MA Examination 2023
Semester II
Economics
Course C-6
(Micro Economics -II)

Time 3 hrs

Full Marks 40

Questions are of value as indicated in the margin
Answer ***any four*** questions

1(a) When does an (expected) utility function on the space of lotteries have the von-NeumannMorgenstern form?
(b) Show that a Utility function has the VNM form if and only if it is linear? (3+7)

2. (a) Explain why the Bernoulli utility function of a risk averse consumer is concave and show that this implies that the certainty equivalent of an uncertain event is less than its expected value.
(b) Explain in this context the Arrow Pratt measure of absolute risk aversion. (7+3)

3. (a) Using an example, describe the method of arriving at an equilibrium of a simultaneous move game through the iterated elimination of dominated strategies
(b) Describe the Bertrand Duopoly game where firms compete in prices. Show how the equilibrium of this game is obtained by iterated removal of dominated strategies in the case where (i) unit cost of both firms are equal, (ii) unit cost of firm 1 is lower than firm 2 (4+6)

4 Consider a model of Cournot Oligopoly with a linear (inverse) demand curve

$$p = a - bQ, \quad Q = \sum_{i=1}^{n} q_i$$

and constant unit costs $C_i(q_i) = c_i q_i$

(a) Show that in case of a duopoly with different unit costs $c_1 \neq c_2$ if the unit cost of Firm 1 increase the optimum quantity produced by that firm decreases in equilibrium
(b) If there are n identical firms with same unit costs $c_1 = c_2 = \ldots\ldots\ldots = c_n$, the equilibrium output of each firm decreases while the total output increases if the number of firms increase (5+5)

5. Consider the following sequential move game between a potential entrant who can choose to enter or not and an incumbent monopolist who can share the market or fight.

Incumbant Monopolist (M)

Entrant	Share	Fight
Enter	$\Pi_C - S, \Pi_C$	$\Pi_D - S, \Pi_D$
Not Enter	$0, \Pi_M$	$0, \Pi_M$

Note here that the first entry refers to Entrant's profits and the second to Monopolist's profits. Further, Π_M is the profits of the monopolist in absence of entry, while Π_C are the ordinary Cournot profit's in case of entry. The Entrant has to pay an additional set up cost S. $\Pi_D$are profits of the firms if the monopolist chooses to 'fight' by raising output so that prices are very low. We assume that

$\Pi_M > \Pi_C > \Pi_C - S > \Pi_D > 0 > \Pi_D - S$

(a) What are the Nash Equilibrium of this Game

(b) Explain the concepts of 'first mover advantage' and elimination of equilibria based on 'non-credible threats' in the context of this sequential move game (2 +8)

6 (a) Show that it is usually difficult to sustain collusion in duopoly context when the firms operate and interact for a finite number of periods.

(b) Can collusion be sustained if firms operate / interact for a infinite number of periods ? If so, under what conditions? (6+4)

7 Consider a Cournot Duopoly where the market demand and unit cost of firm 1 are known to both firms. However only firm 2 knows its own unit cost. Firm 1 knows that it is low C_L with probability p and high C_H with probability $1 - p$. Show that

(a) The high cost firm produces more than it would if its costs were known to both firms

(b) Is this also true of the low cost firm (5+5)

8. Consider a labor market with 2 types of workers – high ability and low ability – known only to the worker but not to firms who know only that 50% are of high ability (productivity Rs 10,000) and 50% are of low ability (productivity Rs 4000). The reservation value of a high ability workers is Rs 8000 and of low ability worker is Rs 2000

(a) Show that under these circumstances only low ability workers remain in the labor market. (4)

(b) What happens if the probability that workers are high ability goes up to 80% ? (1)

(c) Can you explain how the high ability workers in this market would be able to 'signal' that they have high ability (4 +1 +5)

Sem-II

M.A. Examination, 2023

Semester-II

Economics

Course: C7

(Macro Economics-II)

Time: 3 Hours **Full marks: 40**

Questions are of value as indicated in the margin.

Answer **any four** from the following questions

1. Define Natural Rate of unemployment. How is it determined with wage setting and price setting relation? What will be the impact of less stringent enforcement of existing anti-trust legislation on natural rate of unemployment?

2+4+4

2. a. What will be the dynamic effect of a monetary expansion in medium run on price and output? In this context explain the concept of Neutrality of Money.

   b. What is the difference between capital ratio and leverage ratio of banks?

