

B020315(020)

**B. Tech. (Third Semester) Examination,
Nov.-Dec. 2020**

(New Scheme)

(Civil Engg. Branch)

BUILDING MATERIALS

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt all questions. Parts (a) of each question is compulsory and carries 4 marks; attempt any two parts from (b), (c) and (d) carrying 08 marks.

Unit-I

1. (a) (I) To produce low heat cements, it is necessary to reduce the compound : 22

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- (i) C3S
- (ii) C2S
- (iii) C3A
- (iv) C4AF

(II) If p is the standard consistency of cement, the amount of water used in conducting initial setting time test on cement is

2

- (i) $0.65 p$
- (ii) $0.85 p$
- (iii) $0.6 p$
- (iv) $0.78 p$

(b) Explain the hydration process of cement with schematic diagram.

(c) Write a note on classification of aggregates. Differentiate between Coarse Aggregate Vs Fine Aggregate.

(d) Write short notes on :

- (i) Classification of Pozzolanas
- (ii) Field test for cement
- (iii) Ennore sand

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Unit-II

2. (a) (I) The approximate ratio of strength of 15 cm × 30 cm concrete cylinder to that of 15 cm cube of the same concrete is :

2

- (i) 1.25
- (ii) 0.85
- (iii) 1.00
- (iv) 0.50

(II) Consider the following strengths of concrete :

1. Cube strength
2. Cylinder strength
3. Split-tensile strength
4. Modulus of rupture

The correct sequence in increasing order of these strengths is :

2

- (i) 3, 4, 2, 1
- (ii) 3, 4, 1, 2
- (iii) 4, 3, 2, 1
- (iv) 4, 3, 1, 2

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- (b) Define workability and factor affecting it. Explain slump test in detail.
- (c) What are the factor affecting strength and durability of concrete?
- (d) Explain following terms :
- (i) Modulus of elasticity of concrete
 - (ii) Bleeding
 - (iii) Segregation
 - (iv) Water cement ratio

Unit-III

3. (a) (I) According to I.S. code the weight of the timber is to be reckoned at a moisture content of : 2
- (i) 0%
 - (ii) 4%
 - (iii) 8%
 - (iv) 12%
- (II) Hard boards are example of : 2
- (i) Plywood
 - (ii) Particle board

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- (iii) Fiber board
 - (iv) Chip board
- (b) Write short notes on form work and also explain its objective.
- (c) Discuss the need of developing cost effective materials. Give the names and their applications of agricultural and industrial wastes as cost effective material.
- (d) Write short notes on :
- (i) Veneers
 - (ii) Plywood
 - (iii) Fiber board
 - (iv) Particle board

Unit-IV

4. (a) (I) Varnish is a homogeneous solution of resin in : 2
- (i) Alcohol
 - (ii) Kerosene oil
 - (iii) Naptha
 - (iv) Spar varnish

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- (II) Putty is made up of : 2
- (i) white lead and turpentine
 - (ii) red lead and linseed oil
 - (iii) powdered chalk and raw linseed oil
 - (iv) zinc oxide and boiled linseed oil
- (b) Enumerate the composition of oil paint and their functions.
- (c) Write short notes on :
- (i) White washing
 - (ii) Varnishing
 - (iii) Distempering
 - (iv) Aluminium paint
- (d) Write the classification of bitumen and its uses.

Unit-V

5. (a) (I) Percentage of minimum elongation in high strength deformed steel bar Fe-500 : 2
- (i) 14.5%
 - (ii) 8%
 - (iii) 6%

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- (iv) 20%
- (II) The crudest form of iron : 2
- (i) Mild steel
 - (ii) Wrought steel
 - (iii) Pig iron
 - (iv) Cast iron
- (b) Write composition of steel and explain different type of rolled structural steel section.
- (c) What are refractories? Describe its classification.
- (d) Write short notes on :
- (i) Uses of PVC
 - (ii) Advantage of Aluminium
 - (iii) Uses of Glass
 - (iv) Type of tiles