Enroll No	**K.E.Society's** **Rajarambapu Institute of Technology, Rajaramnagar** (An Autonomous Institute, affiliated to SUK) End Semester Examination (Summer 2019) M.Tech. Civil Const.Mgt. Sem- II	Q.P.Code
		EB 1461

Course Code: CCM2014   **Course Name:** Project Economics & Financial Management

Day & Date: .....Tue., 30/04/2019

Time   : .....10.30 am – 1.30 pm   Max Marks: 100

Instructions: 1) All questions are compulsory

2) Figures to the right indicate maximum marks

3) Assume suitable data if not given

4) Use of non-programmable calculator is allowed

Q.1 **Attempt any TWO**

(a) What is time value of money? Explain various single payment and   08   1
uniform series formulae used for calculating time value of money.

(b) A Visa credit card issued through ICICI bank carries an interest rate of 1%   08   1
per month. Calculate the effective rate per semiannual period. If the card's
interest rate is stated as 3.5% per quarter, find the effective semiannual
and annual rates.

(c) A plant hire firm buys a new crawler tractor at a price of Rs. 43500. In the   08   2
first year of use it is estimated that net receipt, that is after paying all
expenses will amount to Rs. 12000. In each succeeding year it is estimated
that net income from the hire of the tractor will reduce by Rs. 1000. After
10 years it is not expected to fetch more than Rs. 1000 on second hand
market.   What is the rate of return on this investment?

Q.2 **Attempt any TWO**

(a) Find out breakeven point analytically for following data: 08   2
1. Sale Rs. 2 lakh, 2. Direct material Rs. 40000/- 3. Direct labour
Rs.20000/- 4. Variable overhead Rs. 20000/- 5. Fixed overhead
Rs. 15000/- 6.Unit sale Rs.1.

Also indicate from breakeven point the effect of 10% rise in fixed cost.

(b) It is proposed to carry out construction of RCC building with an estimated   08   3
cost of Rs. 400000 and no maintenance cost for the first 10 years. If the
same building is constructed in structural steel work with asbestos cement
roofing has an initial cost of Rs. 300000 but the steel has to be painted
every two years at a cost of Rs. 20000. If the rate of interest is 10%, which
is cheaper investment for first 10 years?

(c) Two types of construction equipment are available. 08 2

	MACHIN M	MACHIN N
INITIAL COST	12 Lakh	16 Lakh
SALVAGE VALUE	2 Lakh	3 Lakh
ANNUAL MAINTENANCE	1.5 Lakh	1.2 Lakh
ANNUAL RETURNS	4 Lakh	4.5 Lakh
LIFE	8 Yrs.	10Yrs.

Which equipment should be selected, if minimum requirement of return is 12%?

Q.3 **Attempt any TWO**

(a) Differentiate among modified and conventional benefit/cost analysis. 08 3

(b) White appliances has following cost and revenue estimates for its new refrigerator model. 08 3
   - Fixed cost: $2.58 million per year
   - Cost per unit: $395
   - Revenue per unit: $550
     a) Write the total cost relation
     b) Determine the annual quantity needed to break even

(c) Describe the two ways to account inflation in economic calculation. 08 3

Q.4 **Attempt any THREE**

(a) How short-term sources of finance will be help to fulfil the working capital need of an organization? List out the various sources of short-term finance. 04 4

(b) Which sources are more preferable to finance fixed assets in an organization? Why? 04 4

(c) Analyze the factors considered while framing capital structure of an organization. 04 4

(d) Explain the importance of working capital in construction firms and analyze the determinants of working capital requirement. 04 4

Q.5 Attempt any TWO

(a) The financial statements of a company include the following items: 15   5

Balance Sheet	Current year (Rs.)	Preceding year (Rs.)
Cash	14000	24000
Short-term investments	7020	27500
Net receivables	54000	65560
Inventory	76000	74000
Prepaid expenses	20800	7700
Total current assets	171820	198760
Total current liabilities	121000	85000
	-------	------
Income Statement	-------	------
Net credit sales	445300	------
Cost of goods sold	315000	------

Compute the following ratios for the current year:
a) Current ratio
b) Acid-test ratio
c) Inventory turnover ratio

(b) How is the current ratio calculated? What is it used to measure? How is it interpreted ?   05   5

