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Daffodil International University

B. Sc. in Civil Engineering

Midterm Examination, Summer - 2026

Course Code: CE 401	Course Title: Project Planning and Construction Management	
Section: A, B	Level-Term: 4-2	Teacher's Initial: SAB
Full Marks: 25	Date: July 4, 2026	Time: 1.5 Hours

Note: There are four sets of questions in total. Answer all of them. Right hand margin indicates full marks. Assume any reasonable missing value.

1. (a) Explain the basic principle of the following construction contracts: *[CO1, C2]* [03]

   i) Lump sum contract, ii) Unit price contract, iii) Cost plus contract

   (b) Explain the basic principle of the following project delivery methods: *[CO1, C2]* [03]

   i) Design-bid-build, ii) Design-build, iii) Construction Management at Risk

2. Construct the Bar Chart for the following table: *[CO2, C3]* [03]

Activity	Description	Duration (weeks)
A	Site Selection and Survey	4
B	Design	6
C	Preparation of Drawings	3
D	Preparation of Specifications and Tender Documents	2
E	Tendering Process	4
F	Selection of Contractor	1
G	Award of Work Order	1

Table:1 Finalizations of Designs and work order for a Building project

The activity breakdown for the project is as follows:

- A and B can be started together
- C cannot start until A is completed
- D can only start after both A and B are completed
- E cannot start until both C and D are completed
- F succeeds E
- G starts after the completion of F

3. (a) The following figure shows the network for a construction project, with expected time estimate of each activity marked. Using **PERT** method, compute- *[CO3, C3]* [06]

   i) Critical path and its standard deviation
   ii) Probability of completion of project in 52 days
   iii) Time duration that will provide 78% probability of its completion in time

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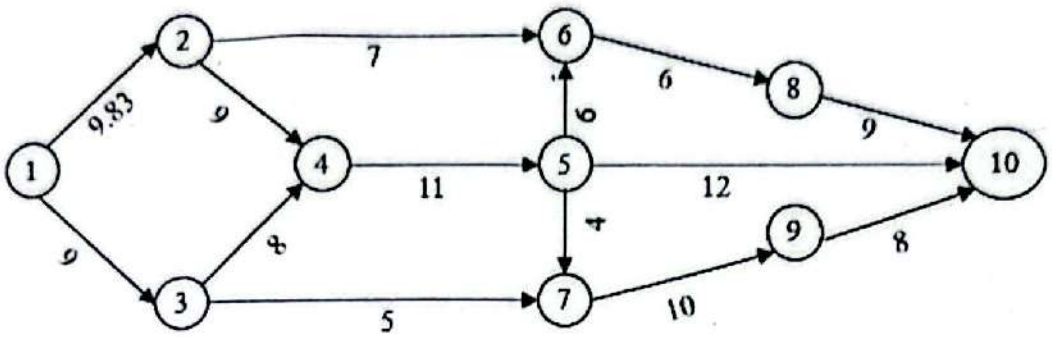


Figure-1

STANDARD NORMAL DISTRIBUTION: Table Values Represent AREA to the LEFT of the Z score.

Z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.50000	.50399	.50798	.51197	.51595	.51994	.52392	.52790	.53188	.53586
0.1	.53983	.54380	.54776	.55172	.55567	.55962	.56356	.56749	.57142	.57535
0.2	.57926	.58317	.58706	.59095	.59483	.59871	.60257	.60642	.61026	.61409
0.3	.61791	.62172	.62552	.62930	.63307	.63683	.64058	.64431	.64803	.65173
0.4	.65542	.65910	.66276	.66640	.67003	.67364	.67724	.68082	.68439	.68793
0.5	.69146	.69497	.69847	.70194	.70540	.70884	.71226	.71566	.71904	.72240
0.6	.72575	.72907	.73237	.73565	.73891	.74215	.74537	.74857	.75175	.75490
0.7	.75804	.76115	.76424	.76730	.77035	.77337	.77637	.77935	.78230	.78524
0.8	.78814	.79103	.79389	.79673	.79955	.80234	.80511	.80785	.81057	.81327
0.9	.81594	.81859	.82121	.82381	.82639	.82894	.83147	.83398	.83646	.83891

(b) The following figure shows the network for a construction project, with expected time estimate of each activity marked. Using **CPM** method, compute- [06] *[CO3, C3]*

i) The event time of each activity
ii) Activity time (EST, EFT, LFT, LST)
iii) Total float of each activity and critical path

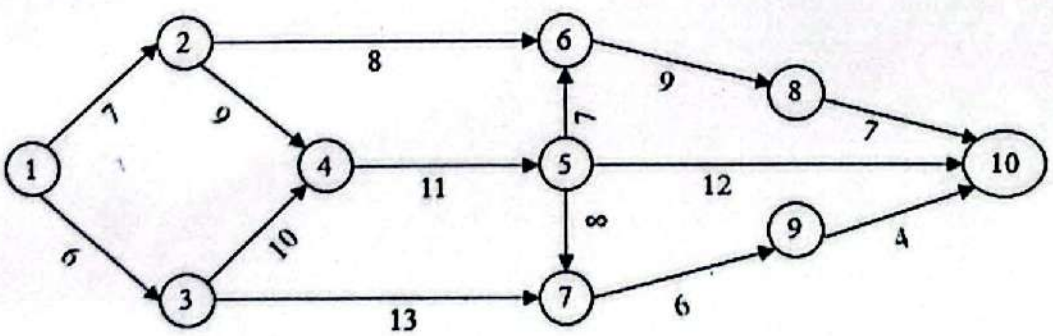


Figure-2

4. Describe the following shortcomings/limitations of bar charts and their remedial measures with diagrams. *[CO5, C2]* [04]

i) Lack of degree of details
ii) Review of project progress