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**PRESIDENCY UNIVERSITY  
BENGALURU**

**SCHOOL OF ENGINEERING**

**MID TERM EXAMINATION**

**Winter Semester:** 2021 - 22

**Course Code:** CIV 2046

**Course Name:** Construction Technology and Processes

**Program & Sem:** B. Tech. (Civil Engineering) & II Sem

**Date:** 14 May 2022

**Time:** 10:00 AM – 11:30 AM

**Max Marks:** 50

**Weightage:** 25%

**Instructions:**

*(i) Read the all questions carefully and answer accordingly.*

**Part A [Memory Recall Questions]**

**Answer all the Questions. Each question carries FOUR marks.**

**(5Qx4M = 20M)**

1. Bring out any four major differences between a framed structure and a load bearing structure.  
(C.O.No.1) [Knowledge]
2. List the functional requirements of a door.  
(C.O.No.1) [Knowledge]
3. Define: (i) Formwork (ii) Scaffolding (iii) Centering and (iv) Falsework  
(C.O.No.1) [Knowledge]
4. List and explain any two types of shallow foundation  
(C.O.No.1) [Knowledge]

**Part B [Thought Provoking Questions]**

**Answer all the Questions. Each question carries SIX marks.**

**(3Qx6M = 18M)**

5. The structural engineer has suggested a column at the corner of a building very close to site boundary. Suggest a suitable type of foundation for this column such that the foundation is within the boundary of the site. Justify the reason for selecting it and also make a simple sketch of the foundation.  
[(C.O.No.1) [Comprehension]
6. You are put as the in charge for construction of a conventional hall (marriage hall). The architect wants to avoid beams in the construction to give an unhindered view. What type of slab or roof will you propose for the given hall, so that there is no need of providing a beam to support it?  
(C.O.No.1) [Comprehension]
7. A concrete road is to be laid in a city. If you are put as the in charge of construction, what would be the type of construction technique and the type of formwork you would propose for the construction of the road. Also, discuss the major advantages and drawbacks of this system  
(C.O.No.1) [Comprehension]

**Part C [Problem Solving Questions]**

**Answer the following Question. Each question carries TWELVE mark. (1Qx12M=12M)**

8. A dog legged staircase is to be provided for a residential building to provide access between two floors. Compute the number of steps and size of the staircase room required with the following data:

(i) Rise = 150mm

(ii) Tread = 250mm

(iii) No. of flights = 2

(iv) Width of each step = 1m

(v) Width of landing = 0.75m

(vi) Height between two floors = 3m

Sketch the plan of the staircase room clearly indicating the no. of steps and the various dimensions of the staircase (C.O.No.1) [Comprehension]



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**Part A [Memory Recall Questions]**

**Answer all the Questions. Each question carries FOUR marks.**

**(5Qx4M = 20M)**

1. Bring out any four major differences between a framed structure and a load bearing structure. (C.O.No.1) [Knowledge]
2. List the functional requirements of a door. (C.O.No.1) [Knowledge]
3. Define: (i) Formwork (ii) Scaffolding (iii) Centering and (iv) Falsework (C.O.No.1) [Knowledge]
4. List and explain any two types of shallow foundation (C.O.No.1) [Knowledge]

**Part B [Thought Provoking Questions]**

**Answer all the Questions. Each question carries SIX marks.**

**(3Qx6M = 18M)**

5. The structural engineer has suggested a column at the corner of a building very close to site boundary. Suggest a suitable type of foundation for this column such that the foundation is within the boundary of the site. Justify the reason for selecting it and also make a simple sketch of the foundation. [(C.O.No.1) [Comprehension]
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7. A concrete road is to be laid in a city. If you are put as the in charge of construction, what would be the type of construction technique and the type of formwork you would propose for the construction of the road. Also, discuss the major advantages and drawbacks of this system

**Part C [Problem Solving Questions]**

**Answer the following Question. Each question carries TWELVE mark. (1Qx12M=12M)**

8. A dog legged staircase is to be provided for a residential building to provide access between two floors. Compute the number of steps and size of the staircase room required with the following data:

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(C.O.No.1) [Comprehension]



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**PRESIDENCY UNIVERSITY  
BENGALURU**

**SCHOOL OF ENGINEERING**

**END TERM EXAMINATION**

**Winter Semester:** 2021 - 22

**Course Code:** CIV2046

**Course Name:** Construction Technology and Processes

**Program & Sem:** B. Tech. (CIV) – II Sem

**Date:** 7<sup>th</sup> July 2022

**Time:** 01:00 PM to 04:00 PM

**Max Marks:** 100

**Weightage:** 50%

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**Instructions:**

*(i) Read the all questions carefully and answer accordingly.*

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**Part A [Memory Recall Questions]**

