Course Code: 1BBA6
Course: Business Mathematics
Credit: 3
Last Submission Date: April 30 (for January Session)
October 31, (for July session)

Max. Marks:-30
Min. Marks:-10

Note:-attempt all questions.

1. **Find the points of inflexion of the function** $y = \frac{1}{3}x^3 - \frac{5}{2}x^2 + 6x - 12$
फलन $y = \frac{1}{3}x^3 - \frac{5}{2}x^2 + 6x - 12$ dk uhfr ifjorZu fcUnq Kkr dhft,A

2. **(a) if** ;fn $A = \begin{bmatrix} 3 \\ 5 \\ 4 \\ 2 \end{bmatrix}$ gks rks **find** AA' rFkk **and** AA' Kkr dhft,A

(b) if ;fn $A = \begin{bmatrix} 0 & 0 & 1 \\ 2 & -3 & 0 \\ 1 & 1 & -1 \end{bmatrix}$ **find** $A^3 + 4A^2 - A$ dk eku crkvksA

3. ;fn **if** $A = \begin{bmatrix} 1 & -2 & 3 \\ -4 & 2 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 3 \\ 4 & 5 \\ 2 & 1 \end{bmatrix}$ gks rks **find AB** Kkr dhft, rFkk fn[kkb;s fd **AB ≠ BA**

4. **Solve the following linear programming problem by graphic method:-**
fuEufyf[kr js[kh; iz.kkyu leL;k dk xzkQh; fof/k ls gy dhft,A
vf/kdre djks **Maximize**

$$Z = 5x_1 + 7x_2$$

tcfd **such that** $x_1 + x_2 \leq 4$

$$3x_1 + 8x_2 \leq 24$$

$$10x_1 + 7x_2 \leq 35$$

rFkk **and** $x_1, x_2 \geq 0$

5. **Solve the following Linear programming problem by simplex method**
fuEufyf[kr js[kh; iz.kkyu dk flEIysDl fof/k ls gy dhft,%&
vf/kdre dhft, **Maximize**

$$Z = 4x_1 + 5x_2$$

tcfd **such that** $2x_1 + 3x_2 \leq 24$

$$2x_1 + x_2 \leq 16$$

rFkk **and** $x_1, \; x_2 \geq 0$

6. **(a) In What time will the simple interest on Rs.500 at 6% be equal to the intrest on Rs 540 for 8 years at 5% ?**

og le; Kkr dhft, ftlls lk/kkj.k C;kt ` 500रू. पर 6% dh nj ls mruk gh C;kt feyk ftruk fd 540 रू. पर 8 वर्ष में 5% C;kt dh nj ls feyrk gS\

(b) A what rate of simple interest will Rs.800 amount to Rs. 836 in 9 month?

fdruh % lk/kkj.k C;kt dh nj ls 800रू. 9 माह में 836 :-gks tk;sxh\

7. Find the compound interest Rs 1200@ 8% annually for two year's if

1200 रू. का 8% वार्शिक चक्रवृद्धि ब्याज की दर से 2 वर्श का चक्रवृद्धि ब्याज ज्ञात dhft, ;fn%

(i) The interest is calculated annually

;fn ब्याज का आगणन वार्षिक होता हो।

(ii) The interest is calculated Half yearly.

यदि ब्याज का आगणन अर्द्ध–वार्षिकd gksrk gkA

(iii) The interest is calculated quarterly.

;fn C;kt dk vkx.ku =ekfld gksrk gkA

8. Differentiate the function y= $(1+x^2+x^3)$ (3x+5) with respect to x.

Qyu y= $(1+x^2+x^3)$ (3x+5) dk x d lkis{k vodyu dhft,A

9. What annual will discharge a debt Rs 4,620 due in 5 years at 5% simple interest.

5% Lkk/kkj.k C;kt dh nj ls 4,620 :-5वर्ष में अदा करने के लिए कितनी वार्षिकd fdLr pqdkuh iMsxh\

10. Mr. 'x' borrowed 5,000 at 5% compound interest to repay in two equal instalments in two years. Find what will be the amount of each annual instalment?

fe-,DI us 5% वार्षिकd pdoof?n C;kt nj ls दो वर्षों में समान किस्तों में चुकाने के लिए 5,000 :-उधार लिए। बताओ प्रत्येक वार्षिक किस्त कितनी होगी\