

Enrollment No.

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M.TECH. (SE)
II YEAR, III SEMESTER EXAMINATION
COMPOSITE MATERIAL

[Time : 03:00 Hours]

[Max. Marks : 70]

NOTE:- ATTEMPT ALL THE QUESTIONS AS PER GIVEN INSTRUCTIONS.**QUESTION NO.-1: ATTEMPT ANY FOUR PARTS.**

(4*3=12)

a)	What is the need for composite material?
b)	Briefly discuss the mechanical behavior of composites.
c)	Mention important matrix materials
d)	What is particulate composite?
e)	Write a short note on Kevlar fiber.
f)	Explain the application of composite material.

QUESTION NO.-2: ATTEMPT ANY THREE PARTS.

(3*4=12)

a)	Explain the following term: 1) knitting 2) Brading 3) weaving.
b)	Mention the merits and demerits of Natural fibers
c)	Explain the process of reaction injection moulding.
d)	Discuss the fiber spinning process.

QUESTION NO.-3: ATTEMPT ANY THREE PARTS.

(3*6=18)

a)	What parameters for concrete being considered as high performance concrete?
b)	Discuss the process of manufacturing of carbon composites.
c)	Discuss about Ex-Pan Carbon Fiber.
d)	Explain the properties and application of boron fiber.

QUESTION NO.-4: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	How waste materials and by products effect on the various properties of mortar and concrete?
b)	Mention the advantages and limitations of Natural fibers
c)	Explain the process of compression moulding.

QUESTION NO.-5: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	Discuss the properties and application of glass fiber? Discuss its structure also.
b)	Discuss the manufacturing process of polymer matrix.
c)	Explain the Recent developments in Natural fiber composites.

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M.TECH. (SE)

II YEAR, III SEMESTER EXAMINATION

DESIGN OF PRE-STRESSED CONCRETE STRUCTURE

[Max. Marks : 70]

[Time : 03:00 Hours]

NOTE:- ATTEMPT ALL THE QUESTIONS AS PER GIVEN INSTRUCTIONS.

CALCULATOR IS ALLOWED (100 MS)

QUESTION NO.-1: ATTEMPT ANY FOUR PARTS.

(4*3=12)

a)	Discuss the role of pre- stress in structural engineering.
b)	What do you understand by pre-stress & working stress in detail?
c)	Write down the advantages & dis-advantages of pre-stress concrete in detail.
d)	List the influencing factors for the shrinkage loss.
e)	Discuss the Load balancing concept in detail.
f)	How do pre-stressed concrete beams behave in torsion ? Explain it.

QUESTION NO.-2: ATTEMPT ANY THREE PARTS.

(3*4=12)

a)	Explain the following terms: (1) Tendon (2) Anchorage (3) Post tensioning (4) Creep in concrete
b)	Discuss the C-Line/P-line concept for analysis of pre-stress in detail.
c)	Explain the factors affecting long-term deflections.
d)	Briefly discuss the assumptions for pre-stress in detail.

QUESTION NO.-3: ATTEMPT ANY THREE PARTS.

(3*6=18)

a)	Discuss the difference in between pre-tensioning & post- tensioning method of pre-stress in detail with neat sketch.
b)	In a pre-stress concrete beam of size 300×400mm is pre-stressed by a tendon of 100mm ² area. In pre-stress $P=1200\text{N/mm}^2$. Find out the percentage increase of stress due to live load of 8KN/m for a span of 6m. Given data: $EC=30\text{ KN/mm}^2$, $\gamma=25\text{ KN/mm}^3$, $ES= 210\text{ KN/mm}^2$, $e = 60\text{ m}$ below C.G.
c)	Explain the procedure for computing short-term and long-term deflection of pre-stress concrete beams.
d)	What do you understand by the working stress & limit state method? Distinguish the difference in between them with neat sketch in detail.

QUESTION NO.-4: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	What are the various methods of curing of concrete? Explain in detail.
b)	A pre-stress concrete beam having a size of 400×600mm has a span of 6 m. Pre-stressing force is 1200 KN. Calculate the extreme stresses at mid span. Considering the self weight of section. $\gamma = 25\text{KN/m}^3$
c)	Explain the difference in between pre-stressed concrete and over reinforced concrete in detail.

QUESTION NO.-5: ATTEMPT ANY TWO PARTS.

(2*7=14)

a)	Briefly discuss why high grade of concrete & high strength steel are the basic requirements for
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