RAMAKRISHNA MISSION VIDYAMANDIRA
(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. SIXTH SEMESTER EXAMINATION, MAY 2017
THIRD YEAR [BATCH 2014-17]

Date : 05/05/2017

Time : 11 am – 3 pm

ECONOMICS (Honours)

Paper : IX

Full Marks : 100

[Use a separate Answer Book for each group]

<u>Group – A</u>

1. Answer **<u>any six</u>** questions : [6×5]

   a) When can we say a function of two variables f(x,y) as concave or convex? With the help of the definition find out the nature of the function : $f(x, y) = -3x^2 + 2xy - y^2 + 3x - 4y + 1$ [2+3]

   b) Define quasi concave and quasi-convex functions. How can we determine the quasi-convexity and quasi convexity of functions using the bordered Herman determinant? [3+2]

   c) Given $U(x, y) = 5x^2 + 6xy + y^2 + 38x + 18y$, P_x = Rs.10, P_y = Rs.5 and M = Rs.40.
   i) Write the Lagrangian function.
   ii) Find the sptimal levels of purchase of x and y.
   iii) Verify the second order condition for maximization. [1+2+2]

   d) For the problem Min px sub to $u(x) \geq \bar{u}$ if h(p,u) represents the Hicksian demand function and e(p,u) the expenditure function then show that $\dfrac{\partial e(p, u)}{\partial p_i} = h_i(p, u)$. [5]

   e) Show that the profit function is convex in pries. [5]

   f) A consumer has the utility function u = $x_1 x_2$ and faces the money income constraint $2x_1 + 3x_2 \leq 100$ and the time constraint $x_1 + 4x_2 \leq 80$.
   Solve for her utility maximizing consumption bundle and the values of shadow prices of the constraints. [5]

   g) State the four fundamental duality relations with respect to the consumer choice decisions. [5]

   h) Assume that the rate of investment is described by the function $I(t) = 12t^{1/3}$ and K(0) = 25. Find the time path of the capital stock. What will be the amount of capital accumulation during the interval [0,1] [3+2]

   i) Find the present value of a constant income stream of Rs 500 per year over the next 15 years assuming an interest rate of 6% annually in
   a) a discrete time frame
   b) a continuous time frame [2·5+2·5]

   j) Does the Hawkins-Siamon condition hold for the following input-output coefficient matrix, in respect of Leonlief static open Model? [5]

   $$A = \begin{bmatrix} 0·2 & 0·3 & 0·2 \\ 0·4 & 0·1 & 0·2 \\ 0·1 & 0·3 & 0·2 \end{bmatrix}$$

k) Let Y_t denote the national income, I_t total investment, S_t = total saring, all in period t. Suppose
$S_t = \alpha Y_t$,
$I_t = \beta(Y_t - Y_{t-1})$,
$S_t = I_t$.
Assume $\beta > \alpha > 0$. Deduce and solve the difference equation given $Y_0 = 100$. [5]

l) When price of a commodity is P Let $D(P) = a - bP$ denote the demand and $S(P) = \alpha + \beta P$ denote the supply. Assume price varies proportionally to excess demand, determine the time path of price. [5]

2. Answer **any two** questions : [2×10]

a) i) Suppose f is a function defined on the convex subset U of R^n. Then show that f is concave iff its restriction is every line segment in U is a concave function of one variable.

ii) Suppose f be a concave function on an open, convex subset U of R^n. If x_0 is a critical point of f such that $Df(x_0) = 0$ then show that $x_0 \in U$ is a global maximizer of f on U. [7+3]

b) A firm uses two inputs to produce a single product according to the production function $f(x_1, x_2) = \sqrt{x_1 x_2}$. The per unit input prices are w_1 and w_2.

i) Determine the firm's conditional factor demand functions and its cost function. [4+2]
ii) Verify that the firm satisfies Sephard's Lemma in this context. [4]

c) i) Given the demand and supply functions :
$Q_d = 40 - 2P - 2P' - P''$; $Q_S = -5 + 3P$
With P(0) = 12 and P'(0) = 1, find P(t) on the assumption that the market is always cleared. [7]
ii) What is the nature of the true path? [3]

d) i) Solve : $\max \int_0^T (xy - y^2 - x^2)dt$ sub to $\dot{x} = y$, $x(0) = x_0$. [5]

ii) Solve : $\max \int_0^T e^{-\rho t}(xy - y^2 - x^2)dt$ sub to $\dot{x} = x + y$, $x(0) = x_0$, $x(T) = x_T$. [5]

Group – B

3. Answer **any four** questions : [4×3]
a) Point out two rationales of economic reforms in India.
b) What do you mean by SEZ?
c) Point out two departures from the planned economic model in the post reform period in India.
d) What do you mean by financial inclusion?
e) What is FRBM Act?
f) What is meant by NPA of the commercial banks?
g) What do you mean by full convertibility of Indian rupee in capital account?
h) What do you mean by 'fiscal deficit'?

4. Answer **any one** question : [1×8]
a) Critically evaluate the GST framework that is going to be introduced in India very soon.
b) Discuss briefly the impact of the WTO on Indian agriculture.

5. Answer **any two** questions : [2×15]

a) Examine the major areas of change in the Indian direct tax structure during the period of economic reforms. Do you think that these reforms have made the overall structure more balanced. Give reasons. [9+6]

b) Critically evaluate the policy of "controlled expansion" followed by the RBI during the plan period. In this context examine the question of 'autonomy' of the RBI in the background of recent "demonetisation" controversy. [8+7]

c) Critically evaluate the performance of the service sector in India during the post-reform period with reference to its contribution to India's GDP, employment and exports. [15]

d) Discuss the major changes in the policy of the government towards foreign capital and investment during the last two and half decades of economic reform. Mention in this context the impact of such changes on India's growth and domestic investment. [9+6]

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