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Subject :- Construction Management

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Q No 1 :-

Given Data :-

Number of Communication channels  
= 6.

Additional stake holders = 2.

Required Data :-

Identify the number of communication channel after increasing the scope of work = ?

Solution :-

As we know that

$$\text{Number of Communication channel} = \frac{n(n-1)}{2}$$

The number of people involved in six communication channel  $\Rightarrow$

$$6 = \frac{n(n-1)}{2}$$



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$$12 = n(n-1) = n^2 - n$$

$$n^2 - n - 12 = 0$$

$$n^2 - 4n + 3n - 12 = 0$$

$$n(n-4) + 3(n-4) = 0$$

$$(n-4)(n+3) = 0$$

$$n-4=0, \quad n+3=0$$

$$\boxed{n=4}, \quad \boxed{n=-3}$$

So the number of people involved  
= 4

As, There are additional stake holders so, total number of people are:-

$$n = 4 + 2$$

$$n = 6$$

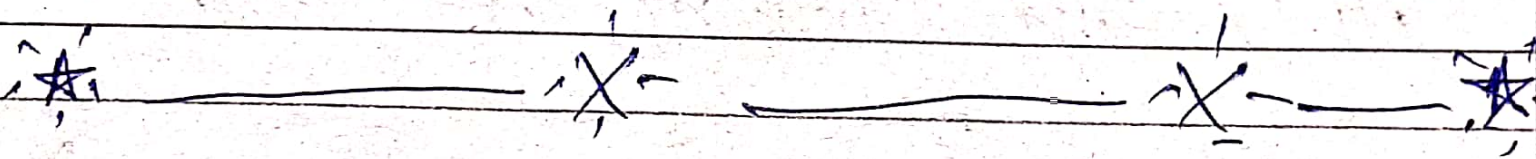
Now, Required communication.

$$\text{channel} = \frac{6(6-1)}{2}$$

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$$= \frac{3 \times (6-1)}{2} = 3(5)$$

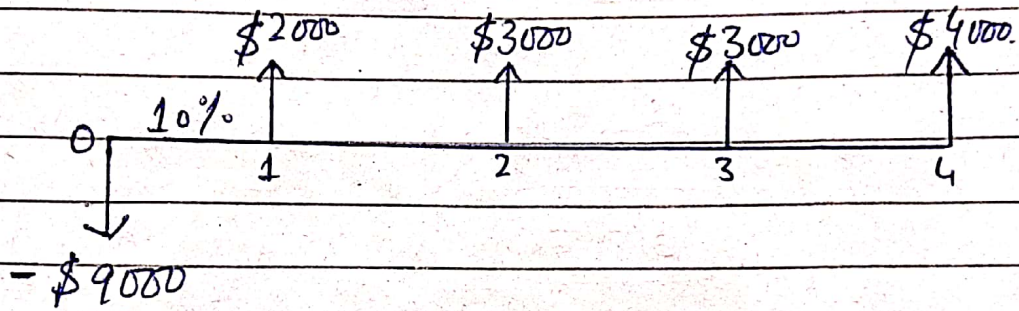
New channel  
↓  
Communication = 15 Ans.





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QNO 3 :- A company is planning to invest \$9000 in project today. The project is expected to have life of 4 years. The expected cash flow for next 4 years is shown & the discount rate is 10%. Calculate the Net present value (NPV) and comment on result.



Sol:-

$$NPV = -C_0 + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \dots + \frac{C_T}{(1+r)^T}$$

$$P_{V0} = -C_0$$

$$P_{V0} = -9000$$

$-C_0$  = initial constant

$C$  = Cash Flow

$r$  = Discount rate

$T$  = Time

$$C_1 = 2000$$

$$C_2 = 3000$$

$$C_3 = 3000$$

$$C_4 = 4000$$

$$P_{V1} = 1818.18$$



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$$PV_2 = \frac{C_2}{(1+r)^2} = \frac{3000}{\left(1 + \frac{10}{100}\right)^2}$$

$$PV_2 = 2479.34$$

$$PV_3 = \frac{C_3}{(1+r)^3} = \frac{3000}{\left(1 + \frac{10}{100}\right)^3}$$

$$PV_3 = 2253.94$$

$$PV_4 = \frac{C_4}{(1+r)^4} = \frac{4000}{\left(1 + \frac{10}{100}\right)^4}$$

$$PV_4 = 2732.05$$

$$NPV = -C + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \frac{C_3}{(1+r)^3} + \frac{C_4}{(1+r)^4}$$

$$= -9000 + 1818.18 + 2479.34 + 2253.94 + 2732.05$$

$$NPV = \$ 283.51$$



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Q No 5 :-

For a project of residential house what are the different stages to be considered in the risk Management checklist?