OR

(c) How do you analyze and interpret financial statements of a company for reporting on the soundness of its capital structure and solvency.   05   5

Q.6

(a) Show the Journal entries & Ledger posting on the basis of following transactions   10   6

Date	Transactions
1st March	Ram Prasad started business and brought cash Rs. 1 Lac. Furniture of Rs. 65000 & Machinery of Rs. 1.50 Lac.
2nd March	Deposited Rs. 80000 in to the Bank of Baroda.
6th March	Bought goods of Rs. 30000 from Narendra Traders and paid Rs. 10000.
8th March	Sold goods of Rs. 17000.
10th March	Paid electricity bill of Rs. 2500.

OR

(b) Classify the following accounts under Real, Personal & Nominal account category.   10   6

Land & Building A/c	Power & Fuel A/c	Wages A/c
Bank of India A/c	Freight A/c	Drawings A/c
Furniture A/c	Shelke firm A/c	Goodwill A/c
Carriage Outward A/c	Loss on sale A/c	Investment A/c
Interest Received A/c	Rohit Cars Ltd. A/c	Capital A/c
Commission paid A/c	Sales A/c	Discount Allowed A/c
Postage & telegram A/c	Machinery A/c	Salary A/c
Library Books A/c	Depreciation A/c	Rent Received A/c
Harish Traders A/c	Discount Earned A/c	Purchase A/c
Axis Bank A/c	Stationary A/c	Cash A/c

(c) Prepare diagram of Accounting Cycle and explain each element briefly.   05   6

(d) Analyze the necessity of budget and budget control system in construction firms.   05   6

Enroll No	K.E.Society's	Q.P.Code
	Rajarambapu Institute of Technology, Rajaramnagar	
	(An Autonomous Institute, affiliated to SUK)	EB 1496
	End Semester Examination (Summer 2019)	
	M.Tech. Civil Const.Mgt. Sem- II	

Course Code: CCM2024   **Course Name**: Construction Contracts

Day & Date: Friday, 03/05/2019

Time   : 10.30 am to 01.30 pm   Max Marks: 100

Instructions: 1) All questions are compulsory

2) Figures to the right indicate maximum marks

3) Assume suitable data if not given

Q.1 (a) Government of India is planning to construct Sewage Treatment Plant for   10   CO1
one of the leading city under smart city mission. Due to lack of availability
of funds government is planning to execute the project by public private
partnership. Propose all aspects of PPP model that suits best for such type of
projects in India. Consider following points for the same.

1. Type of PPP model
2. Suitability of suggested PPP model
3. Revenue Model
4. Concession Period

(b) Discuss essential characteristics of valid contract.   05   CO1

OR

(c) Discuss percentage rate contract and item rate contract.   05   CO1

Q.2 (a) Discuss stepwise procedure of tendering right form preparation of plan to 10   CO1
issue of work order.

(b) Explain the circumstance under which tender can be rejected.   05   CO1

OR

(c) Explain three envelope system of tender submission.   05   CO1

Q.3 (a) Government of Karnataka is planning to construct administrative office   10   CO1
building for District office. The estimated cost of project is Rs. 75,00,000
only. Draft the conditions of contract for the following points with reference
to given case study.

a) Time limit for completion
b) Maintenance & Improper work
c) Liquidated damage
d) Measurement and Payment
e) Subletting

(b)	Discuss any five cases of dispute arises due to faulty drafting of conditions of contract.	05	CO1

OR

(c)	Discuss in detail role owner during execution of any commercial project.	05	CO1

Q.4	(a)	Discuss any five cases of Contract of Guarantee with all details.	10	CO1
	(b)	Discuss responsibility of bailor and bailee.	05	CO1

OR

(c)	Discuss the responsibilities of pawnor and pawnee.	05	CO1

Q.5	(a)	Discuss role of following parties involved in arbitration.	10	CO2

1. Arbitrator
2. Valuer
3. Refree
4. Concilator
5. Mediator

(b)	Discuss in detail procedure of arbitration executed as per arbitration act.	10	CO2

OR

(c)	Discuss expert determination with reference to case study.	10	CO2

Q.6	(a)	Discuss following points with reference to India Arbitration Act.(Any **FOUR**)	20	CO2

