A

Webinar on

"Application of Calculus in Mathematical Modelling: A Journey through Inventory Modelling"

Organiged by

Department of Mathematics , Pattamundai College, Pattamundai

on

26th September 2020.

Session 2020-21

REPORT

A webinar was organised by Department of Mathematics, Pattamundai College, Pattamundai on 26th September 2020 on the topic **"APPLICATION OF CALCULUS IN MATHEMATICAL MODELLING: A JOURNEY THROUGH INVENTORY MODELLING"** . Dr. Bijoy Krishna Debnath, Assistant Professor of Mathematics, Department of Applied Sciences, School of Engineering, Tezpur University, Assam who graced the webinar with his analytical thinking. We were able to get the beautiful glimpses of the students of our Department in this webinar. Sri Arabinda Pandab, Head of the Department gave a key note address of the topic. Principal Prof Adhikari Laxminarayan Dash welcomed the guest and participants of different colleges of our state through web. The webinar was ended with a vote of thanks by Dr Nirmal Kumar Sahoo, another faculty member.

Arabinda Pandab
HOD& Convenor

Ref No. : 885   Date 21/9/20

To

Dr. Bijoy Krishna Debnath,
Assistant Professor of Mathematics,
Department of Applied Sciences,
School of Engineering,
Tezpur University, Assam

Sub: Invitation to act as the **Resource Person** in the extramural webinar
       of Department of Mathematics of Pattamundai College.

Sir,

I am pleased to invite you to kindly act as the resource person in the extramural webinar on **"Application of Calculus in Mathematical Modelling: A Journey through Inventory Modelling"** organised by Dept of Mathematics on 26th September 2020 at 10.30a.m.

Your kind consent in this regard is highly solicited.

Principal 21.9.20
Pattamundai College

Principal
Pattamundai College

M Gmail

Principal Pattamundai College <pattamundaicollege@gmail.com>

Invitation for Resource Person
2 messages

Principal Pattamundai College <pattamundaicollege@gmail.com>   Mon, Sep 21, 2020 at 11:20 AM
To: bijoy91@tezu.ernet.in

pl Find the attachment
Principal
Pattamundai College
pattamundaicollege@gmail.com

📄 **Math Webniar 2.pdf**
144K

Dr. Bijoy Krishna Debnath <bijoy91@tezu.ernet.in>   Mon, Sep 21, 2020 at 11:27 AM
To: Principal Pattamundai College <pattamundaicollege@gmail.com>

Dear Principal,

It is an immense pleasure for me to act as a resource person for the said
webinar. I am confirming myself to attain as a resource person. Thank you
so much for inviting me. Hope to see you in the webinar.

> pl Find the attachment
> *Principal*
> *Pattamundai College*
> *pattamundaicollege@gmail.com <pattamundaicollege@gmail.com> *
>

शुभकामनाओं सहित/ With Regards,
डॉ विजय कृष्ण देवनाथ/ Dr. Bijoy Krishna
Debnath
सहेयक प्रोफेसर, गणित / Assistant
Professor, Mathematics
अनुप्रयुक्त विज्ञान विभाग/
Department of Applied Sciences,
अभियांत्रिकी विद्यालय/ School of
Engineering,
तेजपुर विश्वविद्यालय/ Tezpur
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C.V of Resource Person Dr. Bijoy Krishna Debnath

Dr. Bijoy Krishna Debnath is currently working as an Assistant Professor of Mathematics at Department of Applied Sciences, School of Engineering, Tezpur University, Assam. Prior to that he was working as an Assistant Professor at Government College of Engineering, Kalahandi, Odisha. He did his Ph.D. in Operations Research from National Institute of Technology Agartala, Masters from Gauhati University. His area of research includes Operations Research, Fuzzy Mathematics and Optimization, Mathematical Modelling. He has published research articles in SCI, SCOPUS and Journal of international repute that includes International Journal of Operations research, Hacettepe Journal of Mathematics and Statistics, International Journal of Logistic System and Management, Iranian Journal of Fuzzy Systems.

DEPARTMENT OF MATHEMATICS
PATTAMUNDAI COLLEGE , PATTAMUNDAI

Organises
A Webinar on

"Application of Calculus in Mathematical Modelling: A Journey through Inventory Modelling"

Date: 26.09.2020 , Time:10: 30 A.M

RESOURCE PERSON
Dr. Bijoy Krishna Debnath,
Assistant Professor,
Department of Applied Sciences,
School of Engineering, Tezpur University, Assam

Prof. A.L.N Dash
Principal
Pattamundai College
Pattamundai

Mr. A. Pandab
H.O.D and Convenor

Dr. N.K. Sahoo
Co-Convenor

Topic: Application of Calculus in Mathematical Modelling: A Journey through Inventory Modelling

Presented By: Dr. Bijoy Krishna Debnath, Assistant Professor (Mathematics), School of Engineering, Tezpur University, Assam, India

Presented at: Pattamundai College on 26.09.2020

Outline of Presentation

- ➤ Calculus
- ➤ Maxima and Minima of function
- ➤ Basics of Inventory Modelling
- ➤ Discussion on an Inventory Model as a Special Case

What do you mean by Calculus?

Calculus is the branch of mathematics that deals with the finding and properties of derivatives and integrals of functions i.e. application of derivatives and integrals. One of those application of derivatives involved convexity, concavity and point of inflexion.

Definition

Consider a function $f(x)$ that is defined in an interval I. If the second order derivative $f''(x) \geq 0$ for all x in an interval I then f is convex on I. On the other hand, if $f''(x) \leq 0$ for all x in an interval I, then f is concave on I.

