

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
SECOND SEMESTER 2017 – 2018

CONSTRUCTION MANAGEMENT – Comprehensive Exam

Course No: CE G527

Date: 10-05-2018 [3 PM start]

Duration: 180 Mins (Closed book)

Max. Marks: 70

I: Choose the best answers:

[15 x 1=15]

1. Conciliators should not focus on the common interests of the parties of the projects (True/False)
2. Mobilization cost includes those costs that are necessary for the movement and communication of only equipments and not personnel (True/False)
3. It is very easy to reduce the cost at the construction stage than at the planning stage (True/False)
4. Reportable accidents are the ones in which the worker is unable to report for more than 48 hours (True/False)
5. Hotels will qualify for classification as heritage hotels provided a minimum of _____ % of floor area was built before _____ and no substantial change has been made in the façade
6. The technical purpose of setback in buildings is to ensure _____
7. As per the Arbitration & Conciliation Act, a person of any nationality may be an arbitrator if the parties have agreed (True/False)
8. Abnormally low bids are those that vary from the estimated rates by more than 25 percent even after updating the scheduled rates to match the prevailing cost index (True/False)
9. Open tenders are normally adopted for big projects (True/False)
10. Secured advance is always lower than that of mobilization advance (True/False)
11. The factories act is generally applicable to all the factories employing _____ (10, 50, 500, 5000) or more workers and using any type of power.
12. Bulk ordering is always for “A” group of materials (True/False)
13. In estimating terms, “a deduction that is not totally not within a measured area is known as _____”
14. Change orders are part of every construction contract and completely changes the scope of the work (True/False)
15. The rectangular pier attached to a wall for the purpose of strengthening the wall is known as _____.

II: Short answers

[15 x 2 = 30]

- 1) What is the difference between building construction and infrastructure construction?
- 2) Give a typical example where the break-even cost analysis is absolutely necessary.
- 3) Why bulking of sand is necessary to be evaluated at the construction site?
- 4) What is the single greatest advantage of No-aggregate concrete?
- 5) What is meant by elemental cost estimation? What is over-billing?
- 6) What is the difference between slip form of construction and jump form of construction? Explain with an example.
- 7) What are the difference between civil plans, architectural plans, and structural plans?
- 8) What is meant by revocation of tender?
- 9) Define escrow accounts. What is the significant advantage of introduction of real estate regulation bill?
- 10) What is meant by non-arbitrality? What is meant by ‘seat’ of arbitration?

- 11) What is the difference between fair rent and virtual rent?
- 12) What is construction cess?
- 13) What is guniting and where is it used?
- 14) What is project waste index? What is the basic philosophy behind the lean construction process?
- 15) Explain in brief about Quality bound project and safety bound project.

III: Long answers:

[35 marks]

- 1) Consider a masonry wall construction activity with planned and actual performance as follows.

	Planned performance	Actual performance
Scope of masonry work	1000 sq. m	1000 sq. m
Crew size	5 men	5 men
Construction time	15 days	20 days

Estimate the labor performance efficiency.

[5]

- 2) The concrete placing team has been assigned the task of laying ready-mix concrete for the foundation of the multistoried building. The foundation essentially consists of four isolated footing of 50 cubic metres each.

[10]

The standard and actual cost data for concreting the four isolated footings are as follows.

Cost category	Standard cost (in Rs.)	Actual cost (in Rs.)
Direct materials	10,00,000	---
Direct labor	50,000	80,000
Direct equipment	20,000	25,000

It so happens that the actual concrete used is 180 cubic metres instead of estimated (standard) 210 cubic metres. The concrete cost can be taken as 5000 cubic metres (at the time of pricing) and escalated to 5500 cubic metres (at the time of placing). The transportation cost is already included in the concrete cost.

At the time of planning standard costs for placing concrete, the concrete price for delivery at the site of work.

Determine the direct cost variance, direct materials cost variance, materials price variance and materials usage variance.

- 3) For the construction of factory shed, the following work package is adopted.

[12]

Work package	Duration (in months)	Budgeted cost
1- 2 (Engineering design)	2 months	1,00,000
2-3 (Steel supply and fabrication)	2 months	10,00,000
(2-4) Engineering Design	3 month	1,00,000
(3-5) Steel work erection	3 months	3,00,000

(4-5) Civil work	5 months	5,00,000
(5-6) Finishing work	4 months	2,00,000

The physical progress of the project is reviewed after 6 months and the following reporting is done.

Completed activity	Month started	Month completed	Actual duration	Actual costs incurred
1-2	0	2	2	1,00,000
2-3	2	4	2	8,00,000

Activity in progress	Month started	Duration up to date	Estimated time of completion (from now)	Actual costs incurred
2-4	4	2	1	50,000
3-5	5	1	2	1,00,000
4-5	Not yet started	----	5 months	-----
5-6	Not yet started	----	4 months	-----

Determine the necessary variances (performance variance, efficiency variance) and indicate the whether project suffers from cost over-run and time over-run.

What are the remedial measures to be taken incase required?

- 4) The fixed cost for the year 2016-2017 is Rs. 60,000. The estimated sales for this period are valued as Rs. 2,00,000. The variable cost per unit made is Rs. 5 and if each unit sells at Rs. 25 and the number of units involved coincides with the expected volume of output. Construct break even chart and determine the (i) break-even point and (ii) profit earned at the turnover of Rs. 1,25,000, (iii) margin of safety.

[8]