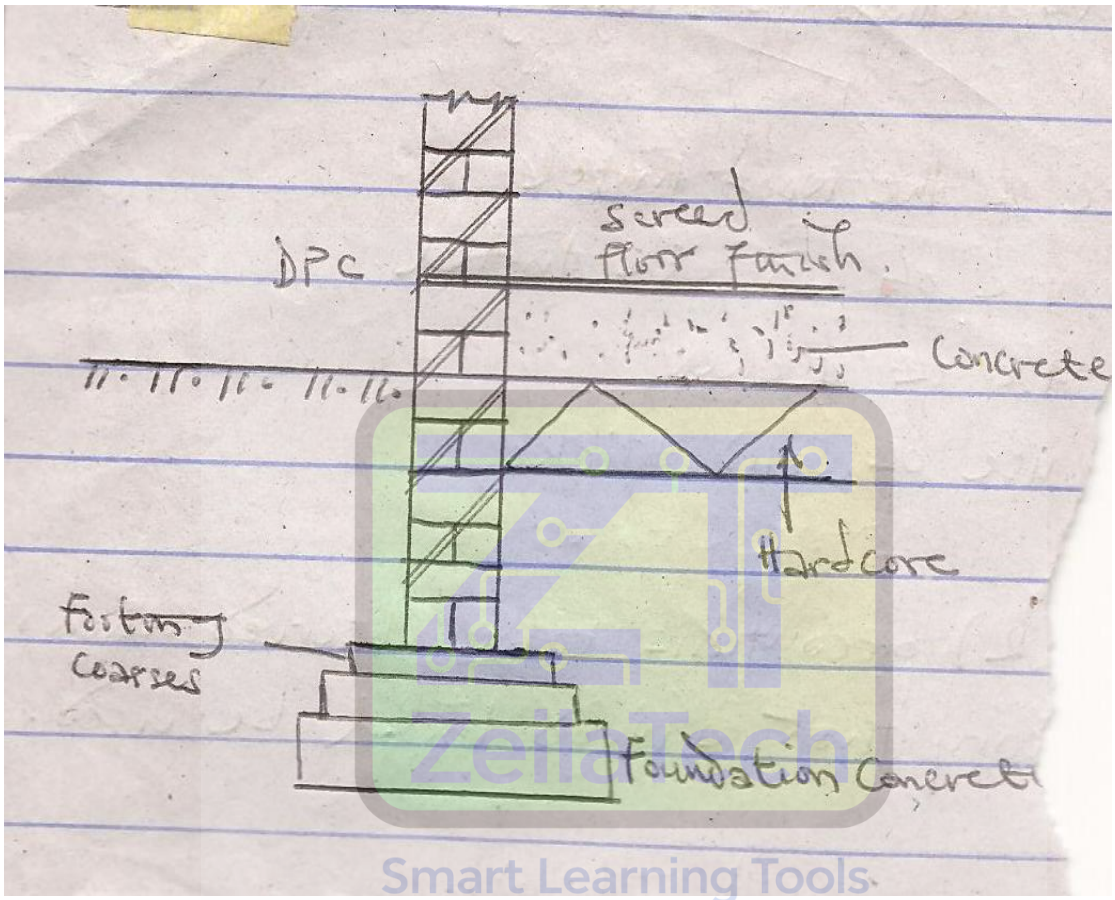
QUESTION 6

With a scale of 1:10, draw a section through 1brick external wall showing the following in your drawing.