Suppose that f is differentiable on an interval I. The graph of f is

- ➤ concave up on I if f' (slope from negative to positive) is increasing on I i.e., slope is increasing; and
- ➤ concave down on I, if f' (slope from positive to negative) is decreasing on I i.e., slope is decreasing

For a continuous and differentiable function $f(x)$ a *stationary* point x^* is a point at which the slope of the function vanishes, i.e. $f'(x) = 0$ at $x = x^*$, where x^* belongs to its domain of definition.
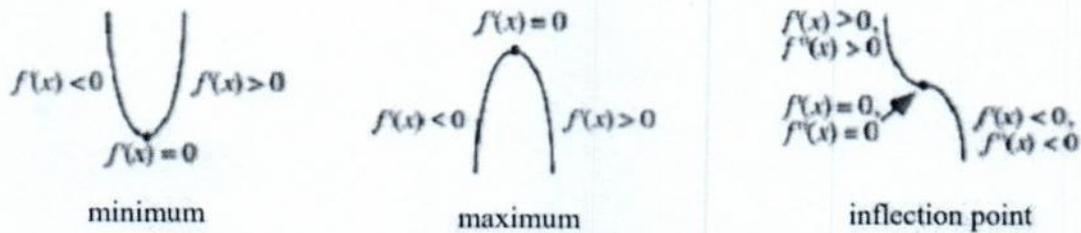

Fig. 1

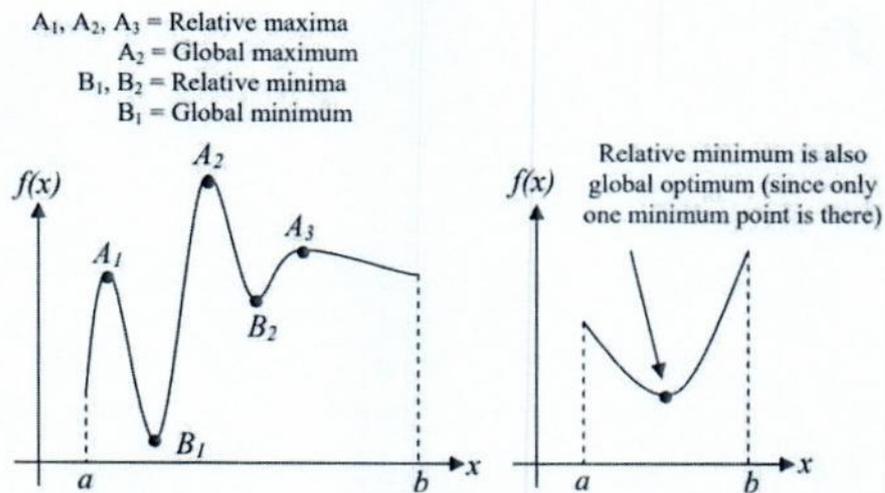Figure 2 shows the global and local optimum points.

A_1, A_2, A_3 = Relative maxima
A_2 = Global maximum
B_1, B_2 = Relative minima
B_1 = Global minimum

Fig. 2

What is inventory

Inventory can be defined as a stock on hand at a given point of time which may be held for the purpose of later use or sale. It has an economic value that include raw material, work in progress inventory, semi finish or final product. In inventory control, our main aim is to manage the inventories in such a manner so that the day to day work is running smoothly without any delay but at the minimum cost.

Various costs related to inventory are

> **Purchase Cost**: This is the cost involved in purchasing of inventories. It depends upon the quantity. Therefore,

Purchase Cost (PC)= No of units (Annual Demand) x cost/unit.

> **Ordering Cost**: The costs involved in ordering inventories from source to destination is called

ordering cost. It includes the tender, processing charge, paper works, inspection and transportation. Therefore,

OC=No of orders x cost/order.

> **Setup Cost:** When the inventory items produced internally, then the costs associated with bringing the shutdown system into work, the costs related with this is called set-up cost. It includes maintenance cost, schedule chart preparation, bringing raw materials, arrangement of workers, tools, equipment costs etc. Therefore,

SC= No of Set-up x cost/set-up.

> Holding / Carrying Cost: The costs associated with the storing, keeping the inventory items within the production system. It includes shortage costs, handling costs, damage costs etc. It depends upon the quantity and period for which the inventory is kept. Therefore,

Holding Cost=Avg. inventory for a period x Holding Cost/ unit time.

> Shortage Costs: It occur for any absence in the inventory and the costs which are associated with not serving the customer. The loss due to this is called shortage cost or stock-out costs. Therefore,

SC=No of units short x shortage cost/unit

Inventory Control-Terminology

> **Demand**: it is the number of items (products) required per unit of time. The demand may be either deterministic or probabilistic in nature.

> **Order cycle**: The time period between two successive orders is called order cycle.

> **Lead time**: The length of time between placing an order and receipt of items is called lead time.

> **Safety stock**: It is also called buffer stock or minimum stock. It is the stock or inventory needed to account for delays in materials supply and to account for sudden increase in demand due to rush orders.

> **Re-order level (ROL):** It is the point at which the replenishment action is initiated. When the stock level reached R.O.L., the order is placed for the item.

> **Re-order quantity**: This is the quantity of material (items) to be ordered at the re-order level. Normally this quantity equals the economic order quantity
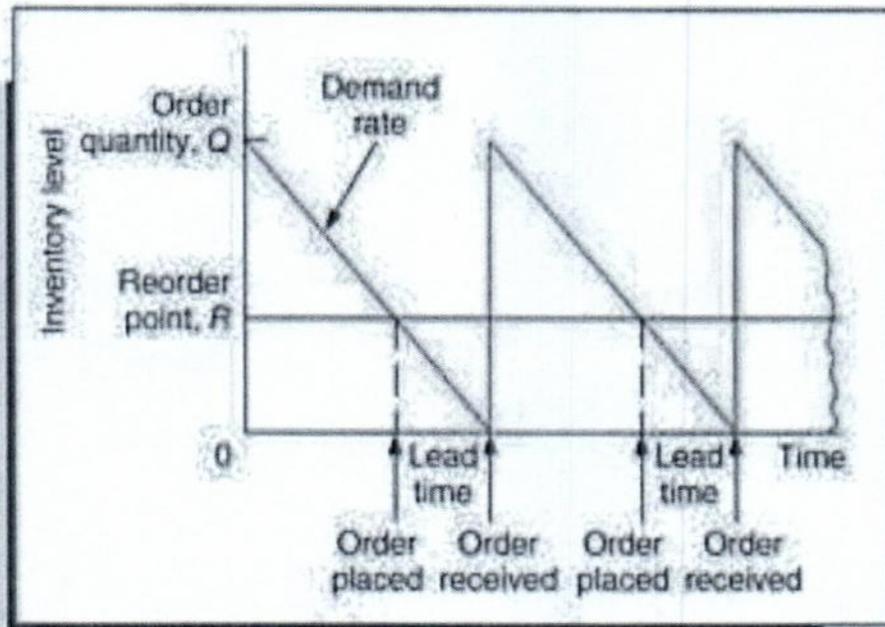
Model Description

