L-4/T-1/WRE Date: 16/01/2021

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY

L-4/T-1-B.Sc. Engineering Examinations, January 2020

Sub: **WRE-415** (Water Resources Planning and Construction Management)

Full Marks: 180 Time: 2 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

(The figures in the margin indicate full marks.)

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. **(a)** Write down the various stages of Project Planning process. (15)

(b). List the key activities of Institutional responsibilities and arrangements in the Planning processes in Bangladesh. (15)

2. **(a)** Discuss Water Resources Management in Small Scale Water Resources Sector project. (15)

(b) Discuss briefly the various stages of implementation program of a water resources project. (15)

3.**(a)** What do mean by water resources system? Give an example, with sketches, of a good river basin system with its various interdependent components. (15)

(b) Discuss "techniques and tools" used in Water Resources Assessments (WRA). (15)

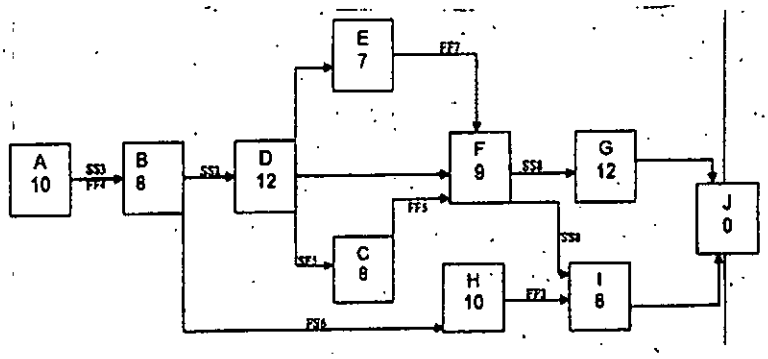
4 (a) What are the methods available for Project formulations? Discuss one of the methods. (15)

(b) Draw a flow chart showing various phases of National IWRM planning and implementation. (15)

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. **(a)** For the following PDM network diagram calculate the project duration, critical path, critical activities. **(24)**



(b) Write down the general flow diagram showing the Construction Planning process. (6)

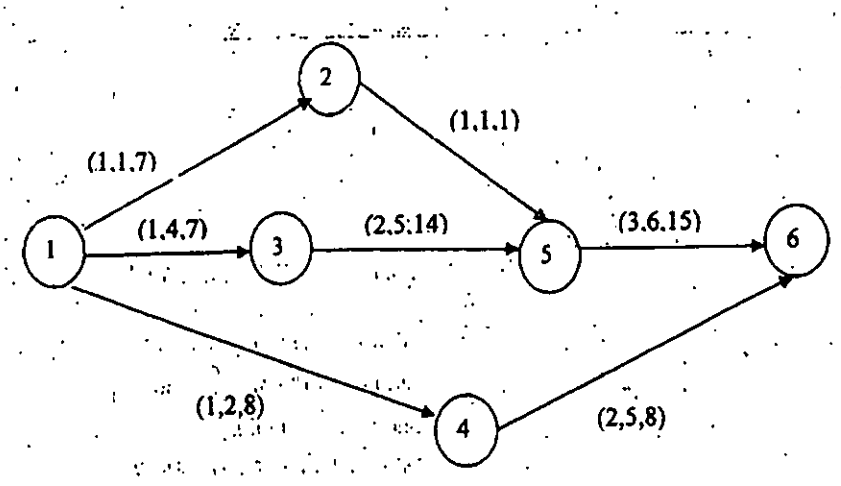
6. Write down the Responsibilities of different Teams to a Project. Explain with an example as a Water Resources Engineer. (30)

7. (a) A small single story commercial building is to be constructed on the site of an existing old structure. The exterior and interior walls are of concrete blocks, the roof is erected from steel members covered with rigid insulation and build up roofing. The ceiling is of suspended tile. The floor is a concrete slab with asphalt finish. Interior finish on all walls is paint. The project has been broken down in to 18 activities with estimated construction time shown below. Specify the predecessors of each activity. Note that the activities are not given in any order. (13)

Activity	Estimated Duration (Days)	Activity	Estimated Duration (Days)
Underground services (water supply etc.)	1	Rough plumbing	3
Exterior walls	6	Rough electrical	3
Foundations	3	Rough carpentry	2
Demolition	2	Finish plumbing	5
Interior walls	3	Finish electrical	3
Floor slab	3	Finish carpentry	4
Floor finishing	2	Ceiling	4
Roof Steel	3	Windows	1
Roof Finishing	3	paint	1

(b) Briefly explain the function of construction management. (17)

8. Three time estimates: the optimistic time, the most likely time, the pessimistic time (t_o, t_m, t_p) of a project are given in weeks in the diagram for each activity.



(i) Determine the critical path and the expected time required for the completion of the project.

(ii) Calculate the probability of completing the project in 20 weeks.

(iii) Calculate the project completion time assuming the probability to be 90%. (30)

Z	0.00	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00
Probability	50	59.87	69.15	77.77	85.2	88.1	92.7	95.2	97.12