(5+2)+3

3. a. What is the Risk of deflation? Explain in the context of aggregate demand and aggregate supply curve.

   b. What is the difference between solvency and illiquidity in the context of operation of banks?

   c. What will be the impact of wage indexation on the Phillips curve?

4+3+3

4. a. Derive the generalized efficiency wage function.

   b. What is the Solow condition in an efficiency wage model? Derive the Solow condition in a generalized efficiency wage.

7+3

5. Find the intertemporal Euler equilibrium in a two-period small endowment economy and justify the relationship between interest rate and fixed time-preference parameter. Also present a graphical illustration to demonstrate the gains from trade.

6+4

6. In the presence of government expenditure and investment, model and illustrate the individual consumer optimization with intertemporal production possibility frontier and check the effects of a higher domestic interest rate.

10

7. In a two-region large economy framework, given the presence of savings and interest rates, calculate the elasticity of intertemporal substitution and check the shape of the saving schedule when utility functions are iso-elastic.

5+5

8. By introducing the savings, investment and the Metzler diagram, set up the trade model between home and foreign country and calculate the relationship between the consumption and rate of interest. In this setup, show that sum of value of current accounts between home and the foreign country will always be equal to zero.

7+3

M.A. Examination, 2023
Semester-II
Economics
Course: C-8
(Development Economics)

Time: Three Hours **Full Marks: 40**

Questions are of value as indicated in the margin
Answer any four questions

1. Discuss, in detail, the context of the genesis of traditional development economics of the early 20th century. How did this context shape the development discourse?

6 + 4 = 10

2. Following the Lewis-Ranis-Fei framework, discuss the process of structural transformation in an underdeveloped labour-surplus economy.

10

3. Present the structure of a two-department model of Kalecki with industry and agriculture. Using this model, analyse the phenomenon of stagflation.

4 + 6 = 10

4. Discuss, in detail, the criticisms against traditional development economics of the mid-20th century.

10

5. Discuss, in detail, the capability approach to economic development. How does it differ from the income, commodity and utility based development discourse?

7 + 3 = 10

6. What are the significant features of the Post-Washington Consensus? Explain the factors that led to its emergence as a set of policy prescriptions alternative to the Washington Consensus.

4 + 6 = 10

7. Briefly discuss the different measures of Human Development and examine their limitations.

10

8. Write short notes on any two of the following: 2 X 5 =10

(i) Difference between the Poverty Gap Ratio and Income Gap Ratio
(ii) Kuznets' inverted-U hypothesis of income inequality
(iii) Challenges of inclusive growth
(iv) Development Management

M.A. Examination, 2023

Semester-II

Subject: ECONOMICS

Paper-C-9 (Computer Application)

Time: Three Hours **Full Marks: 40**

Questions are of value as indicated in the margin

Answer ***any four*** questions

1. (a) What will be your unit of analysis against each of the following broad study objectives?

(i) Estimating the population growth rate across districts in India using time series data.

(ii) The financial performance of women Self-Help Groups in Birbhum district.

(iii) Effect of various inputs on productivity of paddy in agricultural lands in Birbhum district.

(iv) Effect of age, gender and education on mobile data consumption pattern among adults.

(v) Effect of improved cook stove in reducing indoor air pollution and health hazards in India.

(b) What types of charts would you use in describing the following information?

(i) Relative importance of different countries in India's total petroleum import during 2022.

(ii) Daily highest and lowest temperature in Sriniketan during last one year.

(iii) Gender and class wise distribution of Economics (honours) students in Visva-Bharati during the academic year 2022-23.

(iv) Relationship between Block-wise rainfall and paddy productivity in West Bengal during the previous Kharif season

(v) Market share of different Electric Car producers in India during the last financial year.

5+5 = 10

2. (a) Suppose a detailed household survey is being planned to understand the livelihood scenario in a remote village. The villagers have a limited set of livelihood options comprising of *agriculture*, *daily labour*, *migrant labour*, *petty business* and *receipt of government assistance*. Very few villagers might be earning through other activities which cannot be specified prior to the survey. Also, none of the villagers have educational qualification above graduation level. Create a survey module for the sample households that can record member-wise details like age, gender, education, primary activity (if any) and one subsidiary activity (if any). Members of a household may be listed through a 'member_serial' ignoring their names. Also, specify the code lists that you might use for the module.