Let us discuss an inventory model by considering two levels of trade credit, limited storage capacity and assuming the retailer can delay incurring interest charges on the unpaid and overdue balance due to the difference between interest earned and interest charged, a situation designed to reflect real world business situations.

Assumptions

> The replenishment rate is infinite, i.e., the replenishment is instantaneous.

> Backlogging is not allowed.

> The lead-time is assumed to be negligible.

> The demand rate is known with certainty and uniform.

> A constant fraction, θ, of the on-hand inventory which deteriorates per unit time and there is no repair or replenishment or the deteriorated inventory during a cycle time.

> The retailer can accumulate revenue and earn interest after the customer pays for the amount of purchasing cost to the retailer until the inventory cycle T when $M < T$ and the retailer earns interest on sales revenue up to the permissible period M when $M > T$.

> The retailer can decide to pay off all accounts either at the end of the permissible period M or at any time point during (M, T].

Notations

> D = annual demand rate

➢ θ = a constant fraction of the on-hand inventory which deteriorates per unit time

➢ c = unit purchase cost of the item.

➢ s = unit selling price of the item.

➢ h = unit stock holding cost for item in OW (excluding capital opportunity cost)

➢ k = unit stock holding cost for item in RW (excluding capital opportunity cost)

➢ A = the ordering cost per order.

➢ M = the retailer's trade credit period offered by supplier in years.

➢ N = the customer's trade credit period offered by retailer in years.

➢ I_e = the annual interest that can be earned per unit.

➢ I_p = the annual interest charges payable per unit.

➢ T = replenishment cycle time

➢ = the storage capacity of OW

Let $I(t)$ be the inventory level at any time t, $(0 \leqslant t \leqslant T)$. Depletion due to demand and due to deterioration will occur simultaneously. The differential equation that describes the instantaneous state of $I(t)$ over $[0, T]$ is given by

$$\frac{dI}{dt} + \theta I(t) = -D, \quad 0 \leqslant t \leqslant T. \tag{1}$$

The solution of the above differential equation with boundary condition $I(T) = 0$ is

$$I(t) = \frac{D}{\theta}[e^{\theta(T-t)} - 1], \quad 0 \leqslant t \leqslant T. \tag{2}$$

Thus,

$$Q = I(0) = \frac{D}{\theta}(e^{\theta T} - 1). \tag{3}$$

The number of units that deteriorate during one cycle is

$$Q - DT = \frac{D(e^{\theta T} - \theta T - 1)}{\theta}. \tag{4}$$

Let

$$T_a = \frac{1}{\theta} \ln\left(\frac{\theta W}{D} + 1\right). \tag{5}$$

Eqs. (3) yields

$$Q > W \text{ if and only if } T > T_a. \tag{6}$$

(4) The interest earned per year can be obtained as follows:

Case 1: $0 < T \leqslant N$

Annual interest earned $= sI_e D(M - N)$

Case 2: $N < T \leqslant M$

Annual interest earned $= \dfrac{sI_e D(2MT - N^2 - T^2)}{2T}$

Case 3: $M < T \leqslant W'$

In this case, $T \leqslant W'$ implies that the retailer pays off the total amount owed to the supplier cDT and has amount $sDM + \frac{sI_e DM^2}{2} - cDT$ on hand at time M, then the retailer can obtain the interest earned $I_e(sDM + \frac{sI_e DM^2}{2} - cDT)(T - M) + \frac{sI_e D(M^2 - N^2)}{2T}$ during the time period $[M, T]$. On the other hand, after the time point M, the retailer continuously sells items and uses the revenue to earn interest until time T. That is, the retailer can accumulate revenue and earn interest $sI_e D(T - M)^2/2$ during the period M to T. Therefore,

$$\text{Annual interest earned} = \frac{I_e}{T}\left(sDM + \frac{sI_e DM^2}{2} - cDT\right)(T - M) + \frac{sI_e D(T - M)^2}{2T} + \frac{sI_e D(M^2 - N^2)}{2T}$$

Case 4: $W' \leqslant T$

In this case, $W' \leqslant T$ implies that the money in the account at time M is less than the purchasing cost, then the retailer gradually reduces the finance loan from constant sales and revenue received until the time point $M + \{(cDT - sDM - \frac{sI_e D(M^2 - N^2)}{2}) / sD\}$. After this time point, the retailer continuously sells items and uses the revenue to earn interest until time T. Therefore,

$$\text{Annual interest earned} = \frac{sI_e D\left\{T - M - \left[cDT - sDM - \frac{sI_e D(M^2 - N^2)}{2}\right]/sD\right\}^2}{2T}$$

Case 3: $M < T \leqslant W''$

In this case, $T \leqslant W''$ implies that $sDM + \frac{sI_e D(M^2 - N^2)}{2} \geqslant cDT$, then the retailer pays no interest charge.

