ZàÎÂà-4. â§ýyã âÂàâÎjm oÂàÊàâÎà §ýà 2 wx¦ §ýà j§ýwâ÷ £uàk 920.25 Ûý. Ñ¦ ¡àÊ yàoàÊ½à £uàk 900 Ûý. Ñ¦ ñ oÂàÊàâÎà mnà £uàk §ýL ÀÊ Öààm §ýLâk¥ ñ

The compound interest on a certain sum of money for two years is Rs. 920.25 and the simple interest is Rs. 900. Find the sum and rate percent of interest.

OR

5% yàoàÊ½à £uàk §ýL ÀÊ y¦ 9,240 Ûý. qà¡j wx¦ t¦ sªàmàÂà §ýÊÂà §ý âv¥ â§ýmÂàã wàâx§ý â§ýÐm j¦§ýâÂàã q»¦ªàã ñ

What annual instalment will discharge debt of Rs. 9,240 due in 5 years at 5% simple interest?

ZàÎÂà-5. ¥§ý ¥k½»¦ Âà§ýÀ âr§ýL qÊ 5% §ýtâÎàÂà mnà £oàÊ âr§ýL qÊ 9% §ýtâÎàÂà vmà Ñ¦ ñ uâÀ §ýv âtvà§ýÊ £y¦ §ýv âr§ýL §ýà 7½% âtvà Ña¦ mà ÀàÂàà¦ Zà§ýàÊ §ýL âr§ýL §ýà ¡Ààqàm Öààm §ýLâk¥ ñ

An agent charges 5% commission on cash sales and 9% on credit sales. If his overall return is 7½% on the total sales, find the ratio between the two sales.

OR

¡Õàm Âà¦ §ýq»¦ §ý 1,000 ¹¦§ý»¦ 30 Ûý. Zàâm ¹¦§ý»¦ §ýL ÀÊ y¦ hÊãÀ¦ ¡àÊ 25% §ýà r¹¦¹¦à ZàâÃm â§ýuà ñ £yÂà¦ 750 ¹¦§ý»¦ rS¦ y¦ qÑv¦ §ý vàªàm t¦Ìu qÊ mnà ¡Âu 200 ¹¦§ý»¦ sã £yã t¦Ìu qÊ r¡¦ qÊm¦ ràÀ wàv¦ ¹¦§ý»¦à¦ qÊ £y¦ 20% rS¦à ÀÂàà q»¦à ñ uÑ tàÂàm¦ Ñ¥ â§ý Îàx ¹¦§ý»¦ §ýwv 825 Ûý. t¦ âr§ýªà, yq½à Íuwѧà qÊ vàs §ýà ZàâmÎàm Öààm §ýLâk¥ ñ

Akshat purchased 1,000 piece of cloth at the rate of Rs. 30 per piece and got a discount of 25%. He sold 750 pieces at cost price before discount and another 200 pieces at the same price but on these pieces he had to allow 20% discount. Assuming that the remaining pieces would be sold for Rs. 825 only, find the percentage of profit on the whole deal.

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Roll No..... Total No. of Section : 03
Total No. of Printed Pages : 06

Code No. : B-305(A)

Annual Examination - 2017

B.Com-I

BUSINESS MATHS

(GROUP-II)

Paper - II

BUSINESS MATHEMATICS

Max.Marks : 75
Time : 3 Hrs. **Min Marks : 25**

¹¦àq ß h½»¦'¡'t¦ Ày ¡âmvi¦ÙàÊa ZàÎÂà Ñ¦, âkÂÑ¦ Ñv §ýÊÂàà ¡âÂàwàu¦ Ñ¦ ñ h½»¦'r't¦ vi¦ÙàÊã ZàÎÂà mnà h½»¦'y't¦ Àã i¦ £ÙàÊãu ZàÎÂà Ñ¦ ñ h½»¦'¡'§ýà yry¦ qÑv¦ Ñv §ýÊ¦ ñ