1. Arbitral Tribunal
2. Terminations of proceedings
3. Appointment of Arbitrator
4. Conduct of proceedings
5. Arbitral Award
6. Setting aside award

Enroll No		Q.P.Code
		EB 1591

Course Code: CCM2044   **Course Name**: PE III- Health and Safety Management

Day & Date: .....Thu., 09/05/2019

Time   : .....10:30 am – 1:30 pm   Max Marks: 100

Instructions: 1) All questions are compulsory

2) Figures to the right indicate maximum marks

3) Assume suitable data if not given

4) Use of non-programmable calculator is allowed

Q.1	**Attempt Any Two**		**Marks**	
	(a)	Discuss the existing condition of safety Legislation on construction site in India?	07	CO2
	(b)	Discuss the cause of accidents during the excavation process?	07	CO2
	(c)	Justify the following statement. Safety measures required on construction site?	07	CO2

Q.2	**Attempt Any Two**			
	(a)	The Child Labour (Prohibition & Regulation) Act, 1986	07	CO4
	(b)	Prepare a checklist of hoist to check it before and during the Concreting?	07	CO4
	(c)	Discuss the Building & Other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996	07	CO4

Q.3	**Attempt Any Two**			
	(a)	Discuss the Workmen's Compensation Act, 1923?	08	CO3
	(b)	Prepare a checklist for movable type of scaffolding?	08	CO3
	(c)	What facilities are there on your site to call for help and to treat injuries?	08	CO3

Q.4	**Attempt Any Two**			
	(a)	Discuss the limitations of using ladder over the scaffolding?	08	CO1
	(b)	Prepare a checklist to check the site before and during the excavation?	08	CO1
	(c)	Discuss the Contract Labour (Regulation & Abolition) Act, 1970?	08	CO1

Q.5	**Attempt All**			
	(a)	Point out which safety precautions will you take during mass concreting work as Safety Officer?	08	CO2

(b)	Suggest the safety signs which you will recommend to workers before entering in to any Industrial Shed?	08	CO2
(c)	Enlist the methods of demolition used in construction industry? Justify any one in detail?	06	CO2

OR

(d)	Identify the correct method to demolition for RCC framed structure in densely populated area?	06	CO2

Q.6 **Attempt Any Two**

(a)	Discuss and justify any five personal protective equipments used on construction site?	09	CO4
(b)	Prepare a checklist of hoist to check the demolition activities on site?	09	CO4
(c)	Summarize how you will the accident on construction site?	09	CO4

Enroll No	K.E.Society's	Q.P.Code
	Rajarambapu Institute of Technology, Rajaramnagar (An Autonomous Institute, affiliated to SUK) End Semester Examination (Summer 2019) M.Tech. Civil Const.Mgt. Sem- II	EB 1621

Course Code: CCM2084   **Course Name**: PE IV- Building Maintenance

Day & Date: ...... Sat., 11/05/2019

Time   : ...... 10.30 am – 1: 30 pm   Max Marks: 100

Instructions: 1) All questions are compulsory

           2) Figures to the right indicate maximum marks

           3) Assume suitable data if not given

           4) Use of non-programmable calculator is allowed

Q.1

(a) State eight classifications of building maintenance. Illustrate application of each classification and select one you think best for industry buildings. Justify your section.   10   2

(b) Describe the objectives of building maintenance. Explain actions taken under building maintenance to fulfill the objectives.   05   2

OR

(c) Define maintenance. Explain need and gains through Building maintenance.   05   2

Q.2

(a) "Why have a maintenance Plan" Reason.   04   3

OR

(b) "Is Maintenance Important" Reason   04   3

(c) Describe maintenance planning. State works considered in planning and the planning procedure?   10   3