Case 4: $W'' < T$

In this case, $W'' < T$ which implies that $sDM + \frac{sI_e D(M^2 - N^2)}{2} < cDT$, then the retailer needs to finance the difference with interest rate I_p at time M. Based on the assumptions, the retailer gradually reduces the amount of financed loan from constant sales and revenue received. Therefore, the interest payable per cycle is

$$\frac{I_p}{2sD}\left\{cDT - \left[sDM - \frac{sI_e D(M^2 - N^2)}{2}\right]\right\}^2$$

Furthermore, the annual total relevant cost for the retailer can be expressed as

$TC(T) =$ ordering cost $+$ deteriorating cost $+$ stock $-$ holding in RW $+$ stock $-$ holding cost in OW

$+$ interest payable $-$ interest earned.

From possible values of N, M and W'', this study has the following four possible cases.

(I) Suppose $T_d < N < M < W^*$

In this case, the annual total relevant cost can be as follows

$$
TC(T) = \begin{cases}
TC_1(T) & \text{if } 0 < T \leqslant T_d & \text{(1a)} \\
TC_2(T) & \text{if } T_d < T \leqslant N & \text{(1b)} \\
TC_3(T) & \text{if } N < T \leqslant M & \text{(1c)} \\
TC_4(T) & \text{if } M < T \leqslant W^* & \text{(1d)} \\
TC_5(T) & \text{if } W^* < T & \text{(1e)}
\end{cases}
$$

where

$$
TC_1(T) = \frac{A}{T} + \frac{D(h + c\theta)(e^{\theta T} - \theta T - 1)}{\theta^2 T} - sI_eD(M - N) \tag{2}
$$

$$
TC_2(T) = \frac{A}{T} + \frac{D(k + c\theta)}{\theta^2 T}(e^{\theta T} - \theta T - 1) - \frac{(k - h)}{\theta^2 T}[D(e^{\theta T_d} - \theta T_d - 1) + \theta^2 W(T - T_d)] - sI_eD(M - N) \tag{3}
$$

$$
TC_3(T) = \frac{A}{T} + \frac{D(k + c\theta)}{\theta^2 T}(e^{\theta T} - \theta T - 1) - \frac{(k - h)}{\theta^2 T}[D(e^{\theta T_d} - \theta T_d - 1) + \theta^2 W(T - T_d)] - \frac{sI_eD(2MT - N^2 - T^2)}{2T} \tag{4}
$$

$$
TC_4(T) = \frac{A}{T} + \frac{D(k + c\theta)}{\theta^2 T}(e^{\theta T} - \theta T - 1) - \frac{(k - h)}{\theta^2 T}[D(e^{\theta T_d} - \theta T_d - 1) + \theta^2 W(T - T_d)] - \frac{sI_eD(M^2 - N^2)}{2T} - \frac{I_c}{T}
$$
$$
- \left[sDM + \frac{sI_eD(M^2 - N^2)}{2} - cDT\right](T - M) - \frac{sI_eD(T - M)^2}{2T} \tag{5}
$$

and

$$
TC_5(T) = \frac{A}{T} + \frac{D(k + c\theta)}{\theta^2 T}(e^{\theta T} - \theta T - 1) - \frac{(k - h)}{\theta^2 T}[D(e^{\theta T_d} - \theta T_d - 1) + \theta^2 W(T - T_d)] - \frac{sI_eD(M^2 - N^2)}{2T} - \frac{I_c}{2sDT}
$$
$$
- \left\{cDT - \left[sDM + \frac{sI_eD(M^2 - N^2)}{2}\right]\right\}^2 - \frac{sI_eD}{2T}\left\{T - M - \frac{cDT - \left[sDM + \frac{sI_eD(M^2 - N^2)}{2}\right]}{sD}\right\}^2 \tag{6}
$$

From Eqs. (2)–(6), it is obvious that $TC_1(T_d) = TC_2(T_d)$, $TC_2(N) = TC_3(N)$, $TC_3(M) = TC_4(M)$ and $TC_4(W^*) = TC_5(W^*)$. Furthermore, $TC(T)$ is continuous on $(0, \infty)$.

In this case, the annual total relevant cost can be as follows

$$
TC(T) = \begin{cases}
TC_1(T) & \text{if } 0 < T \leqslant N & \text{(7a)} \\
TC_6(T) & \text{if } N < T \leqslant T_d & \text{(7b)} \\
TC_3(T) & \text{if } T_d < T \leqslant M & \text{(7c)} \\
TC_4(T) & \text{if } M < T \leqslant W^* & \text{(7d)} \\
TC_5(T) & \text{if } W^* < T & \text{(7e)}
\end{cases}
$$

where

$$
TC_6(T) = \frac{A}{T} + \frac{D(h + c\theta)}{\theta^2 T}(e^{\theta T} - \theta T - 1) - \frac{sI_eD}{2T}(2MT - N^2 - T^2) \tag{8}
$$

Obviously, $TC_1(N) = TC_6(N)$ and $TC_6(T_d) = TC_3(T_d)$. Furthermore, $TC(T)$ is continuous on $(0, \infty)$.

(III) Suppose $N < M < T_d < W^*$

In this case, the annual total relevant cost can be as follows

$$
TC(T) = \begin{cases}
TC_1(T) & \text{if } 0 < T \leqslant N & \text{(9a)} \\
TC_6(T) & \text{if } N < T \leqslant M & \text{(9b)} \\
TC_7(T) & \text{if } M < T \leqslant T_d & \text{(9c)} \\
TC_4(T) & \text{if } T_d < T \leqslant W^* & \text{(9d)} \\
TC_5(T) & \text{if } W^* < T & \text{(9e)}
\end{cases}
$$

where

$$
TC_7(T) = \frac{A}{T} + \frac{D(h + c\theta)}{\theta^2 T}(e^{\theta T} - \theta T - 1) - \frac{sI_eD(M^2 - N^2)}{2T} - \frac{I_c}{T}\left[sDM + \frac{sI_eD(M^2 - N^2)}{2} - cDT\right][T - M]
$$
$$
- \frac{sI_eD}{2T}(T - M)^2 \tag{10}
$$

Likewise, $TC_6(M) = TC_7(M)$ and $TC_7(T_d) = TC_4(T_d)$. Furthermore, $TC(T)$ is continuous on $(0, \infty)$

Table 1
The optimal replenishment policy used Theorem 1.