Note : Section 'A' comprising of 10 very short answer type question, is compulsory. Section 'B' consists of short answer type questions and Section 'C' consists of long answer type questions. Section 'A' has to be solved first.

h½»¦-'¡'(Section-'A')

âÂàÈÂàà¦â§ým ¡âm vi¦£ÙàÊãu ZàÎÂàà¦ §ý £ÙàÊ ¥§ý uà Àà¦ wà¨uà¦ t¦ À¦ ñ (Answer the following very short-answer-type questions in one or two sentences) **(1x10=10)**

ZàÎÂà-1. tàÂà Öààm §ýLâk¥ (Find out the value of) ß

$$\frac{d}{dx}\log(ax+b)=?$$

ZàÎÂà-2. âÂàÈÂà y©uà §ý yàtàÂu vi ªà½à§ý §ý q½àà¦Îà §ýà¦ âvâh¥ ß

Write down the characteristics of the common logarithm of :

.00073

ZàÎÂà-3. x §ýà tàÂà Öààm §ýLâk¥ uâÀ (Find the value of x if) ß

$$\begin{vmatrix} x & 2x \\ -3 & 5 \end{vmatrix} = 44$$

P.T.O.

ZàÎÀà-4. mmãu §ýt §ýà ¢§ýà¢ ¡àÍuÑ âvâh¥ ñ

Write down the third order of unit matrix.

ZàÎÀà-5. x §ýà tàÀà Öààm §ýLâk¥ (Solve for x) :

$$7\frac{1}{2} : x :: 12 : 20$$

ZàÎÀà-6. âÀàÈÀàâvâhm yØà §ýL Íuà©uà §ýLâk¥ (Discuss the following formula) ß

$$A = P\left[1+\frac{R}{100}\right]^n$$

ZàÎÀà-7. x §ýà tàÀà Öààm §ýLâk¥ (Find the value of x) ß

Average value (¡àym tÌu)

$$130 = 124 + 136 + x$$

ZàÎÀà-8. 50 qy¡, 25 Ûý. §ýà âSýmÀà¡ ZàâmÎàm Ñ¡ ?

What percent is 50 paise of Rs. 25 ?

ZàÎÀà-9. ¥§ý ¥k½¹¡ §ýà §ýv ârSýL qÊ 7% §ýL ÀÊ y¡ 700 Ûý. §ýtâÎàÀà âtvà ñ ârSýL §ýL ÊàâÎà rmà¢¥ ñ

An agent is entitled to a commission of Rs. 700@ 7% on turnover. Find the turnover.

ZàÎÀà-10. r¹¡¹¡ §ýà qáÊsàâxm §ýLâk¥ ñ

Define discount.

h½»¡-'r' (Section-'B')

âÀàÈÀàà¹â§ým vi¡ £ÙàÊãu ZàÎÀàà¡ §ý¡ £ÙàÊ 150-200 îàÆ-yãtà t¡ À¡ ñ (Answer the following short-answer type questions with word limit 150-200) **(5x5=25)**

ZàÎÀà-1. x §ý yàqÕà ¡w§ývk Öààm §ýLâk¥ ß

Differentiate with respect to x :

$$\frac{x}{4x+2}$$

OR

tàÀà âÀà§ýàvà (Evaluate)ß $(0.4627)^{1/3}$

ZàÎÀà-2. ây÷ §ýLâk¥ ß

Prove that :

$$\begin{vmatrix} a+b & b+c & c+a \\ p+q & q+r & r+p \\ l+m & m+n & n+l \end{vmatrix} = 2\begin{vmatrix} a & b & c \\ p & q & r \\ l & m & n \end{vmatrix}$$

