

**SAMANTA CHANDRASEKHAR INSTITUTE OF TECHNOLOGY &
MANAGEMENT, SEMILIGUDA**

1ST INTERNAL EXAMINATION

Diploma 6th Semester (Civil)

Subject: Advanced Construction Techniques & Equipment

Time:1 hr 30 minutes

Total Marks:20

(Figures to the right hand side indicates marks)

PART-A

Q1. Answer any five questions: (2x5=10marks)

- (a) What do you mean by fibers?
- (b) Describe briefly how plastics are being used in construction?
- (c) Write down the uses of fibers as construction material?
- (d) Mention the different properties of plastics?
- (e) What do you mean by artificial timber? Mention the types of artificial timber?
- (f) Define the term veneers?

PART-B

Q2. Answer the following questions: (5x2=10marks)

- (a) Describe the properties & uses of artificial timber?
- (b) Describe the various types of plastics used as construction material?



**SAMANTA CHANDRASEKHAR INSTITUTE
OF TECHNOLOGY AND MANAGEMENT**
SEMILIGUDA - 764 036

1st internal Examination 6th Semester/Class
 Name Megi Guntha Branch Civil Engg
 Roll No. F19030001013 Registration No. F19030001013
 Subject ACTE Date 26/05/2022

No. of Addl. Sheets used _____

N. good
 20
 20
 Manisha
 27/05/2022
 26/05/2022
 Signature of the Invigilator

USE BOTH SIDE OF PAPER

MARKS OBTAINED

Question No.	Marks
1. 1(a) - 2 marks	
2. 1(c) - 2 marks	
3. 1(d) - 2 marks	
4. 1(e) - 2 marks	
5. 1(f) - 2 marks	

Question No.	Marks
6. 2(a) - 5 marks	
7. 2(b) - 5 marks	
8.	
9.	
10.	

Total : 20marks

Manisha
 Signature of the Examiner
 Date 27/05/2022

Q) Answer any five questions (2x5=10)

- What do you mean by fibres?
- Describe briefly how plastic being used in construction.
- Write down the use of fibres as construction material?
- Mention the different properties of plastic?
- What do you mean by artificial timber?
- Mention the types of artificial timber?
- Define the term veneer?

Q2) Answer the following question (5x2=10)

- Describe the properties & uses of artificial timber?

- Describe the various types of plastic used in construction material?

a) Admixture is filament or thread like piece of any material. This term sometimes also refers to a new material that can be drawn into threads. ②

Admixture are used in concrete to control cracking due to plastic shrinkage and drying shrinkage ②

Fibre are considered as a construction material to enhance the flexural & tensile strength.

Ques 1) Following are the properties of plastics

- ① Plastic are very light in weight
- ② Plastic have low electrical and thermal insulating conductivity
- ③ Plastic can be transparent, translucent or opaque
- ④ Plastic can be formed and moulded into any shapes.
- ⑤ Plastic have good sound absorbing properties
- ⑥ Plastics are durable, cost effective & energy saving

Ans 1) Artificial timber or industrial timber is nothing but timber product manufactured scientifically in the factories on which is converted in a factory by some mechanical process such timber possess desired shape appearance & strength and durability following are the various types of timber artificial timber

- ① veneers
- ② plywood
- ③ particle board
- ④ fibre board
- ⑤ batten
- ⑥ impreg timbers

Ans 2) Veneers are nothing but thin layers of wood which is obtained by cutting the wood with the sharp knife in rotary cutter.

in rotary cutters. the wood log is rotated against the sharp knife or saw and cut it into thin sheets. These thin sheets are then dried in kilns and finally veneers are obtained in kilns and finally ⁽²⁾ veneers are obtained.

(2) Plastics: the various types of plastics are used as

i) Polyethylene: polyethylene plastic is made from the polymerised vinyl monomers. is a kind of simple compound which can be polymerized to become macromolecular compound.

ii) Polyethylene Plastic: polystyrene plastic is made from the polymerised styrene monomers. It has the merits of good light transmitted easy, ~~pigmentation better~~ chemical stability, water resistance, light resistance easy processing and low price.

iii) Polypropylene Plastic or polypropylene plastic is made from the polymerised allylic monomer it has the properties of light weight (density $0.909/\text{cm}^3$) strong heat resistance (100-120°)

iv) Polymethyl Methacrylate: thermoplastic resin also called organic glass can be made from the polymerized polymethyl methacrylate. It has the advantage of good light transmission, high strength at low temperature, low water absorption.

v) Polyester resin: polyester resin is made by condensing diatomic or polybasic alcohol & diatomic or poly basic acid polyesters resin has properties of good bonding capacity.

