

B.E.C.E. 1st YEAR EXAMINATION, 2018
(2nd Semester)

SUBJECT: Building Material and Construction

Time: Three hours

Full Marks 100

Use a separate Answer-Script for each part

Part I (Full Marks 60)

No. of
Questions

Marks

Answer question number 1(compulsory) and any four from the rest. All the drawings should be in pencil.

Q1. a) Fill in the Blanks:

1×10=10

- i. The full name of the code which we follow in India for building materials and construction is _____
- ii. Hospital is classified under _____ type of buildings.
- iii. Setting time of cement is determined by _____ instrument.
- iv. The temporary construction of bamboos, pipes, planks etc. to provide space and platform for workers during building construction is known as _____
- v. The cement sand ratio adopted for pointing work is _____
- vi. On an average _____ % of water by weight is required for complete hydration of cement.
- vii. For deep foundation the breadth to depth ratio should be _____
- viii. The masonry work where un dressed or comparatively roughly dressed stones are used is termed as _____
- ix. The moisture content that is generally recommended for good timber is _____ %
- x. The small sized curved pipe that is inserted between the ferrule and service pipe is termed as _____

Q1. b) Differentiate between

2×5=10

- i. Header bond and stretcher bond
- ii. Flush pointing and rubbed pointing
- iii. Flexible damp proof course and rigid damp proof course
- iv. Ferrule and cowl
- v. Growth ring and pith

Q2.a) State conditions of using the following types of foundations: end bearing pile, frictional pile, compaction pile, under reamed pile, batter pile.

2×5=10

Or

Q2.b) Differentiate between load bearing wall and non-loadbearing wall stating function and thickness. Draw a neat section with proper dimension of the foundation of a load bearing wall and mark: brick flat soling, PCC layer, DPC layer, ground level and plinth level

3+7=10

Q3.a) Define the following properties and their standard values for 33 grade of ordinary Portland cement: Specific surface area, soundness, initial setting time, final setting time and

2×5=10

Time: Three hours

Full Marks 100

Use a separate Answer-Script for each part

Part I (Full Marks.60)

No. of
Questions

Q3.a) compressive strength

Mark

Or

Q3.b) Name and define two defects in timber. Name and define two diseases in timber. Name and explain two characteristics of good timber. Name and explain two mechanical properties of timber. Write the name of two timber products used for building construction.

2×5=

Q4.a) Name three layers of plaster work stating their average thickness and functions. What is curing of plaster? Name two defects of plaster work.

3×2+2=

Or

Q4.b) Describe the method of construction of a terrazzo floor clearly mentioning the method of subgrade preparation, ingredients mixing and their ratios, laying, curing and polishing.

2×5=

Q5.a) Differentiate between two pipe system and partially ventilated single stack system stating their advantages and disadvantages. Classify and explain different types of traps stating the basis of classification.

5+2+3=

Or

Q5.b) With a neat sketch explain the function of antisiphonage pipe. Name and explain three piping system in house connection for water supply stating their condition of installation and economics.

5×2=10

B.E. CIVIL ENGINEERING EXAMINATION, 2018(1st Year, 2nd Semester)**BUILDING MATERIAL & CONSTRUCTION****PART-II**

Time: Three Hours

Full Marks 100
(40 marks for this part)

Mark

Use a separate Answer-Script for each part

[Students are allowed to carry signed pages containing tables for FAR calculation]

| No. of questions | Part II (Answer all the questions.) | Marks (2X20=40) | | | | | | | | | |
|---------------------------------|---|-------------------------------------|----------|---------|---------------------------------|-------------------|-------------------------------------|----------------------|------------------------------------|---------------------------------|--|
| 2×5= | 1 (a) Classify beams according to shape, support conditions and reinforcement. | [4] | | | | | | | | | |
| 3×2+2= | (b) Write down the criteria for calculating effective span of a simply supported and continuous beam or slab | [6] | | | | | | | | | |
| 2×5=1 | (c) Draw the reinforcement details of a longitudinal section and two cross-sections, one near the support and other near the mid span, of a RCC continuous beam with two spans using the following data: Clear span of beams 3.2 m each, Beam Size= 250 x 400 mm Reinforcement: | [10] | | | | | | | | | |
| 5+2+3=1 | <table border="1"> <thead> <tr> <th>Support</th> <th>Mid Span</th> <th>Stirrup</th> </tr> </thead> <tbody> <tr> <td>2-20 Φ+ 1-16 Φ(top)</td> <td>2-20 Φ (top)</td> <td>2L-10 Φ@150c/c (near support)</td> </tr> <tr> <td>2-20 Φ(bottom)</td> <td>2-20 Φ+ 1-12 Φ(bottom)</td> <td>2L-10 Φ@250c/c (mid span)</td> </tr> </tbody> </table> | Support | Mid Span | Stirrup | 2-20 Φ + 1-16 Φ (top) | 2-20 Φ (top) | 2L-10 Φ @150c/c (near support) | 2-20 Φ (bottom) | 2-20 Φ + 1-12 Φ (bottom) | 2L-10 Φ @250c/c (mid span) | |
| Support | Mid Span | Stirrup | | | | | | | | | |
| 2-20 Φ + 1-16 Φ (top) | 2-20 Φ (top) | 2L-10 Φ @150c/c (near support) | | | | | | | | | |
| 2-20 Φ (bottom) | 2-20 Φ + 1-12 Φ (bottom) | 2L-10 Φ @250c/c (mid span) | | | | | | | | | |
| 5×2=1 | 2 (a) Draw the reinforcement details of an isolated footing for a column of size 250 x 400 mm. Others details are given below: Main reinforcement in column = 6 – 16 Φ bars. Transverse Reinforcement = 8 Φ @ 175 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 Φ @ 150c/c. | [10] | | | | | | | | | |
| | (b) 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. 1. 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.) | [10] | | | | | | | | | |

