

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE(MINOR)- SEMESTER-VI EXAMINATION – SUMMER 2025

**Subject Code:116AC01**

**Date:10-06-2025**

**Subject Name:Design of Formwork**

**Time:10:30 AM TO 01:00 PM**

**Total Marks:70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

|     |                                                                                                                                                                                                                                                                                                                                                                                                                              | MARKS |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Q.1 | (a) What are the requirements of good formwork                                                                                                                                                                                                                                                                                                                                                                               | 03    |
|     | (b) Write about selection of various formwork based on Structure.                                                                                                                                                                                                                                                                                                                                                            | 04    |
|     | (c) Enlist various materials used in formwork. Explain timber in detail.                                                                                                                                                                                                                                                                                                                                                     | 07    |
| Q.2 | (a) State various construction method used for formwork                                                                                                                                                                                                                                                                                                                                                                      | 03    |
|     | (b) Discuss criteria's for considering cost of formwork for different structure                                                                                                                                                                                                                                                                                                                                              | 04    |
|     | (c) For the data given below, compute the lateral pressure on formwork as per CIRIA formula and also draw the design pressure distribution.<br>D (weight density of concrete) =25 kN/m <sup>3</sup><br>C1 ( shape constant) =1<br>R, rate of rise =1 m/h<br>C2, concrete constituent factor = 0.3<br>Temperature of concrete (°C) = 25<br>Temperature co-efficient = 0.77<br>H, form height = 6.15 m<br>h, pour height = 6 m | 07    |
|     | <b>OR</b>                                                                                                                                                                                                                                                                                                                                                                                                                    |       |
|     | (c) Draw the design pressure distribution for a wall of thickness 10.5 m, length of 10 m and height of 6 m. It is proposed to use OPC concrete with retarder. The concrete temperature at the time of placing is 10°C. The concrete pour speed is 15 m <sup>3</sup> per hour.                                                                                                                                                | 07    |
| Q.3 | (a) What precautions should be taken for design of special structures?                                                                                                                                                                                                                                                                                                                                                       | 03    |
|     | (b) Write a note on heavy duty forms.                                                                                                                                                                                                                                                                                                                                                                                        | 04    |
|     | (c) Explain various steps in the design of formwork for foundations.                                                                                                                                                                                                                                                                                                                                                         | 07    |
|     | <b>OR</b>                                                                                                                                                                                                                                                                                                                                                                                                                    |       |
| Q.3 | (a) List various loads to be considered for designing of formwork?                                                                                                                                                                                                                                                                                                                                                           | 03    |
|     | (b) Differentiate between the formwork of beams and slabs                                                                                                                                                                                                                                                                                                                                                                    | 04    |
|     | (c) Write a short note on slip formwork.                                                                                                                                                                                                                                                                                                                                                                                     | 07    |
| Q.4 | (a) What is the use of table formwork in construction industry?                                                                                                                                                                                                                                                                                                                                                              | 03    |
|     | (b) What are the disadvantages of tunnel formwork?                                                                                                                                                                                                                                                                                                                                                                           | 04    |
|     | (c) Explain how formwork helps in development of precast construction technology.                                                                                                                                                                                                                                                                                                                                            | 07    |

**OR**

- Q.4** (a) Write about the application of slip formwork in construction industry **03**  
(b) What are the advantages of slip formwork? **04**  
(c) List sequence of steps for the construction process? Explain each of them. **07**

- Q.5** (a) What are the causes of failure of formwork? **03**  
(b) Write about formwork management issues. Also explain pre award formwork management in detail. **04**  
(c) What safety precautions are used in formwork and false work? Explain any one in detail. **07**

**OR**

- Q.5** (a) What are the ways to avoid formwork failure **03**  
(b) What do you understand about the formwork economy? How it can be achieved **04**  
(c) Write a short note on reuse and recycling of formwork material. **07**

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