④ phenolic resin: phenolic resin is made by polymerizing phenol and aldehyde under the influence of acid catalyst or alkaline catalyst. Phenolic resin has better cohesion strength, light resistance, weather resistance.

⑤ organic silicon resin: organic silicon resin is made by hydrolyzing one or more types of organic silicon monomers. Organic silicon resin has the properties of heat resistance.

(5)

afford a good antifouling timber should possess the following properties.

- ① weather resistance
- ② durability
- ③ fire resistance
- ④ workability
- ⑤ elasticity
- ⑥ toughness & abrasion
- ⑦ soundness
- ⑧ hardness
- ⑨ resistance to shear

f) strength

use of artificial timber

- following are the uses of artificial timber
- ① Artificial timber is corrosion resistance and hence it can be used where the corrosion is likely to occurs in the structures.
 - ② It is convenient in maintenance and superficial similarity to wood.
 - ③ It is used to make various structural members
 - ④ It is used in maintenance work
 - ⑤ It is also used as ceiling paneling materials
 - ⑥ It is also used as construction material in the building

- ① it is used to make doors and window frames
- ② It is used for making the planks, squeeze & round shape for furniture.
- ③ Density can be varied in between 0.8 & 1.2 KN/m^3 depending on the requirements

⑤

**SAMANTA CHANDRASEKHAR INSTITUTE OF TECHNOLOGY &
MANAGEMENT, SEMILIGUDA
2ND INTERNAL EXAMINATION
Diploma 6th Semester (Civil)**

Subject: Advanced Construction Techniques & Equipment

Time:1 hr 30 minutes

Total Marks:20

(Figures to the right hand side indicates marks)

PART-A

Q1. Answer any five questions: (2x5=10marks)

- (a) Define the term "wall cladding"?
- (b) What is the micro-silica? state any two advantages?
- (c) Define artificial sand? Mention its uses?
- (d) What is plywood? Write its advantages?
- (e) Define adhesives?

PART-B

Q2. Answer the following questions: (5x2=10marks)

- (a) What do you mean by acoustic materials?
- (b) Define "Bonding Agents"? explain the different type of bonding agents briefly?

No. AB/ 5421



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SCITM

2nd internal

Examination

6th

Semester/Class

Name Nagesi Guntha

Branch

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Registration No. P19030001013

Subject Advance construction Techniques and Equipment Date 25/06/2022

No. of Addl. Sheets used _____

20/20

Manisha
25/6/22

100
25/6/22

Signature of the Invigilator

USE BOTH SIDE OF PAPER

MARKS OBTAINED

Question No.

Marks

1. 1(a)

2 marks

2. 1(b)

2 marks

3. 1(c)

2 marks

4. 1(d)

2 marks

5. 1(e)

2 marks

Question No.

Marks

6. 2(a)

5marks

7. 2(b)

5marks

8. _____

9. _____

10. _____

Total:

20marks

Signature of the Examiner

Date 29/06/2022

(a) Ans // Wall cladding is a type of decorative covering intended to make a wall look like it is made of a different sort of material than it actually is. Some of the most common examples are on the outside of the buildings but cladding can also be used as on artistic material elements in the interior decorations. (2)

- The most common types are:
stone cladding - brick cladding, metal claddings
fiberglass cladding - concrete cladding glass cladding etc.
- Wall cladding can give a cladding a new look and a new life to the building. It can be used to increase the value of the building
- It can also improve the thermal acoustical natural daylight performance and appearance
- It is used as weather-resistant material of the exterior walls of the buildings.

(b) Ans // Microsilica is a light grey cementitious materials composed of at least 85 percent ultrafine - amorphous, non-crystalline (glassy) spherical silica dioxide (SiO_2)

→ It is also called as silica fume. It is by-product during the manufacturing of silica metal or ferrosilicon alloys by production of high purity quartz in a submerged arc electrical furnace heated to 2000°C with coal coke

A wood chips as fuel

- Microsilica or silica fume is an excellent admixture for concrete as it leads to

to better engineering properties
→ it reduces thermal cracking - improves durability
and increases strength.

Advantages of microsilica.

