Reg. No.



MANIPAL INSTITUTE OF TECHNOLOGY

(A constituent unit of MAHE, Manipal)

VII SEMESTER B.TECH. (CHEMICAL ENGINEERING)

ENDSEM EXAMINATIONS, MARCH 2021

SUBJECT: PE-IV PROJECT ENGINEERING [CHE 4023]

REVISED CREDIT SYSTEM

(22/03/2021)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- ✤ Missing data may be suitable assumed.

1.A	Write the instrumentation symbols for the following:	
	combined dual service board mounted manual flow recording controller number 2	
	pneumatic transmission, locally mounted pressure recorder number 2 mechanical type	3
1. B	Mention the meaning of 2^{11} W7318E with respect to piping and instrumentation?	1
1.C	Discuss the significance of tangible factors raw material and different modes of transportation for the selection of plant site.	6
2.A	Discuss any four different types of valves used in piping connections.	4
2.B	Discuss maintenance facilities, plant roadways and plant air under secondary utilities	
	required for the operation of the plant.	6
3.A	Explain the dynamic similarity used for comparing model and prototype in pilot plant study.	4
3.B	Discuss the low temperature insulation used for conserving process heat.	3
3. C	Discuss the three types of spalling happening when load is applied on the refractory material.	3

4.A	The annual fixed cost for insulating a certain steam pipe insulation is given by $C_F = (40S + 30) + \frac{130}{s}$ where <i>S</i> is the thickness of insulation in mm.	
	The annual cost of energy lost or the direct cost or steam cost is $C_D = \frac{130}{s}$. Determine the optimum insulation thickness and the optimum annual insulation thickness cost (fixed cost, steam cost and total cost).	4
4.B	Classify the fire, based on the size of fire formed.	3
4.C	Draw a Gantt chart for the following data with horizontal scale denoting days. The duration for each activity is in days.	
	Activity 1 8 days	
	Activity 2 4 days	
	Activity 3 7 days	
	Activity 4 9 days	
	Activity 5 3 days	3
	Activity 6 3 days	
	Activity 7 14 days	
	Activity 8 17 days	
	Activities 1 and 2 can occur simultaneously. Activity 3 can take place after activity 2 is completed. Activities 4, 6 and 3 can occur simultaneously. Activity 8 can start 4 days after the commencement of activity 6. Activity 7 should follow activity 5. Activity 5 can begin simultaneously with activity 8.	
5.A	Discuss with a neat sketch the working of electrolytic hygrometer.	5

Activity	y Immediate	Optimistic	Most likely	Pessimistic
	Predecessor(s)	duration(weeks)	duration(weeks)	duration(week)
А	_	2	4	6
В	_	4	6	8
С	A	6	8	12
D	_	6	8	12
E	В	10	12	14
F	A	3	6	9
G	D,F	8	10	12
Н	G	2	4	6
Ι	C,G	7	9	11
J	G,E	6	8	12
K	H,I	3	5	7
L	K,J	6	8	10
For the r and the p	network information project completion t	l n given, draw the ne time.	l etwork diagram, ide	entify the critical path