

ANNUAL EXAMINATION 2020

(Only for Regular Students)

Centre No. 135
Class-B.Com Part-I
Paper No- I
Time- 3 hrs.

Centre Name- Disha College, Raipur (C.G.)
Subject- Group-II
Paper Name- Business Mathematics
M.M.-75

Note:- Attempt any one question from each unit. Each question carrying equal marks.

Unit-I

Q1(a) Solve the following equations by cross multiplication method:

$7x + 3y - 8z = 0, 5x - 7y + 8z = 0, 3x + 5y + 7z = 64$

(b) A number consist of two digits, whose sum is 12. If 36 is added to the number, the digits are reversed. Find the number.

nks vòls l s cuh fdl h l ; k ds vòls dk ; l 12 gñ ; fn bl l ; k ea 36 tkM+fn; k tkrk gñ rls l ; k ds vòl iyV tkrsgñ l ; k crkvñ

Q2. A firm prepares 200 kg of mixture having the components 'A' and 'B' every day. 'A' costs Rs. 3 per kg and 'B' cost Rs. 8 per kg maximum of 80 kg and minimum of 60 kg of 'B' can be used in the mixture. How much amount of each component should the firm mix to minimize the cost? Transform this problem mathematically and solve this problem graphically.

, d QeZ nks ?Wdñ 'A' rFk 'B' dks feykñ 200 fdxk feJ.k çfrfnu rñkj djrh gñ 'A' dh ylxr #- 3 çfr fdxk rFk 'B' dh ylxr #- 8 çfr fdxk gñ feJ.k ea 'A' dh vf/kdre ek=k 80 fdxk rFk 'B' dh U; mre 60 fdxk ek=k ç; ðr dh tk l drh gñ ylxr dh U; mre j[kus ds fy, QeZ dks çR; d ?Wd dh fdruh ek=k ç; ðr djuh pñg, \ bl l eL; k dk xf.krh; fu#i.k dhft, rFk xkñ; fof/k l sgy dhft, A

Unit-II

Q3(a) Prove that:

$$\begin{vmatrix} a + b + c & -c & -b \\ -c & a + b + c & -a \\ -b & -a & a + b + c \end{vmatrix} = 2(a + b)(b + c)(c + a)$$

(b) If $A = \begin{bmatrix} 9 & 1 \\ 4 & 3 \end{bmatrix}, B = \begin{bmatrix} 1 & 5 \\ 7 & 12 \end{bmatrix}$, find the matrix x so that: $3A + 5B + 2x = 0$

; fn If $A = \begin{bmatrix} 9 & 1 \\ 4 & 3 \end{bmatrix}, B = \begin{bmatrix} 1 & 5 \\ 7 & 12 \end{bmatrix}$, find the matrix x so that: $3A + 5B + 2x = 0$

Q4(a) If $\log_{10}^2 = 0.3010$ $\log_{10}^3 = 0.4771$. Find the logarithm of the following:

; fn $\log_{10}^2 = 0.3010$ $\log_{10}^3 = 0.4771$ gñ rks fuEulñdr l ; k dk y?kñ.kd Kkr dhft, &

(i) $\sqrt[5]{(108)^2}$ (ii) 0.000015

(b) Without using Logarithmic table, prove that:

y?kñ.kd l kj.kh dk fcuk mi ; l 10, 25, 81) dhft, &

$$7\log \frac{10}{9} - 2\log \frac{25}{24} + 3\log \frac{81}{80} = \log 2$$

Unit-III

Q5(a) Raj obtained a loan of Rs. 4000 at an interest rate of 6% per year. He immediately rent Rs. 2500 at an interest rate of 9% per annum to Durgesh and the balance at 12% per year to Harish. After three years he collected the amounts due to them and repaid his loan. Find his gain.

jkt us 6% okññd C; kt dh nj l s #- 4000 dk __.k fy; kñ ml us #- 2500 rññr nññk dks 9% okññd C; kt dh nj l s m/kñ ns fn; s rFk 'kñk 12% okññd C; kt dh nj l s gñh'k dks

fn; A rhu o'k ckn ml usmu nkula l s/kujk'k oki l yd'j viuk __.k pdk fn; kA ml dk ykk crkb, A

- (b) A sum of money was borrowed and paid back in two annual installment of Rs. 5400 and Rs. 11,664 respectively the rate of compound interest was 8% per annum. What sum was borrowed?
 d'q jk'k m/kj yh xbz vlg Øe'k% #- 5]400 rFk #- 11]664 dh 2 ok'k'k fd'rka ea ykS/kbz xbz pØof) C; kt 8% ok'k'k dh nj l syxk; k x; k fdruh jk'k m/kj yh xbz FkA

