**ANNUAL EXAMINATION 2020**

**(Only for Regular Students)**

*Centre No. 135 Centre Name- Disha College, Raipur (C.G.)*

Class-B.Com Part-I Subject- Group-II

Paper No- I Paper Name- Business Mathematics

Time- 3 hrs. 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:

fuEufyf[kr lehdj.kksa dks otzxq.ku fof/k ls gy dhft,%

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 vadks ls cuh fdlh la[;k ds vadks dk ;ksx 12 gSA ;fn bl la[;k esa 36 tksM+ fn;k tkrk gS rks la[;k ds vad iyV tkrs gSA la[;k crkvksA

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 ?kVdksa ‘A’ rFkk ‘B’ dks feykdj 200 fdxzk feJ.k çfrfnu rS;kj djrh gSA ‘A’ dh ykxr #- 3 çfr fdxzk- rFkk ‘B’ dh ykxr #- 8 çfr fdxzk- gSA feJ.k esa ‘A’ dh vf/kdre ek=k 80 fdxzk- rFkk ‘B’ dh U;wure 60 fdxzk- ek=k ç;qDr dh tk ldrh gSA ykxr dh U;wure j[kus ds fy, QeZ dks çR;sd ?kVd dh fdruh ek=k ç;qDr djuh pkfg,\ bl leL;k dk xf.krh; fu#i.k dhft, rFkk xzkQh; fof/k ls gy dhft,A

**Unit-II**

Q3(a) Prove that:

fl) dhft,%

(b) If , , find the matrix x so that: 3A + 5B + 2x = 0

;fn If , , find the matrix x so that: 3A + 5B + 2x = 0

Q4(a) If . Find the logarithm of the following:

;fn gks rks fuEukafdr la[;k dk y?kqx.kd Kkr dhft,&

(i) (ii)

(b) Without using Logarithmic table, prove that:

y?kqx.kd lkj.kh dk fcuk mi;ksx fd, fl) dhft,&

**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% okf”kZd C;kt dh nj ls #- 4000 dk \_.k fy;kA mlus #- 2500 rqjUr nqxsZ’k dks 9% okf”kZd C;kt dh nj ls m/kkj ns fn;s rFkk ‘ks”k 12% okf”kZd C;kt dh nj ls gjh’k dks fn;sA rhu o”kZ ckn mlus mu nksuksa ls /kujkf’k okil ysdj viuk \_.k pqdk fn;kA mldk ykHk 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?

dqN jkf’k m/kkj yh xbZ vkSj Øe’k% #- 5]400 rFkk #- 11]664 dh 2 okf”kZd fd’rksa esa ykSVkbZ xbZ pØo`f) C;kt 8% okf”kZd dh nj ls yxk;k x;k fdruh jkf’k m/kkj yh xbZ Fkh\

Q6(a) What do you understand by Annuity? Discuss its various types.

okf”kZdh ls vki D;k le>rs gS\ blds çdkjksa 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 O;fDr 60 o”kZ dh vk;q esa lsok&fuo`Ùk gksrk gS vkSj mldks fu;ksDrk #- 1800 okf”kZd isa’ku thou Hkj nsrk gSA ;g isa’ku mls v/kZ&okf”kZd fdLrksa esa feyrh gSA ;fn mlds ‘ks”k thou dh vk’kk 13 o”kZ gks vkSj C;kt dh nj 4% okf”kZd gks rFkk C;kt dk Hkqxrku v/kZ&okf”kZd gks rks crkvks orZeku esa fdruh jkf’k mldh dqy isa’ku ds leku gSa\

**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 esa nw/k vkSj ikuh dk vuqikr 5%1 gSA feJ.k esa fdruk ikuh vkSj feyk;k tk;s fd nw/k vkSj ikuh dk vuqikr 10:3 gks tk;s\

(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 etnwj çfrfnu 7 ?k.Vs dk;Z djds ,d [kkbZ dks 18 fnu esa [kksn ldrs gSa] rks fdrus etnwj 9 ?k.Vs çfrfnu dk;Z djds igyh [kkbZ ls nqxuh [kkbZ dks 16 fnu esa [kksn nsaxsA

Q8(a) Find mean from the following table:

fuEufyf[kr lkj.kh ls ek/; 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 iq= dks 25% viuh iq=h dks fn;kA ‘ks”k dk 50% ,d ikB’kkyk dks nku nsus ds i’pkr mlds ikl 2000 #- ‘ks”k gSA crkb, fd mlds ikl fdruk /ku FkkA

**Unit-V**

Q9(a) What do you understand by ‘Commission’ and ‘Brokerage’? Illustrate with example.

^deh’ku^ rFkk ^nykyh^ ls vki D;k le>rs gSa\ mnkgj.k lfgr le>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 vkW;y fey dks 100 fVu rsy 8 #- çfr yhVj ds Hkko ls cspus ij 600 #- dh gkfu gksrh gSA 9 #- çfr yhVj ds Hkko ls cspus ij mUgsa 900 #- dk ykHk gksrk gSA çfr fVu rsy dh ek=k rFkk çfr fVu rsy dh mRiknu ykxr 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 ,ts.V 250 #- çfr ekg osru rFkk fcfØ ij 2% deh’ku çkIr djrk gS vFkok mls fcØh ij dqy 6% deh’ku fn;k tkrk gSA ;fn çR;sd voLFkk esa mldh okf”kZd vk; leku gks rks fcØh dh jkf’k D;k gS\

(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 ?kksM+k vkSj ,d xk; [kjhnrk gSA ;fn og ?kksM+s dks 10% gkfu ij vkSj xk; dks 20% ykHk ij csprk gS rks mls u ykHk gksrk gS vkSj u gkfuA fdUrq ;fn og ?kksM+s dks 5% gkfu ij vkSj xk; dks 5% ykHk ij csprk gS rks mls 10 #- dh gkfu gksrh gSA og çR;sd ds fy, fdruk pqdkrk gS\

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