B.E. CIVIL ENGINEERING EXAMINATION, 2018(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 signed pages containing tables for FAR calculation]

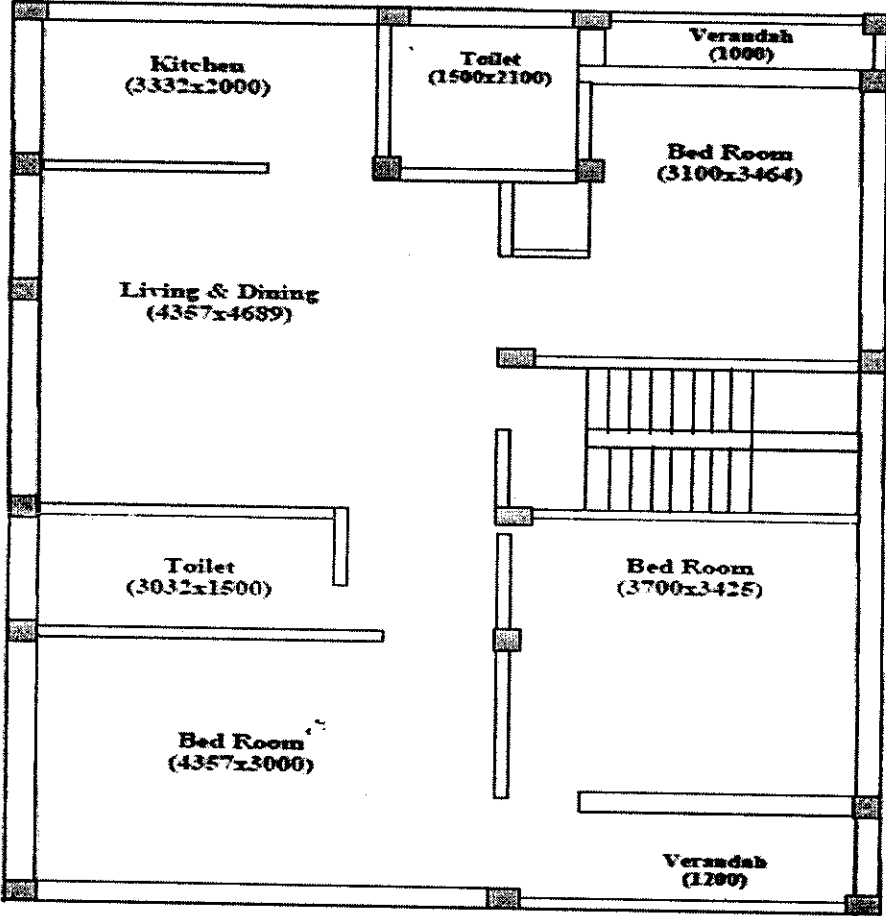
| No. of questions | Part II (Answer all the questions.) | Marks (2X20=40) |
|------------------|--|--------------------|
| |  <p>The floor plan shows a rectangular building layout. At the top left is a Kitchen (3332x2000). To its right is a Toilet (1500x2100). Further right is a Verandah (1000). Below the Kitchen is a large Living & Dining area (4357x4689). Below the Living & Dining area is another Toilet (3032x1500). At the bottom left is a Bed Room (4357x3000). In the center-right area, there is a staircase. To the right of the staircase is a Bed Room (3700x3425). At the top right is a Bed Room (3100x3464). At the bottom right is a Verandah (1200).</p> | |

Fig. 1