REF NO.-EX/CE/PC/B/T/216/2024

B.E.C.E. 2ND YEAR EXAMINATION, 2024

1ST SEMESTER

SUBJECT: BUILDING MATERIALS & CONSTRUCTION

TIME: THREE HOURS FULL MARKS:100

USE A SEPARATE ANSWER-SCRIPT FOR EACH PART

No. of Questions	Part-I (Full Marks 60)	Marks
	For Section-A, answer Question number 1 (Compulsory) and any one from the rest. For Section-B, answer Question number 4 (Compulsory) and any three from the rest. All the drawings should be in pencil.	
	Section-A (CO-1)	
Q1.	Give example of each type of building as per NBC, 2016: Assembly; Business; Institutional and educational. Write the full form of BFS and DPC and mention where you will apply them. What is the purpose of providing plinth in building?	1×4+ 2×3
Q2.	Differentiate between: (i) Strip foundation and strap foundation; (ii) Raft foundation and isolated footing; (iii) Well foundation and caisson foundation; (iv) Plastering work and pointing work; (v) Subgrade and subbase of granolithic floor	2 × 5
Q3. (a)	Mention the position and purpose of the following fittings with reference to plumbing system: S-trap; Ferrule; antisyphonage pipe; Goose neck; Scour pipe	1.5×4
(b)	Among the various piping system related to wastewater plumbing which one is the most economic and effective for multistoried building and why? What is water seal and for which type of trap (based on purpose) you will recommend maximum high depth of water seal?	2×2
	Section-B (CO-2)	1×10=10
Q4.	**Fill in the blanks** i. The dimension of modular brick recommended for 1st class brick in India is---------- ii. The weight of one bag of good quality cement is----------kg iii. White rot of wood is due to _____ iv. The recommended increase in volume of cement after hydration due to presence of free lime for ordinary OPC is _____ v. The maximum % of silt and clay permissible in good quality sand is _____ vi. The cement sand ratio recommends for pointing work is_____ vii. The recommended nickel alloy for construction of water pump or water tank in corrosion prone area is_____ viii. Increase in silica % in brick earth will result in _____in brick. ix. _____is commonly used as base material for metal work. x. Fiber saturation point for wood is defined as_____	
Q5. (a)	(i) With neat sketch define: King closure, toothing in brick bond and ashlar masonry work (ii) What is efflorescence test for brick?	2×5

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No. of Questions	Part-I (Full Marks 60)	Marks
(b)	Why bulking of sand and fineness modulus of sand are considered as important parameters during mix design of concrete?	
Q6.	How will you differentiate heart wood with sap wood? What is the purpose of medullary ray in wood? What is the best seasoning method in timber and why? What is the best conversion method of wood and why? Define block board. Knot is which type of defect?	2×4+ 1×2
Q7. (a)	Define the following properties and their standard values for 33 grade of ordinary Portland cement and the instrument to analysis the properties: Specific surface area, initial setting time, unsoundness and compressive strength	2×5
(b)	What is the recommended water quality for the preparation of concrete as per IS 456:2000	
Q8.	Mention two uses of flyash as building materials. How will you prepare light weight mortar? Why vehicle and thinner are added in paint? Suggest the best suitable application for the following surface finishing elements: distemper, varnish, bituminous paint. Name one material or item which will be utilised during construction and remove after construction.	2×3 +1×4

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Name of the Examinations: B.E. CIVIL ENGINEERING SECOND YEAR FIRST SEMESTER - 2024

Subject : BUILDING MATERIAL & CONSTRUCTION

Time: 3 Hours (Total) Part: II Full Marks: 40

Instructions:	
I	Use Separate Answer scripts for each part.
II	All notations represent their standard relevant meaning.
III	If you feel that any data or condition is/are missing in any question, please assume relevant inputs and mention the same.

Sl No	**Question**	**Marks**	**CO**
1	(a) Is the minimum open space of a building dependent on height of the building ? Discuss. (2 marks) (b) Consider a two storey RC residential building to be constructed at Kolkata on a rectangular plot of size 22m by 20m. Floor to floor height = 3.0m. The typical plan should include 2 Bedrooms, 1 kitchen, Toilets and other necessary components (to be considered suitably) as applicable. One bedroom in each floor should have an attached toilet. Draw a floor plan for the 1st floor, Calculate Carpet area, Calculate Super built-up area of each floor considering all the floors have identical features. (18 marks)	20	CO 4
2	(a) Why and when Nosing is done in staircase? Describe using neat sketch(es).(4 marks) (b) A two storey RC commercial building has floor to floor height 3.3m. The building has Dog legged staircase where nosing is not done. Draw typical detail of cross section of the flights of the staircase. (Take suitable dimensions when necessary). (12 marks) (c) What are stirrups and why stirrups are provided? Describe using neat sketch(es). (4 marks)	20	CO 3