OR

âÀàÈÀà ¡àÍuÑ §ýà Zàâmvàt âÀà§ýàâv¥ ß

Compute the inverse of matrix :

$$\begin{bmatrix} 2 & 3 & 1 \\ 3 & 4 & 1 \\ 3 & 7 & 2 \end{bmatrix}$$

ZàÎÀà-3. âÀàÈÀàâvâhm uàmàuàm ytÐuà §ýà ÂuÀàmt Íuu âwâo y¡ Ñv §ýLâk¥ ß

Solve the following transportation problem by lowest cost method :

wuÊÑà¤ýy (Warehouse) \ ràkàÊ (Market)	M_1	M_2	M_3	qâm¡ (Available)
W_1	16	19	12	14
W_2	22	13	19	16
W_3	14	28	8	12
tàªà (Demand)	10	15	17	42

OR

¡ÊâwÂÀ ¡àÊ ¡ÀàÊàªà §ýL ¡àuà¡, Íuuà¡ ¡àÊ rjmà¡ §ý §ýtÎàß ¡Ààqàm 5:3, 8:5 mnà 2:1 Ñ¡ ñ uâÀ ÀàÂàà¡ §ýL yuQý rjm 3,600 Ûý. wàâx§ý Ña¡ mà¡ £Âà§ýL tàâyS§ý ¡àu Öààm §ýLâk¥ ñ

The ratios of income, expenditure and savings of Arvind and Anurag are 5:3, 8:5 and 2:1 respectively. The joint savings of both of them are Rs. 3,600 in a year, find their monthly income.

P.T.O.

ZàÎÀà-2. x, y mnà z §ý tàÂà rmà¡à màâ§ý ¡àÍuÑ A ¡àÊ B ytàÂà Ña¡ kÑà

Find the value of x, y and z so that the matrices A & B are equal where

$$A=\begin{bmatrix} x+y & z \\ 1 & x-y \end{bmatrix},\ B=\begin{bmatrix} 3 & 2 \\ 1 & 7 \end{bmatrix}$$

OR

âÂàÈÂàâvâhm yàÊâ½âa§ýà¡ §ý tàÂà Öààm §ýLâk¥ ß

Evaluate the following determinants :

$$\begin{vmatrix} 1 & 2 & 4 \\ 2 & 3 & 7 \\ 3 & 4 & 10 \end{vmatrix}$$

ZàÎÀà-3. âÂàÈÂàâvâhm Êhãu Zà§ýt½à ytÐuà §ýà¡ ªààÄý §ýL âwâo y¡ Ñv §ýLâk¥ ß

Solve the following Linear Programming problem by graphical method :

¡âo§ýmt §ýLâk¥ (maximise) $Z = 3x + 5y$

krâ§ý (such that) $x + 2y \le 20$

$x + y \le 15$

$y \le 6$ mnà $x \ge 0, y \ge 0$

OR

qáÊwÑÀà tà»¡v qÊ â¹¡Åq½àã âvâh¥ ñ

Write short note on Transportation Model.

ZàÎÀà-4. 25,000 Ûý. §ýà 2 wx¡ §ýà j§ýwâ÷ £uàk y¡ âtóoÀà ¨uà Ña¡ªàà uâÀ £ÙàÊàÙàÊ wxà §ýL ÀÊ 4% ¥w¡ 5% Zàâm wx¡ Ñ¡ ñ

How much will Rs. 25,000 amount to in 2 years at compound interest if the rates for the successive year be 4% and 5% per year.

P.T.O.