	θ	D	A	c	s	k	h	I_e	I_p	N	M	W	T_a	W^{**}	Δ_1	Δ_2	Δ_3	Δ_4	Δ_5	T^*	$TVC(T^*)$
(A1)	0.1	250	160	5	10	3	1	0.12	0.15	0.2	0.3	50	0.1980	0.606	<0	<0	<0	<0	<0	T_3^*=0.621	415.2456
(A2)	0.1	500	100	5	10	3	1	0.12	0.15	0.2	0.3	50	0.0995	0.606	<0	<0	<0	<0	>0	T_4^*=0.362	453.4573
(B1)	B11	B12	B13	B14	2	1.1	1	B15	0.15	0.0161	0.0165	B16	B17	B18	<0	<0	<0	<0	<0	T_1^*=-0.0161	148020
(B2)	0.1	500	80	5	10	3	1	0.12	0.15	0.2	0.3	50	0.0995	0.606	<0	<0	>0	<0	>0	T_4^*=0.33	395.6781
(B3)	0.1	500	50	5	10	3	1	0.12	0.15	0.2	0.3	50	0.0995	0.606	<0	<0	>0	>0	>0	T_3^*=-0.237	282.7535
(C1)	C11	C12	C13	1.9999	2	1.1	1	C14	0.15	C15	C16	C17	C18	0.0161	<0	>0	>0	<0	<0	T_3^*=-0.0161	166450
(C2)	0.01	100	5	2	4	3	1	0.12	0.15	0.2	0.21	10	0.1	0.4205	<0	>0	>0	<0	>0	T_2^*=0.199	39.7380
(C3)	0.1	500	5	5	10	3	1	0.12	0.15	0.2	0.3	50	0.0995	0.606	<0	>0	>0	>0	>0	T_2^*=-0.1065	27.2602
(D1)	D11	100	D12	1.9999	2	1	1.955	D13	0.15	D14	D15	1.65	D16	D17	>0	>0	>0	<0	<0	T_1^*=-D18	D19
(D2)	0.1	500	3	5	10	1.1	1	0.12	0.15	0.1	0.12	50	0.0995	0.2405	>0	>0	>0	<0	>0	T_1^*=-0.0890	55.1821
(D3)	0.1	500	3	5	10	3	1	0.12	0.15	0.2	0.3	50	0.0995	0.606	>0	>0	>0	>0	>0	T_1^*=-0.0890	7.1821

B11 = 0.00001; B12 = 9,000,000; B13 = 1224.0458507278; B14 = 1.9999; B15 = 0.000005; B16 = 144900; B17 = 0.01609999970; B18 = 0.01650082507385;
C11 = 0.00001; C12 = 10,000,000; C13 = 1378.92297; C14 = 0.000005; C15 = 0.016119; C16 = 0.0161201; C17 = 100,000; C18 = 0.0099999;
D11 = 0.00001; D12 = 0.012930483; D13 = 0.000115; D14 = 0.01650098; D15 = 0.016501; D16 = 0.01649999864949; D17 = 0.01650182509129;
D18 = 0.016194501; D19 = 1.567067798;

References

Aggarwal, S.P., Jaggi, C.K., 1995. Ordering policies of deteriorating items under permissible delay in payments. Journal of the Operational Research Society 46, 658–662.

Bhunia, A.K., Maiti, M., 1998. A two warehouse inventory model for deteriorating items with a linear trend in demand and shortages. Journal of the Operational Research Society 49, 287–292.

Chang, C.T., 2004. An EOQ model with deteriorating items under inflation when supplier credits linked to order quantity. International Journal of Production Economics 88, 307–316.

Chang, H.J., Hung, C.H., Dye, C.Y., 2001. An inventory model for deteriorating items with linear trend demand under the condition that permissible delay in payments. Production Planning and Control 12, 274–282.

Goyal, S.K., 1985. Economic order quantity under conditions of permissible delay in payments. Journal of the Operational Research Society 36, 335–338.

Goyal, S.K., Giri, B.C., 2001. Recent trends in modeling of deteriorating inventory. European Journal of Operational Research 134, 1–16.

Haley, C.W., Higgins, H.C., 1973. Inventory policy and trade credit financing. Management Science 20, 464–471.

Hartely, V.R., 1976. Operations Research, A managerial emphasis, Santa Monica, pp. 315–317.

Huang, Y.F., 2003. Optimal retailer's ordering policies in the EOQ model under trade credit financing. Journal of the Operational Research Society 54, 1011–1015.

Hwang, H., Shinn, S.W., 1997. Retailer's pricing and lot sizing policy for exponentially deteriorating products under the condition of permissible delay in payments. Computers and Operations Research 24, 539–547.

Jamal, A.M.M., Sarker, B.R., Wang, S., 1997. An ordering policy for deteriorating items with allowable shortages and permissible delay in payment. Journal of the Operational Research Society 48, 826–833.

Liao, H.C., Tsai, C.H., Su, C.T., 2000. An inventory model with deteriorating items under inflation when a delay in payment is permissible. International Journal of Production Economics 63, 207–214.

Pakkala, T.P.M., Achary, K.K., 1992. A deterministic inventory model for deteriorating items with two warehouses and finite replenishment rate. European Journal of Operational Research 57, 71–76.

Sarker, B.R., Jamal, A.M.M., Wang, S., 2000. Supply chain model for perishable products under inflation and permissible delay in payment. Computers and Operations Research 27, 59–75.

Sarma, K.V.S., 1987. A deterministic order level inventory model for deteriorating items with two storage facilities. European Journal of Operational Research 29, 70–73.

Teng, J.T., Chang, C.T., Goyal, S.K., 2005. Optimal pricing and ordering policy under permissible delay in payments. International Journal of Production Economics 97, 121–129.