Q.3 Solve any Three

(a) Explain the causes of component deterioration.   06   1

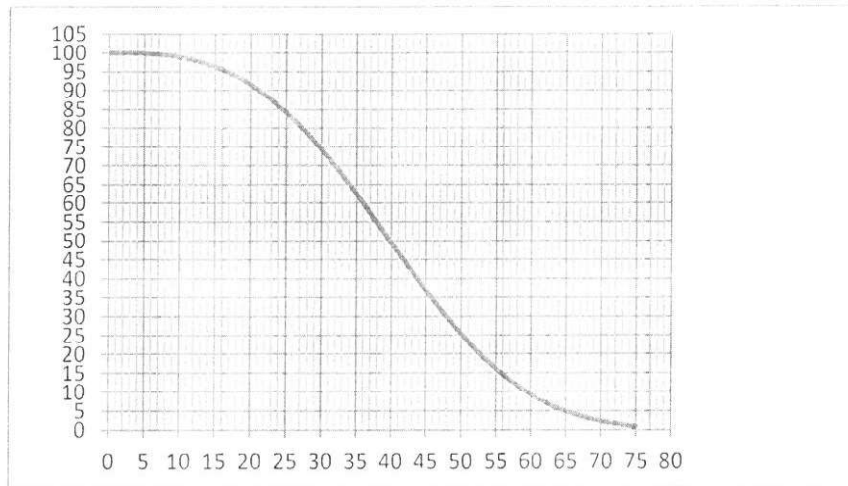(b) Tabulate building systems and the components fall under them.   06   2

(c) One of the major distress observed through survey is "Cracks" state the procedure for taking measurements of the crack, also list various types of cracks.   06   4

(d) Explain the parameters based on which you will select material for repairing a distress.   06   4

Q.4

(a)

10   3

Above graph shows the standard deterioration curve. For the above graphs component, determine when maintenance should be done. Also determine the replacement age of the component if maintenance is not done.

(b) Explain the strategies for sustainable engineering infrastructure.   05   1

OR

(c) For conducting a condition survey, prepare a checklist for documenting component distresses for any two components.   05   1

Q.5 **Solve any Three**

(a) Define Condition survey and its objectives.   06   4

(b) Explain the stages in building condition survey.   06   4

(c) List the non-destructive tests performed for building condition assessment.   06   3/4

(d) Explain major defects observed in RCC buildings.   06   4

Q.6   Refer attached **GRAPH**

(a) Answer the following questions.   20   3/4
    1. Explain the attached graph.
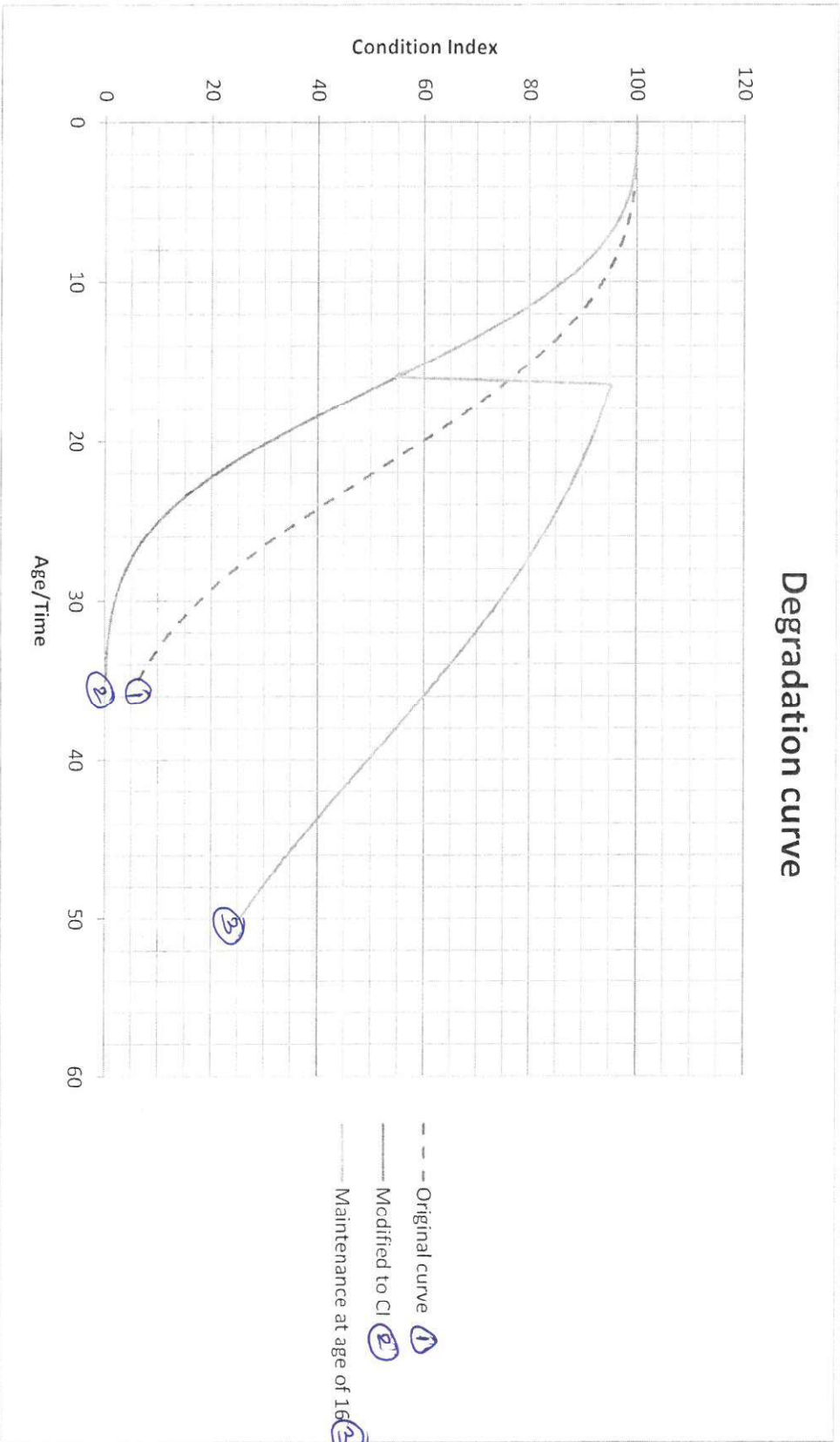   2. On the same graph redraw the prediction if maintenance was done on a sweet spot.
    3. State the outcome from the above analysis. Also mark service life gained due to maintenance. (**consider similar use of structure**)

