Question 01

Answer

* Introduction to concrete

Concrete is neither as strong nor as tough as steel so why is it most widely used enginerring

Material ?????

There are three primary reason

1Concrete posses excellent resistance to water unlike the wood and ordinary steel

The ability of concrete to withstand the action of water without serious deteriatioin

Make it an ideal material for building structure to control store and transport water

2 The second reason for the widerspread use of concrete is the ease with which structural

Concrete elment can be formed in a verity of shape and size this is because freshly made c

Concrete is of a plastic formwork after a number of hours when the concerte has solidified

And hardened to a strong mass the formwork can be removed for reuse

3 The third reason for the popularity of concrete with engineers is that it is usually the

Cheapest and most readily available material on the job the principal components for

For making concrete namely aggregate water and Portland cement are relavitely

Inexpensive and are commonly aviabale in most part of the world

(PART B) ANSWER

It has has been observed that the compressive (crushing) strength of

Concrete is influenced by a huge number of factors

Some of the most important factors are

1 TYPE OF CEMENT

The compostion quality and age of the

Material which is used in the manufacture of cement that have been stored for the

Considerable time make concrete of lower strength

Cement witrh higher proportions of tri caicium silicate produce concrete with them they

Will be durability

QUESTION 02

* ANSWER

Hydrated cement paste in addition to calcium

Silicate hydrate gel and other solid paste contains a verity of voids the water filling

These voids or pores can dissolve ionic species (mainly CA and OH) from the solid

Phases resulting in some ionic conduction through the interconnected capibilty

pores

(Part B) ANSWER

Thermal properties can be defined as the effect of the heat and high temperature on the concrete these high temperature on the concrete these effect are varied and always vividly spread on the surface of concrete some of these effect can be scrutinized materially and some are quite abstract

QUESTION 03

ANSWER

1 Normal strength Concrete

The concrete that is obtained by mixing the basic ingredients cement water and aggregate will give us normal strength concrete the strength of these type of concrete will vary from 10 MPa to 40MPa the normal strength concrete has a initial setting time of 30 to 90 minutes that is dependent on the cement properties and the weather conditions of the construction site

* The strength of concrete is commonly stated in metric in megapascals(MPA)
* Pressure can be measured in pascals (Pa) 1Pa = 1 N / meter
* Pressure = force per area

2 Reinforced concrete

The reinforced cement concrete is defined as the concrete to which

Reinforcement is introduced to bear the tensile strength plain concrete

Is a week in tension and good in compression hence the placement

Of reinforcement will take up the responsibility of bearing the

The tensile stress RCC works with combined action of the

Plain concrte and the reinforcement

3 pre stressed

Pre stressed concrete is a from of concrete used in construction in a

Construction in a pre stressed concrete member the internal stresses

Are introduced in a planned manner so that stresses resulting from the

Superimposed loads are constructed to the desired degree

QUESTION 3

(PART B) ANSWER

* Zone between the aggregate and bulk paste
* Has a major impact on the strength zone is 10 to 50 mm

Generally than either the paste or aggregate due to

Locally high w/c and the wall effect (packing problems) in

Some case predominately large crystals of calcium hydroxide

And ettringite are oriented perpendicular to aggregate surface

* Creater porosity and few unhydrated cement grains

Microcracking commonly exists in transition zone

* Result in shear bond failure and interconnected macroporosity
* Macroporosity which influences permeability
* Modification of transition zone is key to improving concrete