

B.E.C.E. 2nd YEAR EXAMINATION, 2023
(1st Semester)

SUBJECT: Building Materials and Construction

Full Marks 100

Time: Three hours

Use a separate Answer-Script for each part

No. of Questions	Part I (Full Marks 60)	Marks																								
	<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> <p>Q1. (A) Match the most appropriate one:</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">Section A</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">Section B</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">(a)Libraries</td> <td style="padding: 2px;">(i)Assembly</td> </tr> <tr> <td style="padding: 2px;">(b) Hospital</td> <td style="padding: 2px;">(ii)Mercantile</td> </tr> <tr> <td style="padding: 2px;">(c) Day Care Centre</td> <td style="padding: 2px;">(iii) Institutional</td> </tr> <tr> <td style="padding: 2px;">(d) Mandir/Masjid/Church</td> <td style="padding: 2px;">(iv) Business</td> </tr> <tr> <td style="padding: 2px;">(e) Book Shop</td> <td style="padding: 2px;">(v) Educational</td> </tr> </tbody> </table> <p>(B) Match the most appropriate one:</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">Section A</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px;">Section B</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">(a) DPC</td> <td style="padding: 2px;">(i) Non load bearing wall</td> </tr> <tr> <td style="padding: 2px;">(b) BFS</td> <td style="padding: 2px;">(ii) Plinth level</td> </tr> <tr> <td style="padding: 2px;">(c) Stretcher bond</td> <td style="padding: 2px;">(iii) Foundation</td> </tr> <tr> <td style="padding: 2px;">(d) Header bond</td> <td style="padding: 2px;">(iv) Below and above kitchen platform</td> </tr> <tr> <td style="padding: 2px;">(e) Neat cement punning</td> <td style="padding: 2px;">(v) Lintel without chajja</td> </tr> </tbody> </table>	Section A	Section B	(a)Libraries	(i)Assembly	(b) Hospital	(ii)Mercantile	(c) Day Care Centre	(iii) Institutional	(d) Mandir/Masjid/Church	(iv) Business	(e) Book Shop	(v) Educational	Section A	Section B	(a) DPC	(i) Non load bearing wall	(b) BFS	(ii) Plinth level	(c) Stretcher bond	(iii) Foundation	(d) Header bond	(iv) Below and above kitchen platform	(e) Neat cement punning	(v) Lintel without chajja	<p>5×1+ 5×1=10</p>
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Q2.	Discuss the purpose of 1 st layer and third layer of plastering work. Where do you recommend lime putty and why? Which pointing work do you think most durable and least appearance and why? What is curing for granolithic floor? What is polishing for terrazzo floor?	2×5=10																								
Q3.	Which waste water plumbing system do you consider most economical as well as efficient for multistoried building and why? State the positions and explain the functions of following components of water and wastewater plumbing system: ferrule, soil pipe, gully trap, goose neck pipe	2×5=10																								
Q4.	<p>Section-B (CO-2)</p> <p>Fill in the Blanks:</p> <p>i. The nominal size of 1st class modular brick in India is-----</p> <p>ii. Scaffolding is basically _____</p> <p>iii. The volume of one bag of good quality cement is _____</p> <p>iv. The stage at which all the tree water has evaporated and the bound water has</p>	1×10=10																								