**Answer all the Questions. Each question carries TWO marks.**

**(15Qx02M=30M)**

- The carpet area available in a load bearing structure as compared to a framed structure is  
a) More                      b) Less                      c) Same                      d) None of the above                      (C.O.No.1) [Knowledge]
- The ready-mix concrete which is partially mixed in the plant mixer and partially mixed in the truck is known as  
a) Central mixed concrete    b) Shrink mixed concrete  
c) Transit mixed concrete    d) None of the above                      (C.O.No.2) [Knowledge]
- The excavators used for mining and heavy-duty construction jobs is  
a) Crawler Excavators    b) Wheeled Excavators  
c) Dragline Excavators    d) None of the above                      (C.O.No.2) [Knowledge]
- The part of civil engineering which deals with purification of water and treatment of solid waste is called  
a) Transportation Engineering    b) Geotechnical engineering  
c) Environmental Engineering    d) Structural Engineering                      (C.O.No.1) [Knowledge]
- Examine the below statement and choose your response:  
Foundation is not required to be provided for walls in a framed structure  
a) False                      b) True                      c) Can't Say                      d) May be                      (C.O.No.1) [Knowledge]
- The largest blade type used in a bulldozer both in height and width is known as  
a) S-Blade                      b) U-Blade                      c) S-U Blade                      d) None of the above                      (C.O.No.2) [Knowledge]
- The type of window in which the shutter can swing horizontally or vertically is known as  
a) Double-hung windows    b) Fixed Window  
c) Pivoted Window    d) Single-hung windows                      (C.O.No.1) [Knowledge]
- In a doglegged staircase the turn between two flights is usually.  
a) 90°                      b) 180°                      c) 270°                      d) None of the above                      (C.O.No.1) [Knowledge]

9. In case of load bearing structures, the slabs rest on  
 a) Beam      b) Column      c) Walls      d) None of the above      (C.O.No.1) [Knowledge]
10. Name of the foundation provided for wall bearing structure is  
 a) Mat foundation      b) Combined foundation  
 c) Isolated foundation      d) Strip foundation      (C.O.No.1) [Knowledge]
11. If a building secures 85 points under LEED rating, the building is certified as  
 a) LEED Silver      b) LEED Platinum      c) LEED Gold      d) LEED Certified  
 (C.O.No.3) [Knowledge]
12. The design of roads, rail lines, signals, mass transit systems etc. is dealt in  
 a) Geotechnical engineering      b) Structural engineering  
 c) Transportation Engineering      d) Surveying      (C.O.No.1) [Knowledge]
13. A structure is to be proposed in Kutch in Gujarat which is an earthquake prone zone. What type of structure would you propose for the structure?  
 a) Load Bearing Structure      b) Framed Structure      c) A) or B)      d) All of the above  
 (C.O.No.1) [Knowledge]
14. A temporary structure or mould for the support of concrete while it is setting and gaining sufficient strength to be self-supporting is known as  
 a) Formwork      b) Falsework      c) Centering      d) Scaffolding      (C.O.No.1) [Knowledge]
15. The part of civil engineering which deals with design of slabs, beams, columns, footings etc. is called as  
 a) Geotechnical engineering      b) Structural engineering  
 c) Transportation Engineering      d) Surveying      (C.O.No.1) [Knowledge]

### **Part B [Thought Provoking Questions]**

**Answer all the Questions. Each question carries TEN marks. (04Qx10M=40M)**

16. A client approaches you to construct a residential building. The client wishes to make the building a green building and would like to obtain LEED certification for the building. List any 5 features to be incorporated in the building to obtain LEED Platinum Certification. (C.O.No.3) [Knowledge]
17. Automation in the construction industry is expected to grow up to 30% within the next few years. In 2020 funding for construction-related technology (Contech) startups hit \$1.3B, a 56% YoY increase from 2019 and investments in Contech continued at the same pace as in 2021. A global survey of 1,900 construction industry CEOs and MDs, commissioned by ABB in 2021 reveals that more than four out of five (81%) of the world's construction companies are planning to introduce robots into their operations during the coming decade. Reflect on the advantages of automation in construction and briefly explain any three applications of Robots in construction. (C.O.No.4) [Knowledge]
18. A residential building is proposed in a small site of 20' x 30'. Since, the size of the site is limited, the client does not want to waste space for a staircase. As the engineer in-charge of the project you are asked to provide a staircase which will use the least amount of ground space. What type of staircase would you propose for the given situation? Justify the reasons for your choice

of staircase. What material is this type of staircase usually made up of? Also, briefly describe the features of the staircase type proposed. (C.O.No.1) [Comprehension]

19. Formwork represents a significant portion of any concrete construction project. It accounts for 35-50% of the total concrete structure cost. The quality of the structure is much dependent on the quality of formwork construction. Explain the requirements of Formwork for construction. Also, briefly compare any two types of formworks based on material type. (C.O.No.1) [Comprehension]

### **Part C [Problem Solving Questions]**

**Answer both the Questions. Each question carries FIFTEEN marks. (02Qx15M=30M)**

20. a) Our University would like to construct a new computer laboratory block of 5 floors by September before the commencement of next academic year. What method of construction would you propose so that the construction is completed fast or in a short duration? Justify your selection by reflecting the advantages of the method selected. Also, list the disadvantages/drawbacks of the method. [10 Marks] (C.O.No.4) [Knowledge]
- b) At the site of the proposed laboratory block, the soil is found to be soft. It is suspected that there could be possibility of differential settlement. What type of foundation would you propose? Sketch a typical plan and elevation of the type of foundation selected. [05 Marks] (C.O.No.1) [Comprehension]
21. a) Heavy material is to be moved in a dense and irregular terrain. Which type of bulldozer would you employ in this situation? What type of blade would you use for the bulldozer? Explain briefly the features of the bulldozer as well as the blade selected? [10 Marks] (C.O.No.2) [Comprehension]
- b) Classify the different types of excavators and explain briefly any two. [05 Marks] (C.O.No.2) [Knowledge]