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**Roll No. \_\_\_\_\_\_\_\_\_\_\_\_**

**C-5201**

**B.Com. (V Semester) Examination, Dec-2018**

**COMMERCE**

**Business Mathematics**

*Time Allowed: Three Hours] [Maximum Marks: 70*

**Note:** Answer **all** questions.

**Q. 1.** Attempt any six of the following. fuEu esa ls fdUgha 6 iz'uksa ds mRrj nhft,A **5\*6=30**

1. If ;fn A=$\left[\begin{matrix}5\\7\\ 3 \end{matrix}\right]$ , B=[4 -2 8] 1x3

3X1

 then find A B rks , ch Kkr dhft,A

1. Find differential coefficient of 3X2+5X+7 with respect to X

 3X2+5X+7 dk X ds lkis{k vodyu xq.kkad Kkr dhft,A

1. Calculate Compound interest on Rs. 8000@5% p.a. for 3 years.

 8000 :i;s ij 5 izfr'kr okf"kZd C;kt nj ls 3 o"kZ dk pdzo`f) C;kt dh x.kuk dhft,A

1. In What time will a sum of money double it self at 7.5 p.a.

 fdrus le; esa dksbZ /ku 7-5 izfr'kr okf"kZd pdzo`f) C;kt ls nqxquk gks tk;sxkA

1. Find the present worth of Rs. 22,400 due after 2 years if 6% p.a. Compound Interest.

;fn dksbZ /ku 2 o"kkZsa i'pkr 6 izfr'kr okf"kZd pØo`f) C;kt dh nj ls :0 22]400 ns; gS rks mldk orZeku ewY; Kkr dhft,A

1. What is Annuity?

 okf"kZdh D;k gksrh gS\

1. What is linear programming?

 jSf[kd izksxzkfeax D;k gS\

1. What do you mean by Commutation of Pension?

 ,d eq'r isa'ku ls vki D;k le>rs gSA

**Q. 2.** The Cost function of an article is given by C$\left(x\right)=\frac{x^{3}}{3}-5x^{2}+75x+10$. If $x$ is the Number of units, find at what level of output marginal cost will be Minimum? Also Find Marginal Cost. **10**

,d oLrq dk ykxr Qyu C$\left(x\right)=\frac{x^{3}}{3}-5x^{2}+75x+10$ A ;fn $x$ oLrq dh bdkbZ;kW gS rks mRiknu ds fdl Lrj ij lhekUr ykxr U;wure gksxhA lhekUr ykxr Hkh Kkr dhft,A

**OR@vFkok**

The total revenue function and total cost function of a firm producing X units are R=3X and C=100+0.015X2. Find how many units to be produced to maximize profit. Also find the maximum profit.

,d QeZ tks X bdkbZ;kW mRikfnr djrh gS mldk dqy vkxe Qyu vkSj dqy ykxr Qyu gS R=3X vkSj C=100+0.015X2 A ykHk dks vf/kdre djus ds fy, fdruh bdkb;ka mRikfnr djuh gksxhA vf/kdre ykHk Hkh Kkr dhft,A

**Q. 3.** Find the Value of $\left[\begin{matrix}3&2&5\\2&5&3\\5&3&2\end{matrix}\right]$by using. **10**

(i) The method of minor

(ii) The method of co-factor

(iii) Sarrus diagram.

Kkr dhft, $\left[\begin{matrix}3&2&5\\2&5&3\\5&3&2\end{matrix}\right]$

(i) ekbuj fof/k }kjk

(ii) dks-QSDVj fof/k }kjk

(iii) lkjl fof/k }kjk

**OR@vFkok**

Verify, whether AB=BA, for matrices:

A= $\left[\begin{matrix}1&2&3\\2&1&5\\3&2&7\end{matrix}\right]$and B= $\left[\begin{matrix}1&-2&3\\4&-2&-7\\2&4&5\end{matrix}\right]$

fl) dhft, AB=BA

**Q. 4.** What do you mean by linear programming? Which are the applications of linear programming tehniques used in the Management & Industry. **10**

 jSf[kd izksxzkfeax ls vki D;k le>rs gSA izca/k vkSj m|ksxksa esa jSf[kd izksxzkfeax dh dkSu lh rduhdsa iz;qDr gksrh gSA

**OR@vFkok**

 Various investment alternative with the expected and annual rate of return, risk and lock up period are given below. What % of funds a person should invest in each alternative to maximize the return.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.No. | Investment | Annual Rate of Return (%) | Lock in period in year | Risk |
| 1. | Govt. Security | 6 | 15 | 1.3 |
| 2. | Corporate Bonds | 8 | 06 | 1.5 |
| 3. | Common Stock | 5 | 10 | 1.9 |
| 4. | Mutual fund | 7 | 08 | 1.7 |
| 5- | Real Estate | 15 | 05 | 2.7 |

 Conditions :

 (i) The average risk of the portfolio should not exceed 2%

 iksVZQksfy;ksa esa vkSlr tksf[ke 02 izfr'kr ls vf/kd ugha gksuh pkfg,A

 (ii) Maximum lock up period is 15 years

 vf/kdre ykWd vi vof/k 15 o"kZ gSA

 (iii) Not more than 20% of the investment be put in to real estate.

 fj;y LVsV esa fofu;ksx 20 izfr'kr ls vf/kd ugha gksA

 mijksDr rkfydk ,oa 'krkZsa ds vk/kkj ij ,d O;fDr dks miyC/k fodYiksa esa ls fdl fodYi dks fofu;ksx ds fy, pquuk pkfg, ftlls fd mldh vk; vf/kdre gks ldsA

**Q. 5.** A machine costs the company Rs. 1,20,000 and its effective life is estimated to be 12 years. If the scrap realises Rs. 5000 only, what amount should be retained out of profits at the end of each year to accumulate at C.I.@10%p.a. **10**

 ,d e'khu [kjhnus ij ,d dEiuh dks :0 1]20]000 dk O;; vkrk gS ,oa e'khu dk vuqekfur thou 12 o"kZ gSA ;fn vo”ks’k ewY; :0 5000 gks] rks dEiuh dks vius ykHk esa izR;sd o"kZ fdruk cpkuk pkfg, fd 12 o"kZ ds vUr esa mlds ikl ,d u;h e'khu [kjhnus ds fy, :01]20]000 ,df=r gks tk;sa\ pØo`f) C;kt dh nj 10 izfr'kr izfro"kZ gSA

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 Define Annuity. Explain the different types of Annuities.

 okf"kZdh dh ifjHkk"kk nhft,A okf"kZdh ds fofHkUUk izdkjksa dk o.kZu dhft,A