attach the graph to answer sheet

Degradation curve

Condition Index (y-axis): 0, 20, 40, 60, 80, 100, 120

Age/Time (x-axis): 0, 10, 20, 30, 40, 50, 60

Legend:
- – – Original curve (1)
- Modified to CI (2)
- Maintenance at age of 16 (3)

Enroll No.

K. E. Society's
Rajarambapu Institute of Technology, Rajaramnagar
(An Autonomous Institute affiliated to S.U.K.)
End Semester Examination, April 2019

Q. P. Code

EB 1567

F. Y. M. Tech. (Civil Construction and Management Engineering) Semester–II
Course Name: Statistical Analysis **Code:** SHP526

Day & Date: Tue, 07/05/2019

Time: 10.30 am – 1.30 pm

Max. Marks –100

Instructions: i) All questions are compulsory.
ii) Figures to the right indicate full marks.
iii) Use of non-programmable calculator is allowed.

Q.1 Attempt the following.

(a) State and prove Bayes' rule [8] CO1

(b) In a certain assembly plant, three machines B_1, B_2 and B_3, make 30%, 45%, and [7] CO2
25%, respectively, of the products. It is known from past experience that 2%, 3%, and
2% of the product made by each machine, are defective. Suppose that a finished
product is randomly selected and found to be defective, what is the probability that it
was made by machine B_3?

OR

(b) It is known from past experience that the daily demand for a perishable product is [7] CO2
as shown in the following table:

Number of orders	3	4	5	6	7	8	9
Probability	0.05	0.12	0.20	0.24	0.17	0.14	0.08

If each item costs $35, it sells for $50 provided that it is in stock, and it represents a
total loss if it remains in stock at the end of a day, how many items should be stocked
each day so as to minimize the expected profit?

Q.2 Attempt the following.

(a) The life-time of certain type of battery has mean life of 400 hours and a standard [5] CO2
deviation of 50 hours. Assuming the distribution of life-time to be normal, find:
(i) The percentage of batteries which have life-time of more than 350 hours.
(ii) The percentage of batteries which have life-time between 300 and 500 hours.
(Given: For S. N. V. z area between $z = 0$ and $z = 1$ is 0.3413 and $z = 0$ and $z = 2$ is
0.4772).

