Ref No. --Ex/CE/T/124/2017

B.E.C.E. 1st YEAR EXAMINATION. 2017
(2nd Semester)
SUBJECT: Building Material and Construction

Time: Three hours | Full Marks 100

Use a separate Answer-Script for each part

No. of Questions	Part I (Full Marks 60)	Marks
	Answer question number 1(compulsory) and any four from the rest. All the drawings should be in pencil.	
Q1.	Differentiate between a. Two pipe and single stack waste water drainage system b. Rapid hardening cement and quick setting cement c. Isolated footing and combined footing d. Plastering and pointing works e. Soft wood and hard wood	4×5=20
Q2.a)	With neat sketches define: king closer, queen closer, frog and lap.	1.5×4
b)	Write two tests to check the quality of brick. What is bulking of sand?	2+2
Q3.a)	With a neat sketch describe well foundation.	7
b)	What is DPC? Where should we add that?	2+1
Q4.a)	With a neat sketch of a cross section of a tree define and mark pith, medullary rays and cambium layer.	2+1×3
b)	Write the name of two defects in timber. What is seasoning of timber?	2+3
Q5.	Write the importance of the following properties, the name of the instruments to test the properties and the standard values in relation to ordinary Portland cement: a. Consistency b. Setting time c. Soundness d. Compressive strength	2.5×4
Q6.	Describe the method of construction of a cement concrete floor clearly mentioning the method of subgrade preparation, ingredients mixing and their ratios, laying, finishing and curing.	2×5
Q7.	Write the positions and functions of the following components in connection with water and waste water plumbing system: ferrule, trap, goose neck, anti-syphonage pipe, cowl	2×5

B.E. CIVIL ENGINEERING EXAMINATION, 2017

(1st Year, 2nd Semester)

BUILDING MATERIAL & CONSTRUCTION

PART-II

Time: Three Hours

Full Marks 100
(40 marks for this part)

Use a separate Answer-Script for each part

[Students are allowed to carry pages containing tables for FAR calculation in the exam hall]

No. of questions	Part II (Answer all the questions.)	Marks (2X20=40)
1 (a)	Classify beams according to shape, support conditions and reinforcement.	[5]
(b)	Write down the criteria for calculating effective span of a simply supported and continuous beam or slab	[5]
(c)	Draw the reinforcement details of a RCC continuous beam with longitudinal section and two different cross-sections with the following data: Clear span of beams 3.5m each, (b) Beam Size= 250 x 400 mm (c) Support width= 200 mm, (d) Main Bars = 3-16 mm dia. bars with 1 bar bents up at 900mm from each face of the support, (e) Anchor/ Hanger bars = 2-20 mm dia. (f) Stirrups = 8mm dia. @ 160 c/c (Material: HYSD bar)	[10]
2 (a)	Classify different types of foundation with proper sketches	[4]
	OR	
	Write down the criteria for reinforcement requirement of a rectangular column with a proper sketch.	[4]
(b)	Draw the reinforcement details of an isolated footing for a column of size 300 x 300 mm. Others details are given below: Main reinforcement in column = 4 - 20mm dia. bars. Transverse Reinforcement = 6mm @ 150 c/c. Plan size of footing = 2.5 x 2.5 m. Footing depth at column face = 500 mm. Footing depth at edge = 150 mm. Depth of foundation = 1500 mm. Footing reinforcement = A mesh of 16 mm dia. @ 175c/c. (Grade of steel: Fe415)	[8]
	OR	

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BUILDING MATERIAL & CONSTRUCTION

PART-II

Time: Three Hours

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(40 marks for this part)