(b) If the data has to be entered in an Excel Sheet using the module you specified in part (a), explain how you would assign the variables to successive columns and what would be data range under each of these columns. 5+5 = 10

3. Following is part of an OLS regression result produced by Excel using a household survey dataset, where the dependent variable is household's monthly per-capita consumption expenditure (**mpce**):

Variable description	Regressor	Coefficient	t-value	p-value
Total number of household members	fsize	-365	-3.77	0.003
Age of the household head (Years)	hdage	10.5	2.48	0.014
Gender of the household head (0=Male; 1= Female)	hdsex	-0.41	-1.30	0.195
Location status (0 = Urban; 1 = rural)	rural	-1495	-5.74	0.001
Amount of agricultural land (Katha)	agri_land	155	3.64	0.005
Total value of livestock,holding (in thousand rupees)	livestock	22.2	0.66	0.508
	Constant	5388	3.55	0.006
Number of observations=1136, R-squared=0.238, F-value=50.297, Prob>F=0.000				

(a) Describe your understanding of the behaviour of ***mpce*** with respect to each of the regressors separately.

(b) What is the marginal effect of *fsize* on *mpce*? Do you have any plausible explanation for its sign?

(c) Draw an appropriate probability distribution for the estimated coefficient of the regressor '*hdage*'. Indicate the area outside the corresponding estimated t-statistic. 5+2+3= 10

4. (a) A regression output produced by Excel, typically provides the ANOVA for the regression. Following is an example of such a result:

	A	B	C	D	E	F
1	ANOVA					
2		*df*	*SS*	*MS*	*F*	*Significance F*
3	Regression	5	25831	5166	6.52	0.0015
4	Residual	17	13471	792		
5	Total	22	39302			

(i) What do you mean by 'significance F'? How significant is the regression result here?

(ii) What is meant by F-value? How is it computed?

(iii) What should be the value of R^2 in this regression result? (give formula only, using cell references)

(b) In a survey of 150 households, information on household's daily expenditure on food (Rs.) is collected along with family size. It is observed that family size ranges from 1 to 10. Then food expenditure is regressed on family size (fsize) in a quadratic form. The partial regression result is produced below:

Variable	*Coeff.*	*Std. Err.*	*t Stat*	*P-value*
Intercept	-20	27.19	-0.77	0.455
fsize	215	12.38	17.47	0.000
fsize-square	-7	1.20	-5.79	0.000

On the basis of the above result, draw a graph showing estimated daily expenditure on food against family size for those households.. Explain its shape. (2+2+1) +5 = 10

5. (a) Suppose a Stata dataset contains two variables x and y. It is known that they are related by the following equation:

$$y_i = e^{\alpha+\beta x_i+u_i}$$

where u_i is the random error term following CLRM specification and α, β are the parameters. Write down the set of commands in Stata that would help you to obtain the estimated parameters using OLS method.

(b) A file named *File1.dta* is loaded in Stata. Following is a Stata command and the corresponding result as is shown in the Results window:

```
. merge 1:1 hhid using "C:\Desktop\Projects\File2.dta"

    Result                      # of obs.
    -----------------------------------------
    not matched                        14
    from master                        4       (_merge==1)
    from using                         10      (_merge==2)

    matched                            71      (_merge==3)
    -----------------------------------------
```

(P.T.O)

(i) What is attempted with *File1* and *File2* with the command? Is the attempt successful?
(ii) What is the 'master' file and what is the 'using' file?
(iii) What is the total number of observations in the whole dataset ?
(iv) What is the unique identifier across the two files?
(v) What is '_merge' ? what are its value labels and their meanings? 5+5 =10

6. (a) Consider the following part of a household questionnaire used for primary survey with coded options:

Q1. Structure of the house (put √): *1=Kuchha* *2=Semi Pucca* *3=Pucca* *4=Other*
Q2. Main source of light (put √): *1=Electricity* *2=Solar unit* *3=Kerosene* *4=Other*
Q3. Whether the household has a sanitary latrine (put √) *:1=Yes* *2=No*

The collected information is recorded in a Stata dataset with variable names q1, q2 and q3 respectively. Write the set of Stata commands that will assign appropriate variable labels as well as value labels under each variable.