1. Foundation concrete
2. Footing coarse
3. Hardcore

4. Concrete slab
5. D.P.C
6. Floor screed

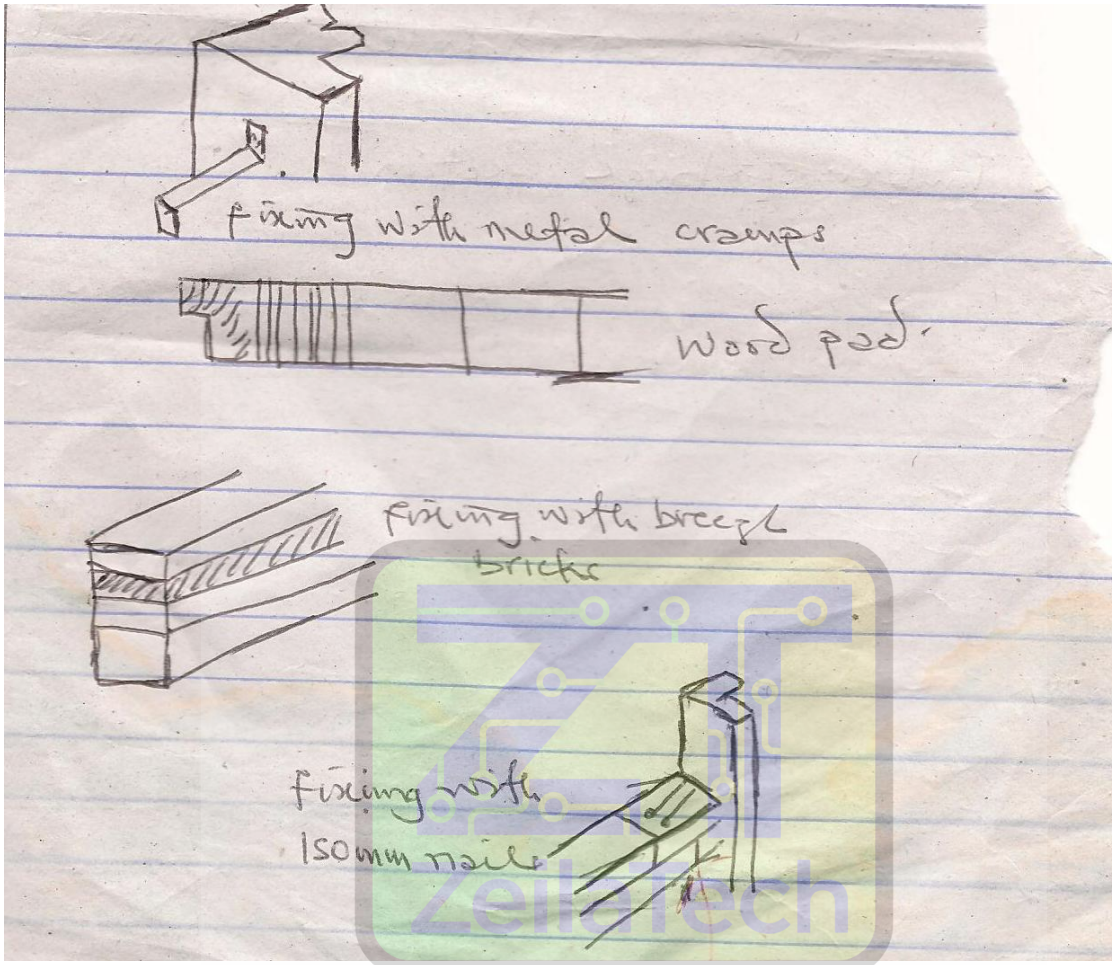
ANSWER



QUESTION 7

A. Sketch three (3) methods of fixing a door frame into a wall.

ANSWER



B. Mention two (2) methods of bridging an opening

ANSWER

(i) By the use of the wood lintel
(ii) By the use of concrete lintel
(iii) By the use of arches
(iv) By the use of solid bricks

C. State two (2) precautions to be observed when it becomes necessary that a word lintel be used.

ANSWER

(i) Ensure that the wood is hard
(ii) Make certain that the wood is free of defects
(iii) Ensure that the span of the opening is not too large.
(iv) Ensure that the lintel is not exposed to weather

(v) Make sure that the wood lintel is minimally loaded.

(vi) Use timber of large section.