

B.E.C.E. 2ND YEAR EXAMINATION, 20231ST SEMESTER SUPPLEMENTARY

SUBJECT: BUILDING MATERIALS & CONSTRUCTION

TIME: THREE HOURS

USE A SEPARATE ANSWER-SCRIPT FOR EACH PART

No. of Questions	Part-I (Full Marks 60)	Marks
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	<p>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.</p> <p>Section-A (CO-1)</p>	
Q1.	Describe the classification of building proposed by NBC mentioning the basis of classification. DPC is provided at------. Differentiate between (write main points only): (i) loadbearing wall and non-load bearing wall (ii) plinth level and seal level	5+1+2×2
Q2. (a)	Recommend suitable foundations for the following cases: (i) two closely spaced column of differential load, bearing capacity of soil is high near ground surface (ii) two columns of differential load one within building premises and other adjacent to boundary wall, bearing capacity of soil is high near ground surface; (iii) for expansive soil, (iv) load of the structure is very high and soil adjacent to ground surface is of very low bearing capacity, (v) for port structure	1 × 5
(b)	Name two finishing works of plastering. On which situations do you recommend pointing works? Why curing is required for granolithic floor?	2×2+1
Q3.	Differentiate between: (i) Ferrule and cowl; (ii) Single stack system and one pipe system; (iii) Vent pipe and antisiphonage pipe; (iv) Gully trap and intercepting trap; (v) Bib cock and stop cock	2×5
Q4.	<p>Section-B (CO-2)</p> <p>Fill in the blanks</p> <p>i. The compressive strength recommended for 1st class brick in India is-----</p> <p>ii. The weight of one bag of good quality cement is-----kg</p> <p>iii. The inner most dead layer of wood is known as _____</p> <p>iv. The increase in volume of cement after hydration due to presence of free lime is defined as _____</p> <p>v. The increase in volume in moist sand is defined as _____</p> <p>vi. The cement sand ratio recommend for ceiling plastering is _____</p> <p>vii. The recommended metal alloy for construction of water pump or water tank in corrosion prone area is _____</p> <p>viii. Increase in alumina % in brick earth will result in _____ in brick.</p> <p>ix. _____ is commonly used as base material for wooden work.</p> <p>x. Separation of wood between annual rings is defined as _____</p>	1×10=10

[Turn over

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No. of Questions	Part-I (Full Marks 60)	Marks
Q5. (a) (b)	(i) With neat sketch define: queen closure, lapping in brick bond and rubble masonry work (ii) Why frog is provided in brick? Describe two tests to check the quality of sand	2×5
Q6.	How will you differentiate soft wood with hard wood? What is cambium layer? What is the importance of seasoning in timber? Define veneer. Give one example for each type of defect of timber (i) due to fungus attack; (ii) due to natural force, (iii) during conversion	2×3+ 1×4
Q7.	Write a short note on hydrolysis of cement. Which instrument is utilised to check the consistency of cement? Recommend the increase or decrease of the most appropriate Bouge's compound for the following cases compare to the ordinary Portland cement: (i) To reduce the heat of hydration; (ii) To accelerate the initial setting time; (iii) To accelerate the hardening of cement; (iv) To make cement resistant to chemical attack	5+ 1×5
Q8.	Write two advantages of flyash brick over conventional brick. What do you mean by light weight mortar? With example write the importance of vehicle in paint. in Differentiate between distemper and varnish. Write the full form: BFS; PPC	2×5

**B.E. CIVIL ENGINEERING SECOND YEAR FIRST SEMESTER – 2023
SUPPLEMENTARY EXAMINATION 2023
SUBJECT: BUILDING MATERIAL AND CONSTRUCTION (CE/PC/B/T/216)**

Time: 3 hours

Full Marks: 100

Instructions: Use Separate Answer scripts for each part.

Part – II (40 Marks)

ANSWER ANY THREE (3) QUESTIONS.

ONE (1) mark is reserved for neatness and to the point answer

Total 3x13=39 +1 =40.

Sl. No.	Question	CO	Marks
1	<p>a) Write down the guidelines along with a neat sketch regarding spaces to be left out as per KMC rule for a building while preparing a plan for sanctioning purpose. Road width is 6 m. The building will be of 3 storied.</p> <p>b) What is the full form of FAR? Why is it important for planning an apartment house ?</p> <p>c) A plot size of 20.50 m depth and 18.70 m front is available for construction of a 4 storied residential house . Road frontage is 6.50 m. How much FAR is to be available as per KMC rule? No garage is to be provided</p>	[CO1]	[2+2]
2	<p>a) What are rise and tread in staircase. What is the conventional relationship between them ? Give a dimension of above for comfortable vertical movement.</p> <p>b) A stairwell is of 6.2 m width and 4.3 m length. Draw a neat sketch for a dog-legged staircase. The following information are to be used.</p> <p>i) Waist slab thickness 140 mm.</p> <p>ii) Height of the room is 3300 mm.</p> <p>iii) Main reinforcement 12 mm ϕ dia. @ 125 c/c.</p> <p>iv) Distribution bars 8 mm @ 200 c/c.</p> <p>Show the reinforcement details for one flight only from first landing level. Assume other relevant dimension.</p>	[CO2]	[3]
3	<p>a) Why pedestals and dowel bars are provided in column foundation?</p> <p>b) Draw a neat sketch for a vertical longitudinal section of a column of 300 mm x 400 mm dimension up to foundation level which is 1200mm from the ground level. Provide 8 no. 16 mm dia ϕ as main bars in the column. The ties are 8 mm ϕ @ 200 c/c. Pedestal is to be provided at 300 mm level from GL..Clear cover 50 mm. Draw the cross section also.</p> <p>b) What are the differences between primary and secondary beams? Show how the loads are transferred to beams from slab panel. Why sometime doubly reinforced beams are employed? A beam having following dimensions:</p> <p>i) Section 250 mm x 350 mm.</p> <p>ii) Length 4 m.</p> <p>iii) Bar size— 2 nos.16 mm at top and 3 nos. 16 mm at bottom.</p> <p>iv) Stirrups 8 mm @ 150 c/c.</p> <p>Assume any other information.</p> <p>Draw a longitudinal and cross section of the above dimensioned beam.</p>	[CO3]	[4]
4	<p>a) Why reinforcements are placed in two directions for a two way slab? Is it applicable for slab in single spanning also? What is corner reinforcement? Is it necessary for all slab panels? How much length to be covered with torsion reinforcements for exterior panel with both sides discontinuous edge ?</p> <p>b) Draw a typical slab panel of 3.6 m x 4.2 m dimension supported by beams . The slab thickness</p>	[CO4]	[3]

is 120 mm. Draw also a typical section to show the section details of slab. Bars are spaced at 150 mm c/c and 200 mm c/c with 8 mm dia in two directions. The slab is of continuous type. Assume it as an interior panel.

c) Draw a typical lintel and chajja of 450 mm projection. Why these elements are employed?