Yang, H.L., 2004. Two-warehouse inventory models for deteriorating items with shortages under inflation. European Journal of Operational Research 157, 344–356.

Zhou, Y.W., 2003. A multi-warehouse inventory model for items with time-varying demand and shortages. Computers and Operations Research 30, 2115–2134.

Zhou, Y.W., Yang, S.L., 2005. A two-warehouse inventory model for items with stock-level-dependent rate. International Journal of Production Economics 95, 215–228.

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Math/ W2/2020/T0YKUM-CE000088

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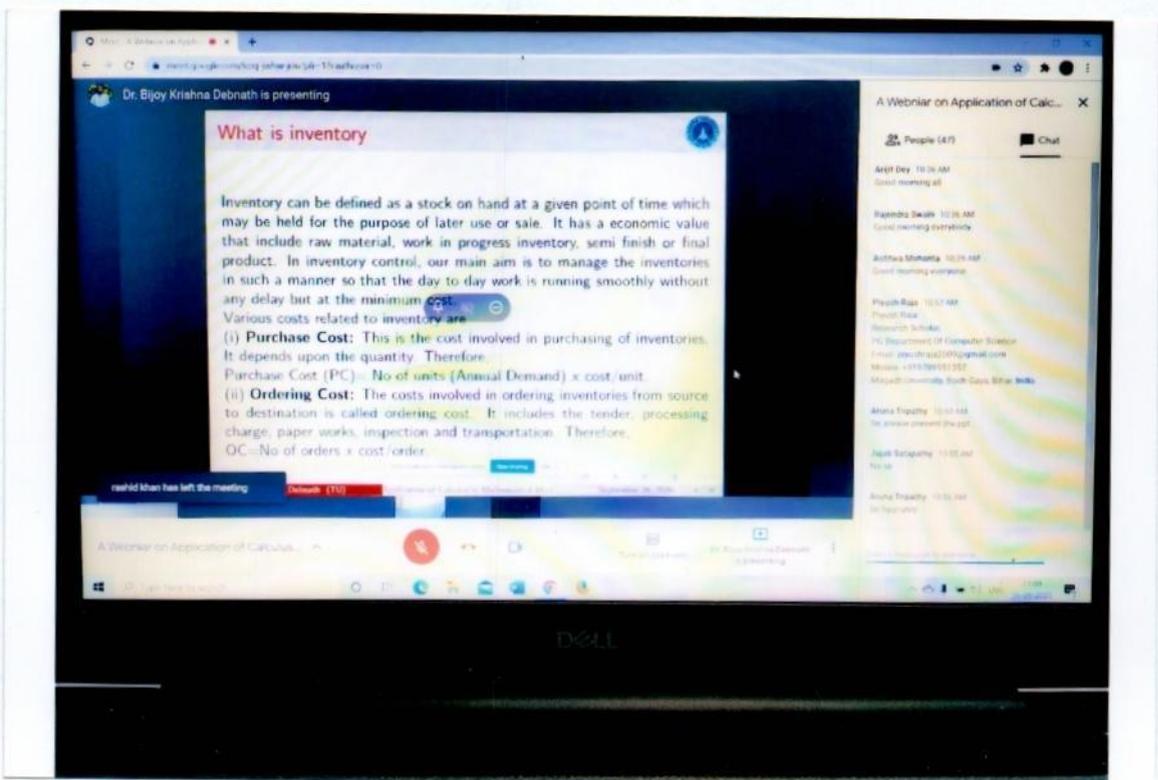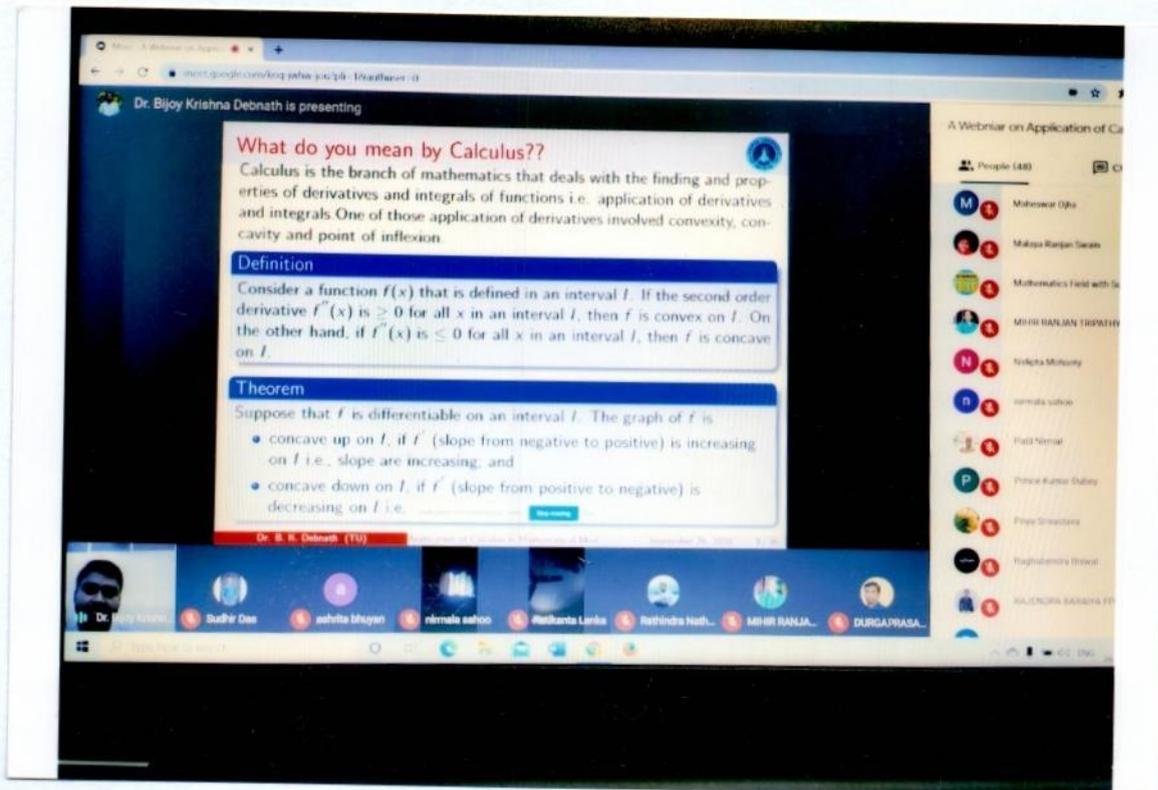| Full Name	Email	College/Institute Name
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ପଙ୍ଗାମୁଣ୍ଡାଇ କଲେଜ ଗଣିତ ବିଭାଗ ୱେବିନାର

