

Model Answer Sheet

Subject: Construction Material

Course Code: CE2G

Sub Code: 17209

Q.1

a) Explain Role of transportation engg. in human life.

→ Transportation engineering :

It is branch of civil engg. , which deals with design, development, construction & maintenance of roadways, railways, airports, harbors, docks, tunnels & bridges.

It plays an important role in development of India.

- i) Design & development of different types of roads.
- ii) Traffic management & parking facilities.
- iii) Design & provision of curved structures like bridges, tunnels, ghat-roads.
- iv) Survey, design & provision of different modes of transport i.e. airports, railways, roads, ports & harbors etc.

b) Explain term seasoning of timber with its purpose.

→ Seasoning of timber:

It is a process by which moisture content in a freshly cut tree is reduced to a suitable level.

→ Purposes:

- i) To increase strength, durability & workability.
- ii) To make it suitable for painting.
- iii) To reduce its tendency to split & decay.
- iv) To reduce its weight.
- v) To reduce shrinkage.

c) State uses of asphalt.

→ Uses:

- (i) As damp-proof course.
- (ii) As water proof layer for tanks, basements & swimming pools.
- (iii) For preparing paints.
- (iv) For construction of roads & pavements.

d) What are requirements of good sand?

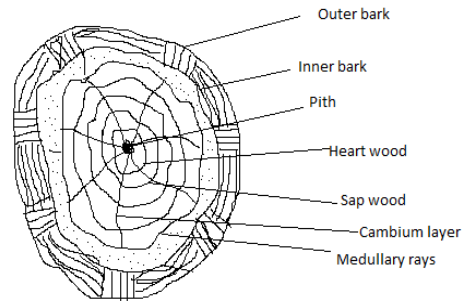
→ Requirements:

- i) It should be chemically inert.
- ii) It should be free from organic & inorganic matter.
- iii) It should be free from salt.
- iv) It should be well graded.

v) It should be hard.

Q.2

a) Draw & explain cross section of section of tree.



- i) Pith: The innermost central portion of tree is called as pith.
- ii) Heart wood: This is portion surrounding the pith.
- iii) Sap wood: It is next layer to heart wood.
- iv) Cambium layer: The thin layer between sap wood & inner bark , is cambium layer.
- v) Medullary rays: These are thin radical fibers extending from pith to cambium layer.
- vi) Inner bark: It is inner skin of tree protecting cambium layer.
- vii) Outer bark: The outer skin of tree, is outer bark.

b) Compare asphalt, bitumen & tar on the basis of color, carbon content, state & uses.

Properties	Asphalt	Bitumen	Tar
i) Color	Blackish brown	Dark with slight reddish	Deep dark
ii) Carbon content	Low	Moderate	High
iii) State	Solid / Semi-solid	Solid	Viscous liquid
iv) Uses	As damp proof course, For paints	As damp proof course	For preserving timber

- c) State & Explain criteria for selection of constructional material.
- i) Prescribed load:
It is design load which can be taken by construction material. Before giving design load on construction material, the ability to take the load is determined by carrying various lab tests.
 - ii) Serviceability:
Service requirements are dimensional stability strength, toughness, heat resistance, corrosion resistance etc. The material should be light in weight, smooth, flexible.
 - iii) Aesthetically pleasing:
Aesthetically pleasing building material is when one can have the experience of pleasant feeling in connection with calmness, happiness, texture, touch, smell.
 - iv) Economical:
Generally raw material costs 50% of total cost of finished product. If we use cheaper material then processing cost will be high due to large no of operations to be performed.
 - v) Environment friendly:
Selected material should be such that it should not disturb the eco-systems of environment and that should be eco-friendly. So it reduces the environmental problem. Use natural material mostly.

Q. 3

- a) What are characteristics of good timber?
- i) It should be sufficiently durable.
 - ii) It should have sufficient Strength.
 - iii) It should have sufficient resistance against weathering action.
 - iv) It should have sufficient hardness.
 - v) It should be easily workable.
 - vi) It should be free from defects.
- b) What are uses of lime in building construction work?
- Uses:
- i) For white washing
 - ii) For making mortar for masonry work & plastering
 - iii) To produce lime sand bricks
 - iv) For soil stabilization

- v) For making cement
- vi) As a refractory material for lining open hearth furnace

c) Explain role of environmental engineering in human life.

→ Environmental engineering:

It is a branch of civil engineering which deals with water supply, disposal of waste water from domestic & industrial use and environmental pollution control.

It deals with study of water supply, sanitary engg. & environmental pollution control such as air, water, noise, land & thermal pollution.

- (i) Measurement of pollutants such as air, water, radioactive & noise pollution.
- (ii) Water treatment for supplying potable (drinkable) water.
- (iii) Design, construct & maintenance of water treatment plant & sewage treatment plant.
- (iv) Conservation & preservation of natural resources & ecosystems.