- ②
- It gives better application when added with portland cement
 - Micro-silica increases the compressive strength
 - It improves abrasion and chemical resistances

(Ans) \rightarrow Artificial sand - also called crushed sand or mechanical sand - refers to rocks - mine tailings or industrial waste granules with a particle size less than 4.75 mm which are processed by mechanical crushing and sieving but does not include soft or weathered granules. ②

\rightarrow Artificial sand is a specific purpose produced materials which will satisfy the strength, durability, size shape, grading requirement of fine aggregate in concrete mix. the stone metal or crushed stone waste below 25mm from good parent rock is fed to the disintegrator

Uses of Artificial sand:-

- Artificial sand often used as filler between aggregate and cement.
 - It can also be used in concrete, brickwork etc.
 - They can also be used for concrete projects like pavements and water conservancy.
- (Q) Ans \rightarrow Ply means thin plywood is a board obtained by adding thin layers of wood or veneers on one above each other. Successive layers is done by pinning or adhesive. the layers

are glued and pressed with some pressure either in hot or cold condition.

In hot conditions 150 to 200°C temperature is maintained and any hydraulic press is used to press the layers.

→ In cold condition room temperature is maintained and 0.7 to 1.4 N/mm² pressure is applied.

Advantages of Plywoods

① It is light in weight still many times stronger than solid wood of same thickness.

② It is resistant to cracking. wrappings spellings and it has uniform strength in all the directions.

③ It is available in many sizes and is defect free.

④ It is available in many sizes and is defect free.

easy to cut, bend and variety of decorative finishes are available.

(E) Adhesive is the attraction between unlike surfaces.

→ adhesives are bonding agents used to join different materials generally by gluing.

→ construction adhesive are a general-purpose adhesive used for attaching drywall tiles and fixtures to walls, ceilings and floors.

→ It is most commonly available in tubes intended for use with a caulking gun.

(F) Acoustic is the science that deals with the production, control, transmission, reception and effect of sound.

→ It is the science of controlling sound within the buildings.

→ when the sound intensity is more than it gives a great trouble or nuisance to the particular area like the auditorium - cinema hall studio recreation centre entertainment hall - college reading hall etc. hence it is very important to make that area ~~area or room~~ to be sound proof by suitable materials called as the acoustic materials, if it is measured in decibels acoustic materials plays a vital role in the various areas of building construction as to control the outside as well as inside sound of the various building such that sound will be audible without any ~~noise~~ nuisance or disturbance

Properties of Acoustic Material

(5)

- ① sound energy is captured and absorbed if it has a low reflection and high absorption of sound
- ② higher density improves the sound absorption efficiency at low frequencies
- ③ higher density material help to maintain a low flammability performance hence acoustic material should have higher density.

Uses of Acoustic Material

- ① Acoustic materials can be use for noise reduction and noise absorption it makes the sound more audible which is clear to listen without any disturbances.
- ② it suppresses echoes - reverberation clearance and reflection
- ③ sound proof doors and windows are designed to reduce the transmission of sounds

Q/ A vinyl acoustic barrier blocks/ controls curbside noise (street traffic, music) from passing through a wall, ceiling or floor.

Q/ Acoustic foam and ceiling tiles absorb sound so as to minimize echo and reverberation within a room.

- (b) Ans/ → Bonding agents are natural - compounds or synthetic materials used to enhance the joining of the individual members of a structure without using mechanical fasteners.
- these products are often used in repair applications such as the bonding of fresh concrete sprayed concrete, brush mortar & off concrete.
- the most commonly used types of bonding agents are generally made of natural elements, synthetic resins or any other organic polymer with the addition of bonding agents in repair mortar.
- of bonding reduces water-cement ratio. concrete the same work-area is adopted for the same drying ability thereby reducing shrinkage.
- Following are the various types of bonding agents:
- emulsions used as bonding agents in construction works.
- The

Epoxy latex

These emulsions are produced from epoxy resins mixed with the curing agents

→ most of the epoxy resins are prepared on the job site just before the use because phase separation occurs in packed emulsions

→ equal parts of Epoxy and curing agents are mixed and blended for 2 to 5 minutes and allowed to sit for 20 minutes to enable polymerization to begin.

Styrene Butadiene

→ this latex is compatible with cementitious compounds which is a copolymer if subjected to high temperatures freezing temperatures. Several mechanical action for a long period of time

Polyvinyl Acetate latex

→ this type is most commonly widely used as a bonding agent for plasters

→ Because of its compatibility with cement it is widely used as a bonding agents and a binders for cementitious water based paints and waters proofing coating

(S) N, good

Epoxy Bonding agents

→ for the bonding of freshly placed concrete various products are available

→ most products contains resins that are 100% solids are available in variety of consistency ranging from a highly filled paste (barreled head tank) to liquids with a viscosity of 100 cp which is similar to water