(b) Write the Stata commands lines that will accomplish the following tasks:
(i) Generate a serial number (1,2,3...) for the existing dataset with the name 'slno'.
(ii) Substitute any missing value in the variables **aa**, **bb** and **cc** with the value zero.
(iii) Change the character of the variables **xx** and **yy** from alphabetic to numeric.
(iv) Create a new variable **zz** such that it contains the arithmetic mean of **aa**, **bb** and **cc**.
(v) Arrange the variables in the dataset such the serial number appears first, followed by the variables **xx** and **yy.** 5+5 =10

7. Following is the description of variables in a Stata dataset:
Location of data file on computer: "C:\Desktop\Sem2\Survey.dta"
Number of observation: 100 [household level survey data]

Variable	Description
sl	Unique identification number of the survey household
age'i'	Age of the 'i'-th member of the household [10 repetition of 'i' = 1,2,.....10]
sex'i'	Sex of the 'i'-th member of the household [10 repetition of 'i' ; each coded: 1= Male; 2= Female]
edu'i'	Number of years of education of the i-'th member of the household [10 repetition of 'i'] [0 = illiterate]
main_earning'i'	Main earning activity of 'i'-th member of the household [10 repetition of 'i'] (code 1 to 5, as described at the end of this table); blank if no earning activity
other_earning'i'	supplementary earning activity of 'i'-th member of the household (code 1 to 5, as described at the end of this table); blank if no supplementary earning activity.
land_bigha	Amount of agricultural land in Bigha (1 Bigha = 20 Katha)
land_katha	Amount of agricultural land in Katha
cow	Value of cows possessed (Rs.) [blank if no cow]
goat	Value of goats possessed (Rs.) [blank if no goat]
birds	Value of chicken/duck possessed (Rs.) [blank if no such birds]

Note: *all variables except* **sl, age1, sex1** *and* **edu1** *may have missing values*

Codes for earning:
1=Agriculture ; 2=Daily labour; 3= Migrant Labour 4= Own business 5= Salaried employment ; 6= Any other

Following the above details, sequentially write the command lines for a Stata DO-file that will execute the following tasks:

(a) Open the data file, generate new variables (with names of your choice) representing (i) family size (ii) total agricultural landholding and (iii) total value of livestock holding for each household. Store these newly generated variables along with the household identifier in

(b) Open the original data file and keep only the variables containing individual information. Reorganize the data at individual level. Assign value labels to individuals' main and supplementary occupations. Store the individual level information in a separate .dta file in the same folder using the filename 'Indiv_profile' such that it can be merged with the household level information using appropriate identifiers. Clear the data from memory.

(c) Merge the two files 'HH_profile.dta' and 'Indiv_profile.dta' with an appropriate Stata command. 4+4+2 =10

8. Refer to the dataset described in the previous question (Q#7). A model suggests that individual's decision to work as migrant labour may be affected by factors like age, gender, years of schooling, family size as well as asset possession such as land and livestock holding. Write down the set of Stata commands sequentially to check the effect of these factors on one's decision towards opting for migrant labour as his/her main earning activity. You need to check the marginal effect of each of these regressors after the model estimation. 10

M.A. Examination- 2023

Semester-II

Economics

Paper: C-10 (Indian Economics)

Time: Three hours | Full Marks: 40

Questions are of value as indicated in the margin

Answer any *four* questions

1. Explain the concept of premature deindustrialization. In what ways does the structural change in India's economy differ from the classical pattern? 4+6

2. Discuss briefly, the relationships between growth, structural change and employment generation in India over the past decade. 10

3. Critically discuss the fiscal reforms undertaken in India after 1990s. 10

4. Highlight the growth and contribution of the service sector in India. Explain the reasons for rapid growth of this sector in recent decades and comment on its impact on employment. 4+4+2

5. Discuss briefly the trends and challenges of balance of payments in India in the post-reform period. 10

6. 'The Great Indian Poverty Debate is ending'. How far do you think the statement is true? Discuss briefly. 10

7. What is Inequality Adjusted Human Development Index (IHDI)? Examine the performance of South Asian countries in terms of IHDI, particularly focusing on India. 10

8. Evaluate India's development experience during the last seven decades highlighting exclusionary nature of development. 10

MA Examination 2024
Semester II
Economics
Course C-6 (Micro Economics -II)

Time 3 hrs **Full Marks 40**

Questions are of value as indicated in the margin
Answer ***any four*** questions

1 (a) Discuss the Axioms underlying the von-Neumann Morgenstern Expected Utility Theorem?
(b) How is the Axiom of Independence violated in case of the Allais Paradox (3+7)

2 (a)What is an 'actuarily fair' premium? Explain why a risk neutral competitive insurance company usually charges an 'actuarily fair' premium.
(b) Why does a risk averse consumer buy 'full insurance' if the premium is 'actuarily fair'?
(c) Would she continue to do so if the premium was higher than the 'actuarily fair' premium?
(3+5+2)

