

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- April-2019

M.Tech. (CM) IInd Semester

COURSE CODE: 10M11CE213

MAX. MARKS: 25

COURSE NAME: Construction Cost Analysis

COURSE CREDITS: 03

MAX. TIME: 1.5 Hour

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q1. The question relates to the construction of a reinforced concrete basement (size 50 m x 30 m x 10 m deep) built below ground on a green field site. E326 Excavation for foundations, material other than topsoil, rock or artificial hard material maximum depth 5–10 m is 15,000 m³. Approach: Consider two alternative construction methods.

Method A – open cut with battered sides (assume total volume of excavation equals 2.5 x net volume) – the open-cut method will require additional working space to allow for erect and strip shutter to the outer face; Method B – steel cofferdam built around net perimeter of basement.

Assume the following net costs (based on quotations from subcontractors): Excavation open cut – INR 3 per m³; Disposal on site – INR 1 per m³; Bring back and fill – INR 1 per m³; Excavation restricted within cofferdam – INR 8 per m³; Sheet piling (assume 15 m deep) – INR 20 per m³; Mobilization/demobilization-piling rig – INR 5,000 each way; Extract cofferdam piling – INR 5,000; Site overheads – 10%, head office overheads and profit – 12%. Find out contractor's estimator as required to calculate an appropriate BofQ rate. (9)

Q2. A contractor has inserted a rate of INR 28 per m² for formwork to a retaining wall. The quantity was 576 m² based on 24 bays 8 m long by 3 m high.

The engineer issued a variation order reducing the retaining wall to 16 bays, i.e. 384 m² after the shutter had been ordered but before the work commenced on construction of the wall.

Calculate a revised rate for this varied work marking necessary assumptions (8% site overheads/ 10% head office overheads, profit and risk). The contractor has informed the engineer that in pricing the item he allowed for a purpose-built steel shutter 8 m X 3 m at a capital cost of INR 6000. (9)

Q3. Write detailed notes on "Pre-contract cost management" & "Payment systems". (7)