(b) Suppose that a system contains a certain type of component whose time, in years, [5] CO2
to failure is given by T. The random variable T is modeled by the exponential
distribution with mean time to failure $\beta = 5$. If 5 of these components are installed in
different systems, what is the probability that at least 2 are still functioning at the end
of 8 years?

(c) The probability that a patient recovers from a rare blood disease is 0.4. If 15 people [5] CO2
are known to have contracted this disease, what is the probability that (a) at least 10
survive, (b) from 3 to 8 survive, (c) exactly 5 survive?

OR

(c) Given a random variable X having a normal distribution with $\mu = 50$ and $\sigma = 10$, find the probability that X assumes a value between 45 and 62. [5] CO2

Q.3 **Attempt the following.**

(a) Elaborate the steps involved in the method of drawing a random sample. [5] CO1

(b) The following table of 10 random numbers of two digits each is provided to the field investigator [5] CO3

34	96	61	85	69
78	50	02	27	13

Use this table to make a random selection of 5 plots out of 40.

(c) Explain in detail the concept of Standard Error. [5] CO3

OR

(c) Discuss the term Simple Random Sampling. [5] CO3

Q.4 **Attempt the following.**

(a) What is a hypothesis? Describe null and alternative hypothesis. [5] CO3

(b) If α represents the level of significance and region of acceptance is made larger explain the phenomenon in terms of error. [5] CO3

(c) 360 persons out of 600 are found to suffer from population induced bronchitis in one city. In another, 400 out of 500 are found to suffer from bronchitis. Is there any significant difference in the incidence of bronchitis? Justify your answer. [5] CO3

OR

(c) The demand for a particular spare part in a factory was found to be varying from day to day. In a sample study the following information was obtained [5] CO3

Days	Mon	Tue	Wed	Thus	Fri	Sat
No. of parts demand	1124	1125	1110	1120	1126	1115

Test the hypothesis that the number of parts does not depend on the day of the week.

Q.5 **Attempt the following.**

(a) A computer while computing correlation coefficient between two variables X and Y from 25 pairs of observations obtained the following results: [10] CO4

$n = 25, \sum X = 125, \sum X^2 = 650, \sum Y = 100, \sum Y^2 = 460, \sum XY = 508$. It was, however, discovered at the time of checking that two pairs of observations were not correctly copied. They were taken as (6, 14) and (8, 6) while the correct values were (8, 12) and (6, 8). Prove that the correct values of the correlation coefficient should be $\frac{2}{3}$.

(b) Compute the coefficient of correlation between x and y from the following data. [10] CO4

x:	10	11	14	14	20	22	16	12	15	13
y:	12	14	15	16	21	26	21	15	16	14

Interpret the result.

OR

(b) The following table gives according to age the frequencies of marks obtained by **[10]** CO4
200 students in a certain test to determine talent in specific subject.

Age in years ⇒ Marks ⇓	20	21	22	23	24	Total
0-10	10	8	6	10	4	38
10-20	8	10	8	--	11	37
20-30	--	11	7	8	5	31
30-40	20	--	10	12	10	52
40-50	2	6	7	15	12	42
Total	40	35	38	45	42	200

Calculate the correlation coefficient.

Q.6 Attempt the following.

(a) Discus how to proceed for a simple linear regression modeling in real life situation **[10]** CO4
and give the model set up for it.

OR

(a) The following table gives the respective heights x and y of a sample of 10 father **[10]** CO4
and their sons:

Height of father x (inches)	65	63	67	64	68	62	70	66	68	67
Height of son y (inches)	68	66	68	65	69	66	68	65	71	67

(i) Calculate regression line of y on x.

(ii) Calculate regression line of x on y.

(ii) Estimate son's height if father's height is 65 inches.

(iv) Estimate father's height if son's height is 60 inches

(b) Determine the equation of the regression plane to estimate $\beta_0, \beta_1, \beta_2$ to the **[10]** CO4
information given below of a transport company on the weights of 6 shipment, the
distances they were moved and the damage of the goods that was incurred. Estimate
the damage when a shipment of 3700 kg is moved to a distance of 260 km.

Weight X_1: (1000 kg)	4.0	3.0	1.6	1.2	3.4	4.8
Distance X_2: (100 km)	1.5	2.2	1.0	2.0	0.8	1.6
Damage X_3: (Rs)	160	112	69	90	123	186

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