3 (a) With the use of a numerical example explain the method of iterated removal of dominated strategies.
(b) Use this method to show that the optimal bid for each bidder in a Second Price Sealed Bid Auction (with private values) is to quote the true value of the bidder. (3 + 7)

4 (a) Define a Dominant Strategy Equilibrium (DSE) and a Nash Equilibrium (NE) – and provide examples of each in the context of Economic games.
(b) Show that the DSE is always a NE but the converse may not be true (4+6)

5. (a) Define a Sub-Game perfect Equilibrium.
(b) In the context of a Stackelberg duopoly with quantity competition explain the concept of first-mover advantage. (3+ 7)

6 Consider an alternating offer of non-cooperative bargaining , where buyer's reservation price is Rs 200, seller's reservation price is Rs 100 and the common rate of discount is $d = 0.7$.
(a) Find the solution to this game if there are only 3 periods and the seller makes the first offer.
(b) Find the solution to this game if there are infinite periods. Does the solution depend on (i) the rate of discount and (ii) who makes the first offer? (4+6)

7. (a) Explain the concept of adverse selection in the context of a model of used cars.
(b) Show that the problem of adverse selection occurs only if the proportion of bad cars ("lemons') is high enough. (7+3)

8 Consider a Cournot Duopoly where the market demand and unit cost of firm 1 are known to both firms. However only firm 2 knows its own unit cost. Firm 1 knows that it is low C_L with probability p and high C_H with probability $1 - p$. Show that
(a) The high cost firm produces more than it would if its costs were known to both firms
(b) Is this also true of the low cost firm (5+5)

M.A. Examination, 2024
Semester-II
Economics
Course: C-8
(Development Economics)

Time: Three Hours **Full Marks: 40**

Questions are of value as indicated in the margin
Answer any four questions

1. Discuss, in detail, the fundamental characteristics of traditional development economics of the mid-20th century. What is Amartya Sen's main criticism against this discourse? 7+3 = 10

2. Following the Lewis-Ranis-Fei framework, discuss the rationale of the 'turning points'. What was the policy prescription proposed by Ranis and Fei in this context and why? 7+3 = 10

3. Examine the view that government policy for mitigating the problem of urban unemployment by expanding the modern sector employment may fail to eradicate the problem because such efforts would trigger off the process of rural-urban migration. 10

4. Discuss in detail, the concept of primitive socialist accumulation and the policy prescription as proposed by Preobrazhensky. 7+3 = 10

5. What do you mean by the East Asian miracle? Examine the factors that contributed to the East Asian miracle. 4+6 =10

6. What are the major prescriptions of the Washington Consensus? Write a critical note on the suitability of these provisions from the perspectives of the less developed economies. 5+5 =10

7. Discuss in detail the Chinese development model since 1978. 10

8. Write short notes on any two of the following: 2 X 5 =10
   (i) Kalecki and stagflation in the context of a dual economy
   (ii) Development Management
   (iii) Great Leap Forward
   (iv) IHDI

M.A. Examination- 2024

Semester-II

Economics

Paper: C-10 (Indian Economics)

Time: Three hours | Full Marks: 40

Questions are of value as indicated in the margin

Answer any *four* questions

1. Explain the concept of 'premature de-industrialization'. Do you think India should make a transition from service-led growth to manufacturing-led growth? Justify your answer. 3+7

2. How is 'governance' conceptualized in the development discourse? Discuss the measures for assessing the 'quality of governance' in Indian states. What is the relationship between 'governance' and 'development' performance of the Indian states? 3+4+3

3. Write a note on the evolution of Indian exchange rate system? How does the RBI intervene in the foreign exchange market? 7+3

4. What are the major causes and consequences of rising income inequality in India? 10

5. Write a note on the structure of Employment in India. In this connection, highlight the government policies for removing unemployment. 6+4

6. Identify some of the critical sectoral and policy issues that will need to be addressed if we wish to push the growth rate around nine percent and also make it more inclusive and sustainable. 10

7. It is widely believed that "prior to 1980, the growth rates of the Indian states were mediocre but relatively uniform. After 1980, however, the futures of the states diverged considerably". Explain. 10

8. Indian policy makers emphasised on "inclusive growth" for the Indian economy. Make an assessment of performance of the Indian economy in terms of 'inclusiveness'. 10

M.A. Examination, 2024

Semester-II

Economics

Course: ECPC07

(Macro Economics-II)

Time: 3 Hours **Full marks: 40**

Questions are of value as indicated in the margin.