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ପଞ୍ଚମୁଣ୍ଡାଇ କଲେଜ ଗଣିତ ବିଭାଗ ୱେବିନାର

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ଏଥିରେ ଆସାମ ତେଜପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟ ଗଣିତ ବିଭାଗ ସହକାରୀ ପ୍ରଫେସର ଡ. ବିଜୟକୃଷ୍ଣ ଦେବନାଥ ଯୋଗଦେଇ କାଲକୁଲସର ପ୍ରୟୋଗ ଓ ଗଣିତରେ ଇନଭେଣ୍ଟରୀ ମଡେଲର ଆବଶ୍ୟକତା ସମ୍ପର୍କରେ ବିଶ୍ଳେଷଣ କରିଥିଲେ। ବିଭାଗୀୟ ମୁଖ୍ୟ ପ୍ରଧ୍ୟାପକ ଅରବିନ୍ଦ ପାଣ୍ଡବ ସ୍ୱାଗତ ଭାଷଣ ଓ ଅତିଥି ପରିଚୟ ପ୍ରଦାନ କରିଥିଲେ। ଶେଷରେ ଅଧ୍ୟାପକ ଡ. ନିର୍ମଳ କୁମାର ସାହୁ ଧନ୍ୟବାଦ ଦେଇଥିଲେ। ଏହି କାର୍ଯ୍ୟକ୍ରମରେ ବହୁ ଅଧ୍ୟାପକ/ଅଧ୍ୟାପିକା ଓ ଛାତ୍ରଛାତ୍ରୀ ଯୋଗ ଦେଇଥିଲେ।

ପଞ୍ଚାମୁଣ୍ଡାଇ କଲେଜରେ ୱେବିନାର

ପଞ୍ଚାମୁଣ୍ଡାଇ(ଆପ୍ର): ପଞ୍ଚାମୁଣ୍ଡାଇ କଲେଜ ଗଣିତ ବିଭାଗ ପକ୍ଷରୁ 'ଆପ୍ଲିକେସନ ଅଫ କାଲକୁଲସ ଇନ ମ୍ୟାଥମେଟିକାଲ ମଡେଲିଂ-ଏ ଜର୍ସି ଥ୍ରୁ ଇନଭେଣ୍ଟରୀ ମଡେଲିଂ' ଶୀର୍ଷକ ୱେବିନାର କଲେଜ ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ଅଧିକାରୀ ଲକ୍ଷ୍ମୀନାରାୟଣ ଦାଶଙ୍କ ପୌରହିତ୍ୟରେ ଅନୁଷ୍ଠିତ ହୋଇଛି। ଏଥିରେ ଆସାମ ତେଜପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟ ଗଣିତ ବିଭାଗ ସହକାରୀ ପ୍ରଫେସର ଡ. ବିଜୟକୃଷ୍ଣ ଦେବନାଥ ଯୋଗ ଦେଇ କାଲକୁଲସର ପ୍ରୟୋଗ ଓ ଗଣିତରେ ଇନଭେଣ୍ଟରୀ ମଡେଲର ଆବଶ୍ୟକତା ସମ୍ପର୍କରେ ବିଶ୍ଳେଷଣ କରିଥିଲେ। ବିଭାଗୀୟ ମୁଖ୍ୟ ପ୍ରଧ୍ୟାପକ ଅରବିନ୍ଦ ପାଣ୍ଡବ ସ୍ୱାଗତଭାଷଣ ଓ ଅତିଥିପରିଚୟ ପ୍ରଦାନ କରିଥିଲେ। ଶେଷରେ ଅଧ୍ୟାପକ ଡ. ନିର୍ମଳ କୁମାର ସାହୁ ଧନ୍ୟବାଦ ଦେଇଥିଲେ। କାର୍ଯ୍ୟକ୍ରମରେ ବହୁ ଅଧ୍ୟାପକ/ଅଧ୍ୟାପିକା ଓ ଛାତ୍ରଛାତ୍ରୀ ଯୋଗ ଦେଇଥିଲେ।

ସେହିପରି ଓଡିଆ ବିଭାଗ ପକ୍ଷରୁ ଓଡିଆ ନାଟକ ଅଭ୍ୟୁଥାନରେ ନାଟ୍ୟକାର କାନ୍ତିଚରଣ ଓ ଅଶ୍ୱିନୀ କୁମାର ଶୀର୍ଷକ ୱେବିନାର ଅନୁଷ୍ଠିତ ହୋଇଥିଲା। ଏଥିରେ ବିଶ୍ୱ ଭାରତୀର ପ୍ରଫେସର ଡ. ନିଳାଦ୍ରୀ ଭୂଷଣ ହରିଚନ୍ଦନ ଯୋଗ ଦେଇ ବିଷୟ ଭିତିକ ଆଲୋଚନା କରିଥିଲେ। କଲେଜ ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ଅଧିକାରୀ ଲକ୍ଷ୍ମୀନାରାୟଣ ଦାଶ ସ୍ୱାଗତଭାଷଣ ଓ ବିଭାଗୀୟ ମୁଖ୍ୟ ପ୍ରଧାପକ ଡ. ନାମମଣି ଲେଙ୍କା କାର୍ଯ୍ୟକ୍ରମ ସମ୍ପର୍କରେ ସୂଚନା ଦେଇଥିଲେ। ପ୍ରାଧ୍ୟାପକ ଡ. ପ୍ରେମଲତା ରାଉତ ଅତିଥିପରିଚୟ ପ୍ରଦାନ କରିଥିଲେ। ଶେଷରେ ଅଧ୍ୟାପିକା ଲକ୍ଷ୍ମୀପ୍ରିୟା ପାତ୍ର ଧନ୍ୟବାଦ ଦେଇଥିଲେ। କାର୍ଯ୍ୟକ୍ରମକୁ ଅଧ୍ୟାପକ ପ୍ରମୋଦ ସ୍ୱାଇଁ, ନିରୁପମା ସ୍ୱାଇଁ, ଜିତେନ୍ଦ୍ର ମଲ୍ଲିକ, ଡ. ମାନସ ନାୟକ ପରିଚାଳନା କରିଥିଲେ।

