

FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI
SCHOOL OF ENGINEERING AND ENGINEERING TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING
2019/2020 RAIN SEMESTER EXAMINATION

Course: CIE 512 (Construction Management and Economics for Civil Engineers)

Date: 21st June, 2021

Time allowed: 3 hours

Instructions: Answer 5 Questions, at least one from each section. All questions carry equal marks

SECTION A

Question A1

- (a) Briefly discuss the disadvantages of the bar chart in projects scheduling and why the bar chart is still very popular in spite of these disadvantages. (4 marks)
- (b) What are the following terms as used in network scheduling (i) Zero slack convention (ii) Early start schedule (iii) Total slack (iv) Critical path. (4 marks)
- (c) The durations and precedence relationships of the 10 activities making up a project are as given in Table QA1. Draw the network diagram and carry out Forward and Backward passes. Show the critical path and the total floats on your diagram. What is the minimum completion time of the project? 12 (12 marks)

Table QA1

Activity	Immediate predecessor activity	Duration (Days)
A	NONE	4
B	A	15
C	A	12
D	C	20
E	B	15
F	C	6
G	E	10
H	F, G	8
J	D	10
K	J, H	15
L	G	15
M	K, L	5

Question A2

- (a) You have been appointed by the Vice Chancellor as the project manager for the construction of an Olympic size swimming pool in FUTO. Write an "Invitation to Tender" for interested construction companies to apply for the construction of the swimming pool. Assume post qualification of tenderers. (12 marks)
- (b) Explain the conditions that may lead to the rejection of a bid (4 marks)
- (c) Explain the difference between Pre-qualification and Post-qualification of bidders, stating when they are applied (4 marks)

SECTION B (Question B1 is compulsory).

- 1(a) Discuss work measurement, state the where data from such measurement are applied? (5 marks)
- (b) Write an informative note on standard rating? For an observed time of 0.95 minute given an observed rating of 99, calculate the basic or normal time? (4 marks)
- (c) A civil engineering project involving the production and casting of mass concrete has in its program of activities the production of 6m³ mobile concrete mixer. The basic time for the task is estimated at five minutes (5minutes) per m³ based on an expected rating of 100 and 65% is to be added for relaxation allowance and contingences. At the end of the fifth working day, 450m³ of concrete had been produced and cast. If an eight-hour day were worked: What level of performance by the machine and the operator would have been achieved? Comment on the level of performance you computed. What factors would affect/influence the observed time but not necessarily the rating? (6 marks)
- (d) Discuss standard performance? (5 marks)

20m

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Question B2

- (a) What are the primary areas of concern in facility layout and location? (4 marks)
- (b) What are the issues of concern in materials storage and handling aimed at reducing waste? (5 marks)
- (c) In activity sampling (field count), distinguish between active and non-active operatives? (5 marks)
- (d) Discuss activity sampling? (6 marks)

Question B3

- ✓(a) Discuss work study and state three steps involved in work study? (5 marks)
- ✓(b) Discuss method study, state the areas of application of method study? (5 marks)
- (c) What are the situations that could give rise to method study? (4 marks)
- (d) Discuss the works of ergonomics when concerned with separate machines and environment? (6 marks)
When concerned with man working in a large environment, discuss the works of ergonomist?
In which areas can the knowledge of ergonomists be applied?

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SECTION C

Question C1

- ✓(a) Write a short note on personnel management, stating five functions of the Personnel management department. (6 marks)
- ✓(b) Discuss four methods of Job evaluation. (8 marks)
- ✓(c) What is incentive scheme, discuss the types of incentive schemes? (6 marks)

Question C2

- (a) Discuss four important approaches to material procurement. (8 marks)
- ✓(b) What is inventory control management? State the objectives of inventory control? (4 marks)
- (c) Discuss the following (i) Manpower planning (ii) Recruitment (iii) Selection (iv) Placement (8 marks)

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