Sol :-

Stage 1 :- Initiation

- \* Assemble Risk Management Resources.
- \* Appoint the team leader and ensure a breadth of skills/experience within team.
- \* Assign Risk Management responsibilities appropriate to task.

Stage 2 :- Proposal Familiarization

- \* Specify objectives & criteria.
- \* Familiarise the team with the proposal, assemble documentation and define the key objective.
- \* Assess the proposal in relation to the Agency's objective &



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strategies.

- \* Determine assessment criteria for proposal.

- \* Define key elements (target 20-50 elements, items or activities) to structure risk analysis.

Stage 3 :- Risk Analysis:

Identify Risks:-

- \* Prepare a comprehensive schedule of risks for each element.

- \* Describe each risk and list the main assumptions.

Assess risk likelihoods & consequences

- \* Assemble data on risk and their consequences.

- \* Assess risk likelihoods.

- \* Assess risk impact.

Identify significant Risks



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- \* Rank risks to reflect impacts and likelihoods.
- \* where applicable, estimate risk factors.
- \* Discard/accept minor risk.
- \* identify moderate risks for management measure.

## Stage 4: Risk Response Planning

### Identify Feasible response:-

- \* For each moderate and major risk, identify the feasible response.
- \* Responses may include:-
  - a) risk prevention
  - b) impact mitigation
  - c) risk transfer and insurance
  - d) risk acceptance.

Describe each Feasible response & list main assumptions:-

select best Response:-

- \* Evaluate best response, benefits & costs for each response.
- \* select the preferred response.



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QNo4:-

Being a project Manager, how would you identify the stake holders by power/interest matrix?

Ans:- Classifies stakeholders in relation to their power and the extent to which they are likely to show the interest in the actions of organization

can be used to indicate the nature of the relationship which should be adopted with each group.

Power/interest Matrix (Crawford et. al 1986)

		Level of interest	
		Low	High
Power	Low	A Minimal effort	B Keep informed
	High	C Keep satisfied	D Key players



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Power / interest matrix :-

Stakeholders in group A :-

Need only minimum effort on monitoring.

Stakeholders in group B :-

Should be kept informed as they may be able to influence more powerful stakeholder.

Stakeholders in group C :-

Are powerful but level of interest is low, Generally expected to be passive, but may move into group on an issue of particular interest.

Stakeholders in group D :-

Are both powerful and interested.

Their co-operation is of key importance for new strategies.



Q102:-

Work Package	BCWS	ACWP	Progress	P-11 BCWP	(CV)	CPI	SPI	SU
	Planned value (PV)	Actual cost (AC)	%	Earned value (EV)	EV-AC	EV/AC	EV/PV	EPV-PV
1	\$1000000	\$1200000	100%	\$2000000	\$(200000)	0.83	1.00	\$-
2	\$1000000	\$1100000	100%	\$2000000	\$(100000)	0.91	1.00	\$-
3	\$1000000	\$1800000	90%	\$900000	\$(100000)	0.13	0.90	\$(100000)
4	\$1000000	\$1250000	80%	\$800000	\$(450000)	0.64	0.80	\$(200000)
5	\$1000000	\$750000	50%	\$500000	\$(250000)	0.67	0.50	\$(500000)
6	\$1000000	\$-	0%	\$-	\$-	0.00	0.00	\$(1000000)
7	\$1000000	\$-	0%	\$-	\$-	0.00	0.00	\$(1000000)
8	\$1000000	\$-	0%	\$-	\$-	0.00	0.00	\$(1000000)
9	\$1000000	\$-	0%	\$-	\$-	0.00	0.00	\$(1000000)
10	\$2000000	\$-	0%	\$-	\$-	0.00	0.00	\$(2000000)

BAC

Comment:- The project is behind schedule & over budget.