(3) **Code No. : B-305(A)**

ZàÎÀà-2. x, y mnà z §ý tàÂà rmà¡à màâ§ý ¡àÍuÑ A ¡àÊ B ytàÂà Ña¡ kÑà

Find the value of x, y and z so that the matrices A & B are equal where

$$A=\begin{bmatrix} x+y & z \\ 1 & x-y \end{bmatrix},\ B=\begin{bmatrix} 3 & 2 \\ 1 & 7 \end{bmatrix}$$

OR

âÂàÈÂàâvâhm yàÊâ½âa§ýà¡ §ý tàÂà Öààm §ýLâk¥ ß

Evaluate the following determinants :

$$\begin{vmatrix} 1 & 2 & 4 \\ 2 & 3 & 7 \\ 3 & 4 & 10 \end{vmatrix}$$

ZàÎÀà-3. âÂàÈÂàâvâhm Êhãu Zà§ýt½à ytÐuà §ýà¡ ªààÄý §ýL âwâo y¡ Ñv §ýLâk¥ ß

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How much will Rs. 25,000 amount to in 2 years at compound interest if the rates for the successive year be 4% and 5% per year.

P.T.O.

OR

2000 Ûý. §ýL 20 wxà m§ý jvÂà wàvã wàâx§ýL §ýà âtóoÂà Öààm §ýLâk¥, j§ýwâ÷ £uàk §ýL ÀÊ 8% wàâx§ý Ñ ñ

Find the amount of an annuity of Rs.2000 for 20 years; the rate of compound interest is 8% per annum.

ZàÎÂà-5. ¥§ý ÍuâQý ¡qÂàã tàây§ý ¡àu §ýà $\frac{9}{10}$ iÊv §ýàu t hj §ýÊmà Ñ ñ Îàx §ýà 30% ÀàÂà §ýÊÂà §ý ràÀ £y 1,750 Ûý. §ýL rjm Ñàmã Ñ ñ £y§ýL tàây§ý ¡àu rmà¢¥ ñ

A man spends $\frac{9}{10}$ of his monthly income on domestic affairs. He donates 30% of the balance leaving a balance of Rs. 1,750 as saving. Find out his monthly income.

OR

¥§ý âw§ýmà §ýà 8.55 Ûý. §ý sàw y â§ýmÂà qÂà rjÂà jàâÑ¥ âkyy â§ý 5% §ýL ÀÊ y 85.50 Ûý. §ýà §ýtãÎàÂà âtv y§ý?

How many pens an agent need to sell at Rs. 8.55 each to earn a commission worth Rs. 85.50 at the commission rate of 5%?

h½»-'y' (Section-'C')

âÂàÈÂàà â§ým ÀãiÁ £ÙàÊãu ZàÎÂàà §ý £ÙàÊ 300-350 Îà£À-yãtà t À ñ (Answer the following long-answer type questions with word limit 300-350) **(5x8=40)**

ZàÎÂà-1. uâÀ $u = x^2 + y^2 + z^2$, âÀhà¢¥ â§ý $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + \frac{\partial u}{dz} = 2u$

If $u = x^2 + y^2 + z^2$, show that $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + \frac{\partial u}{dz} = 2u$.

OR

tàÂà Öààm §ýLâk¥ (Evaluate)ß $\frac{\sqrt{78.23} \times \sqrt[3]{0.024}}{(0.9694)^2}$

(4) Code No. : B-305(A)

OR

2000 Ûý. §ýL 20 wxà m§ý jvÂà wàvã wàâx§ýL §ýà âtóoÂà Öààm §ýLâk¥, j§ýwâ÷ £uàk §ýL ÀÊ 8% wàâx§ý Ñ ñ

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h½»-'y' (Section-'C')

âÂàÈÂàà â§ým ÀãiÁ £ÙàÊãu ZàÎÂàà §ý £ÙàÊ 300-350 Îà£À-yãtà t À ñ (Answer the following long-answer type questions with word limit 300-350) (5x8=40)

ZàÎÂà-1. uâÀ $u = x^2 + y^2 + z^2$, âÀhà¢¥ â§ý $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + \frac{\partial u}{dz} = 2u$

If $u = x^2 + y^2 + z^2$, show that $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + \frac{\partial u}{dz} = 2u$.

OR

tàÂà Öààm §ýLâk¥ (Evaluate)ß $\frac{\sqrt{78.23} \times \sqrt[3]{0.024}}{(0.9694)^2}$