[Turn over

Time: Three hours

Use a separate Answer-Script for each part

No. of Questions	Part I (Full Marks 60)	Marks										
	<p>just begun to evaporate is referred to _____.</p> <p>v. Soundness of cement is measured using _____.</p> <p>vi. The cement sand ratio adopted for pointing work is _____</p> <p>vii. Monel metal is used _____</p> <p>viii. For good quality sand the silt and clay should not exceed _____ of the thickness of the sand during testing the quality of sand by adding water.</p> <p>ix. On an average _____% of water by weight is required for complete hydration of cement.</p> <p>x. Toughness is defined as _____ capacity of building materials</p>											
Q5.	<p>Mark the odd ones:</p> <p>(i) Knot/Honey combing/Burl/Twisted fibre</p> <p>(ii) Cup/split/twist/Rindgall</p> <p>(iii) Sal/Deodar/Chir/Fir</p> <p>(iv) Pith/Heart wood/ Sap wood/ Hard wood</p> <p>Which seasoning method do you think most efficient and why for timber? Which conversion method of timber do you think most efficient and why? Name two industrial timber products.</p>	<p>1×4+</p> <p>2×3=10</p>										
Q6.	<p>Find the odd one as accelerator of cement concrete: NaCl /NaSO₄/CaSO₄/MgSO₄</p> <p>Which constituents or physical properties do you suggest to be modified for ordinary Portland cement to obtain quick setting and rapid hardening cement? What are the importance of alumina and iron oxide in brick earth? If silica is increased in brick earth what may happen?</p>	<p>1+2×4</p> <p>+1=10</p>										
Q7.	<p>Write two properties of good mortar. As per IS 3812:1981 write two physical requirements of Fly Ash to be used as building material. Write two uses of fly ash as building materials. Write the full form: RCC, PCC, DPC and OPC</p>	<p>2×3</p> <p>+1×4=10</p>										
Q8.	<p>Write the importance of base, vehicle and thinner in paints. Match the most appropriate one:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Section A</th> <th style="text-align: center;">Section B</th> </tr> </thead> <tbody> <tr> <td>(a) Varnish</td> <td>(i) Wooden surface made up of mango tree</td> </tr> <tr> <td>(b) Red lead Oxide</td> <td>(ii) Plastered surface</td> </tr> <tr> <td>(c) White lead Oxide</td> <td>(iii) Wooden surface made up of teak tree</td> </tr> <tr> <td>(d) Distemper</td> <td>(iv) Metal surface</td> </tr> </tbody> </table>	Section A	Section B	(a) Varnish	(i) Wooden surface made up of mango tree	(b) Red lead Oxide	(ii) Plastered surface	(c) White lead Oxide	(iii) Wooden surface made up of teak tree	(d) Distemper	(iv) Metal surface	<p>2×3+1×4</p> <p>=10</p>
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BACHELOR OF CIVIL ENGINEERING EXAMINATION, 2023
IINDYEAR 1ST Semester Examination 2023
SUBJECT: BUILDING MATERIAL AND CONSTRUCTION

Full Marks 30/100

Time: ~~Two hours~~/Three hours/~~Four hours~~/Six hours

Use a separate Answer-Script for each part

No. of Questions	Part II(Marks:40)	Marks
	Answer Any Three (3)questions One mark is reserved for neatness and to the point answer Assume relevant data if not given. Draw neat sketch with proper labels and scale as necessary	
1) a)	What is the significance of building bye –laws? Discuss the steps to be followed for sanctioning a building project within a corporation area	4
1) b)	Discuss the various setback dimensions to be provided as per corporation rules with neat sketch.	5
1) c)	Why site plan and index plan are required to show in building plan ?	2
1) d)	Define built up area	2
2) a)	Describe the following terms with diagrams and KMC guidelines for each term i) Carpet area ii) FAR iii) garage space iv) circulation area	4x 2.5 =10
2) b)	Why road frontage and width of the road is important?	3
3) a)	With the help of a sketch explain slab spanning one direction and that in both directions.	4
3) b)	Draw a typical detail of a continuous slab of effective span of 4.3 m with necessary reinforcement details. Clear cover is 15mm.. Draw also top sectional view of one panel with same span in transverse direction. Both span and support to be shown	8
4) a)	What are the functions of chujja and lintel of a house? Where it is located? Draw a typical detail of lintel and chujja considering width of chujja is 500mm and lintel sections 250x200mm.Ude 10 mm bars for chujja.and 12mm for lintel.	6
4) b)	What are the purposes for providing primary and secondary beams in a building? Draw a typical R.C.C Beam of effective span of L m.Both Longitudinal and sections at span and support to be shown. Depth assume to be 350 mm.	2+5
5) a)	Draw a neat sketch of an isolated footing of size 1800mm x 1800mm with 65mm cover. Use 12mm dia bars with 125mm spacing.6 nos 16 mm dia bars are provided in columns. Size of column is 300x300mm.Show also dowel bars.The depth of footing slab varying 200 at edge and 400 at column face.Provide 50 mm offset at column face.	7
5) b)	What are the purposes of providing stair case? State the relation of tread and rise for a normal building. Draw a typical stair case of Dog legged type with one flight only. Assume effective span is5.3 m. Why nosing is employed in steps of a staircase ?	6