Use a separate Answer-Script for each part

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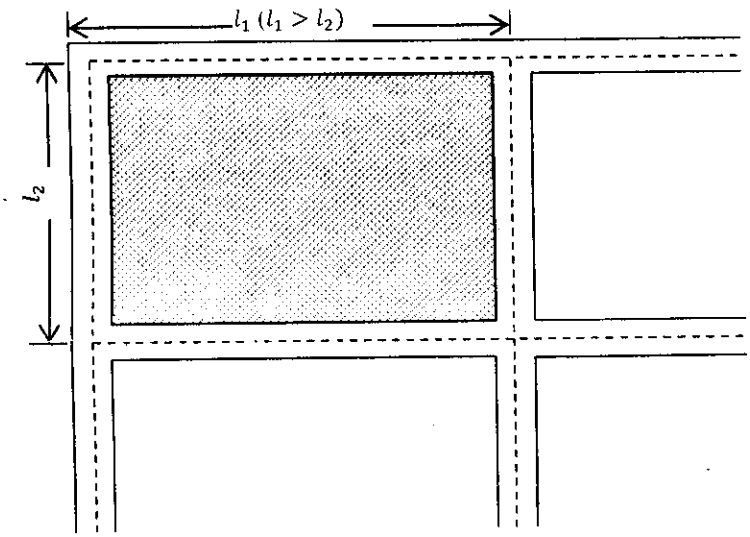
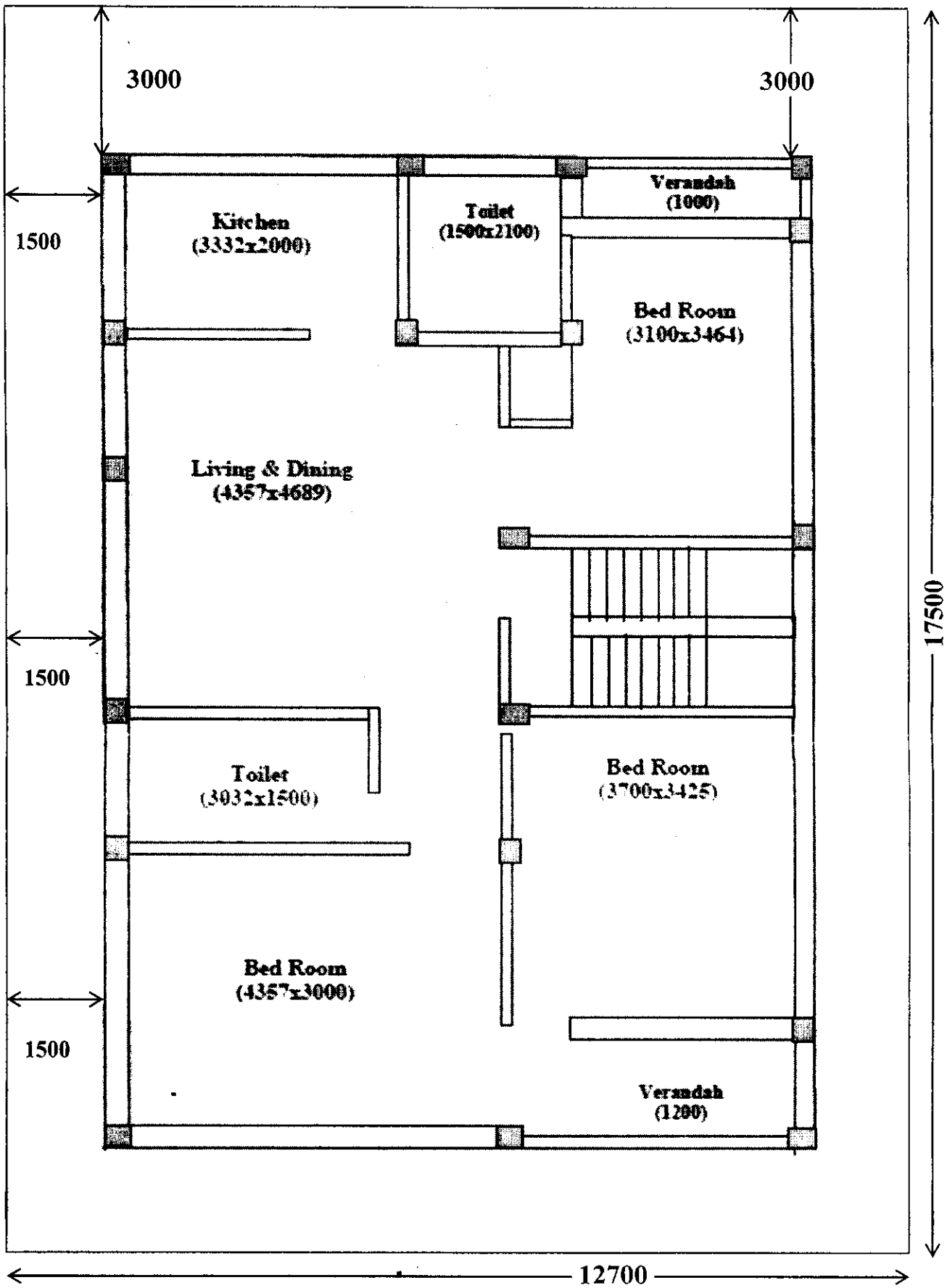
No. of questions	Part II (Answer all the questions.)	Marks (2X20=40)
	Define a two way slab. Show the typical top, bottom and corner reinforcement of a two way slab system for the exterior panel (marked in hash) as shown below (Fig.1):	[2+6]
	 **Fig. 1**	
(c)	A ground plus three storey building is to be constructed on a rectangular plot of land (12.7m x 17.5m) facing 7 m wide KMC roads. Typical floor plan of the building is given in Fig. 2. Check all the dimensions given in the plan of the building as per KMC building rules. Compute Floor Area Ratio (FAR) of the building. (Permissible FAR= 1.75, Assume Outer wall and partition wall thicknesses 250mm and 125 mm, respectively.)	[8]



[All dimensions are in mm]

Fig. 2