Q6(a) What do you understand by Annuity? Discuss its various types.
 ok'k'k l s vki D; k l e>rs gS bl ds çdkjka dks crkb, A

- (b) A man retires at the age of 60 years and his employer given him a pension of Rs. 1800 a year paid on half yearly installments for the rest of his life. Reckon his expectation of life to be 13 years more and that interest is at 4% per annum payable half yearly. What single sum at present is equivalent to his pension?
 , d 0; fDr 60 o'k dh vk; qea l ok&fuok gkrk gS vlg ml dks fu; kDrk #- 1800 ok'k'k i s ku thou Hk nsrk gA ; g i s ku ml s v/k&ok'k'k fdLrka ea feyrh gA ; fn ml ds 'k'k'k thou dh vk'k'k 13 o'k gk vlg C; kt dh nj 4% ok'k'k gk rFk C; kt dk Hkrku v/k&ok'k'k gk rks crkvs orëku ea fdruh jk'k ml dh d'g i s ku ds l eku gA

Unit-IV

Q7(a) Mixture of 36 litres contains milk and water in the ratio of 5:1. How much water should be added to the mixture so that the ratio of milk and water be 10:3?
 36 ehVj ds feJ.k ea nkk vlg ikuh dk vuqkr 5:1 gA feJ.k ea fdruk ikuh vlg feyk; k tk; sfd nkk vlg ikuh dk vuqkr 10:3 gk tk; A

- (b) If 24 labour can digged a pit in 18 days by per 7 hours working per day. How many labour required to digging just double pit in 16 days by 9 hours working per day.
 ; fn 24 etnj çfrnu 7 ?k. Vs dk; l d'j ds , d [k'k'k dks 18 fnu ea [k'n l d'rs gA rks fdrus etnj 9 ?k. Vs çfrnu dk; l d'j ds i gyh [k'k'k l s n'kuh [k'k'k dks 16 fnu ea [k'n n'k'k

Q8(a) Find mean from the following table:
 fuEufyf[kr l kj.kh l sek; Kkr dhft, %

Marks:	1-5	6-10	11-15	16-20	21-25
No. of students:	12	30	18	24	6

- (b) A man gave 35% of his sum of money to his son and 25% of his daughter. 50% percent of the remaining gave to a school still he has Rs. 2000 with him find the total sum.
 , d vkneh us vius/ku dk 35% vius i'q dks 25% viuh i'q dks fn; kA 'k'k'k dk 50% , d i k'k'k'k dks nku nus ds i'pkr ml ds ikl 2000 #- 'k'k'k gA crkb, fd ml ds ikl fdruk /ku FkA

Unit-V

Q9(a) What do you understand by 'Commission' and 'Brokerage'? Illustrate with example.
 ^deh'ku^ rFk ^nykyh^ l s vki D; k l e>rs gA mnkj.k l fgr l e>kb, A

- (b) An oil mill sells 100 tins of oil at the rate of Rs. 8 per litre and it suffers a loss of Rs. 600. It makes a profit of Rs. 900 if the oil is sold at the rate of Rs. 9 per litre. Find out the quantity of oil per tin and its cost of production.
 , d vk'k'k fey dks 100 fVU ry 8 #- çfr yHvj ds Hko l s çpus ij 600 #- dh gkfu gkrh gA 9 #- çfr yHvj ds Hko l s çpus ij mlga 900 #- dk ykk gkrk gA çfr fVU ry dh ek=k rFk çfr fVU ry dh mRiknu ykx' Kkr dhft, A

Q10(a) A salesman gets a salary of Rs. 250 every month and 2% commission on sales or he is given 6% as total commission on sales. If he gets an equal income in both the cases in the whole year, what is the value of the sale?
 , d , tsV 250 #- çfr ekg oru rFk fcfØ ij 2% deh'ku çkr djrk gS vFkok ml s fçØh ij d'g 6% deh'ku fn; k tkrk gA ; fn çR; çd volFk ea ml dh ok'k'k vk; l eku gk rks fçØh dh jk'k'k D; k gA

- (b) A man purchase a horse and a cow. If he sells the horse at 10% loss and the cow at 20% profit then there is no profit or loss to him. But if he sells the horse at 5% loss and cow at 5% profit, then there is a loss of Rs. 10 to him. What does he pay for each?
 , d vkneh , d ?k'k'k vlg , d xk; [kjmrk gA ; fn og ?k'k'k dks 10% gkfu ij vlg xk; dks 20% ykk ij çprk gS rks ml s u ykk gkrk gS vlg u gkfuA fdUrq; fn og ?k'k'k dks 5% gkfu ij vlg xk; dks 5% ykk ij çprk gS rks ml s 10 #- dh gkfu gkrh gA og çR; çd ds fy, fdruk pdkrk gA