ପ୍ରମେୟ
THE PRAMEYA

ଗଣିତ ବିଭାଗରେ ୱେବିନାର୍

ପଙ୍ଗମୁଣ୍ଡାଇ,୪୧୦(ଆପ୍): ପଙ୍ଗମୁଣ୍ଡାଇ କଲେଜ ଗଣିତ ବିଭାଗ ପକ୍ଷରୁ ଆପ୍ଲିକେସନ୍ ଅଫ୍ କାଲ୍କୁଲସ ଇନ୍ ମାଥମେଟିକାଲ୍ ମଡେଲିଂ ଏ ଜର୍ନିଂ ଥ୍ରୁ ଇନ୍ଭେଣ୍ଡାରୀ ମଡେଲିଂ ଶୀର୍ଷକ ୱେବିନାର୍ କଲେଜ ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ଅଧିକାରୀ ଲକ୍ଷ୍ମୀନାରାୟଣ ଦାସଙ୍କ ପୌରହିତ୍ୟରେ ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି । ଏଥିରେ ଆସାମ ତେଜପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟ ଗଣିତ ବିଭାଗ ସହକାରୀ ପ୍ରଫେସର ଡ ବିଜୟକୃଷ୍ଣ ଦେବନାଥ ଯୋଗଦେଇ କାଲ୍କୁଲସ୍ର ପ୍ରୟୋଗ ଓ ଗଣିତରେ ଇନ୍ଭେନ୍ଟାରୀ ମଡେଲର ଆବଶ୍ୟକତା ସମ୍ପର୍କରେ ବିଶ୍ଳେଷଣ କରିଥିଲେ । ବିଭାଗୀୟ ମୁଖ୍ୟ ପ୍ରଧ୍ୟାପକ ଅରବିନ୍ଦ ପାଣ୍ଡବ ସ୍ୱାଗତ ଭାଷଣ ଓ ଅତିଥି ପରିଚୟ ପ୍ରଦାନ କରିଥିଲେ । ଶେଷରେ ଅଧ୍ୟାପକ ଡ. ନିର୍ମଳ କୁମାର ସାହୁ ଧନ୍ୟବାଦ ଦେଇଥିଲେ । ଏହି କାର୍ଯ୍ୟକ୍ରମରେ ବହୁ ଅଧ୍ୟାପକ/ଅଧ୍ୟାପିକା ଓ ଛାତ୍ରଛାତ୍ରୀ ଯୋଗ ଦେଇଥିଲେ ।

ପଙ୍ଗାମୁଣ୍ଡାଇ କଲେଜ ଗଣିତ ବିଭାଗ ୱେବିନାର

● ପଙ୍ଗାମୁଣ୍ଡାଇ,ପିଏନଏସ୍:
ପଙ୍ଗାମୁଣ୍ଡାଇ କଲେଜ ଗଣିତ ବିଭାଗ ପକ୍ଷରୁ ଆପ୍ଲିକେସନ ଅଫ କାଲ୍କୁଲସ ଇନ ମାଥମେଟିକାଲ ମଡେଲିଂ ଏ କର୍ସ ଥୁ ଇନଭେଣ୍ଡାରୀ ମଡେଲିଂ ଶୀର୍ଷକ ୱେବିନାର କଲେଜ ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ଅଧିକାରୀ ଲକ୍ଷ୍ମୀନାରାୟଣ ଦାଶଙ୍କ ପୌରହିତ୍ୟରେ ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି । ଏଥିରେ ଆସାମ ତେଜପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟ ଗଣିତ ବିଭାଗ ସହକାରୀ ପ୍ରଫେସର ଡ. ବିଜୟକୃଷ୍ଣ ଦେବନାଥ ଯୋଗ ଦେଇ କାଲ୍କୁଲସର ପ୍ରୟୋଗ ଓ ଗଣିତରେ ଇନଭେନ୍ଡାରୀ ମଡେଲର ଆବଶ୍ୟକତା ସଂପର୍କରେ ବିଶ୍ଲେଷଣ କରିଥିଲେ । ବିଭାଗୀୟ ମୁଖ୍ୟ ପ୍ରଧ୍ୟାପକ ଅରବିନ୍ଦ ପାଣ୍ଡବ ସ୍ୱାଗତଭାଷଣ ଓ ଅତିଥିପରିଚୟ ପ୍ରଦାନ କରିଥିଲେ । ଶେଷରେ ଅଧ୍ୟାପକ ଡ. ନିର୍ମଳ କୁମାର ସାହୁ ଧନ୍ୟବାଦ ଦେଇଥିଲେ । ଏହି କାର୍ଯ୍ୟକ୍ରମରେ ବହୁ ଅଧ୍ୟାପକ, ଅଧ୍ୟାପିକା ଓ ଛାତ୍ରଛାତ୍ରୀ ଯୋଗ ଦେଇଥିଲେ ।