JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION- OCTOBER 2023
B.Tech 5th Semester (CIVIL)

COURSE CODE: 18B1WCE531 (3) MAX. MARKS: 25
COURSE NAME: Construction Technology and Management
COURSE INSTRUCTORS: Mr. KAUSHAL KUMAR MAX. TIME: 1.5 Hrs

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

Q 1. A father finds that his teenage daughter uses the telephone. She takes no less than 5 minutes for a call and sometimes as much as an hour. Fifteen minutes calls are more frequent than any other duration calls. If daughter's phone calls were a PERT project activity, then

a) What will be the phone call's expected duration?
b) What estimate would you give for its variance?

In scheduling the project, how much time would you allocate for the phone calls?

CO-1, CO-2 **[3Marks]**

Q 2. What are the Benefits of the Critical Path Method, Also Discuss about its Limitations and drawbacks? ***CO-3*** **[2Marks]**

Q 3. A project consist of seven activities P, Q, R, S, X, Y and Z. Their sequence and duration is shown in following table: ***CO-1, CO-2, CO-3*** **[2+3+ 2 = 7 Marks]**

Activity	*Duration in weeks*			*Immediate Predecessor*
	Pessimistic	*Optimistic*	*Most likely*	
P	18	9	12	-
Q	17	6	10	P
R	8	4	6	P
S	26	14	17	Q, R
X	21	10	14	Q
Y	14	8	11	S, X
Z	10	6	8	S

i. Draw the network Diagram.
ii. Show the critical path and determine the expected completion time.
iii. What is the probability of the project being completed in 60 days? Probability may be linearly interpolated from the table of probability factors (Z).

Z	1.0	1.5	2.0	2.5	3.0
Probability	84.13	93.32	97.72	99.38	99.87

Q 4. Draw the network for the following project and indicate the event times and Critical Path. Also find the Project duration and Total Float for all activities:

Activity	*Duration (Days)*	*Preceding Activities*
A	5	-
B	3	A
C	3	A, B, F
D	7	C, L
E	7	D, G, H
F	2	A
G	2	F
H	3	G, L
K	6	A
L	3	F, K

CO-1, CO-2, CO-3 **[3+3+ 2 = 8 Marks]**

Q 5. A small CPM network has the following data given in the table below. Establish the optimum schedule for (i) minimum cost, and (ii) minimum duration. Indirect cost is ***Rs 3000*** per day and normal total cost is ***Rs 2,00,000*** only. Above results must be clearly shown in Graph paper along with **total cost curve** on it. ***CO-2, CO-3, CO-4*** **[2+2+2 = 6 Marks]**

Activity	*Following*	*Preceding*	*Duration, days*		*Time cost curve slope in Rs/day*
			Normal	*Minimum*	
A	D & E	-	8	6	2000
B	F	-	12	8	1500
C	-	-	20	19	2500
D	-	A	10	9	3000
E	F	A	5	3	1000
F	-	B & E	10	9	2200

CO-3, CO-4 **[5 Marks]**

----------End of Paper----------