Answer **any four** from the following questions

1. Present a model of an intertemporal trade equilibrium where consumers consume a single good that lasts for two periods. Check the condition where consumption in both the periods would be equal and hence find the equilibrium amount of consumption.

6+4

2. In the presence of two-period intertemporal trade framework, define the current account and write down the budget constraint to illustrate the relationship between current account balance and consumption pattern. How does this model change in the presence of positive government expenditure?

5+5

3. Given $Y_t = F(K_t)$ and assuming a unit of capital can be created from one unit of consumption good which is a reversable process, show that $CA_t = S_t - I_t$ (usual notations). Hence by deriving the intertemporal production possibility frontier, find the consumer equilibrium with appropriate budget constraint.

4+6

4. In two-region large global endowment economy where trade must take place, in the absence of investment and government expenditure, find the relationship between

savings and rate of interest. Use this framework to check the substitution, income and wealth effects where initial interest rate may affect both present and future consumptions.

5+5

5. a. Derive the equation of expectations-augmented Phillips Curve.

b. Why is the natural rate of unemployment also called nonaccelerating rate of unemployment? Explain from Phillips curve.

7+3

6. a. Analyse the dynamic effects of a monetary expansion on output and interest rate.

b. Prove that in the medium run inflation rate is difference between rate of growth of nominal money and normal growth rate of output.

c. Why an increase in the employment rate does not lead to a one for one decrease in the unemployment rate?

5+3+2

7. a. Show that in the efficient bargaining model of unionized wage market, unemployment rate is determined independent of market clearing condition.

b. How does unemployment rate vary with unemployment benefit in the above model?

8+2

8. a. What is difference between Right to manage model and Efficient Bargaining Model of unionized wage market?

b. What will be the effect of change in unemployment rate on effective wage rate and factor intensity in a Generalized efficiency wage model?

3+7

M.A. Examination, 2024

Semester-II

Subject: ECONOMICS

Paper-ECPC 09 (Computer Application)

Time: Three Hours **Full Marks: 40**

Questions are of value as indicated in the margin

Answer ***any four*** questions

1. (a) What will be your unit of analysis against each of the following broad research questions?

(i) Whether women gain in their empowerment through involvement in Self-help groups
(ii) Whether the economic success of Self-help Groups depend on their members' education
(iii) What is the marginal effect of a specific pesticide on crop productivity ?
(iv) Whether expenditure on children's education depends on parental educational status
(v) How age of a user is related to mobile data consumption?

(b) Suppose you are formulating some household survey questions to collect information on the following characteristics:

(i) Building structure of the respondent household
(ii) Location in terms of distance (in hours) from the nearest railway station
(iii) Family size
(iv) Main source of earning (few broad categories)
(v) Education level of the household head

Formulate five close-ended and pre-coded questions for collecting this information. Specify the codes you may use. 5+5 = 10

2. An OLS regression result is produced in Excel and is described below with some cell values omitted (with interrogation mark)

	A	B	C	D	E	F
1	Multiple R	0.242421				
2	R Square	0.058768				
3	Adjusted R Square	?				
4	Standard Error	6.923368				
5	Observations	306				
6	ANOVA					
7		*df*	*SS*	*MS*	*F*	*Significance F*
8	Regression	4	900.8371	225.20927	4.6984	0.001083
9	Residual	301	?	47.93303		
10	Total	?	15328.68			
11						
12		*Coefficients*	*Standard Error*	*t Stat*	*P-value*	
13	Intercept	?	8.636340	-1.275470	0.203127	
14	Regressor 1	-0.000054	0.000020	?	0.006309	
15	Regressor 2	0.045694	0.021137	2.161791	0.031422	
16	Regressor 3	0.016212	?	1.831304	0.068044	
17	Regressor 4	-0.064860	0.034223	-1.895300	0.059011	

[P.T.O]

(a) What formula would you put in cells B3, B10, B13, C9, C16 and D14?

[Assume that it is part of an Excel spreadsheet and hence use cell references in your formulae, not the values].

(b) What is your conclusion against the null hypothesis that 'Intercept' is zero?

(c) Which of the regressors are significant at 10% level but not at 5% or 1% level of significance?

(d) What do you understand by the value of 'Standard Error' given in cell B4?

(e) What percentage of total variation in the dependent variable is explained by this regression model?

6+1+1+1+1=10

3. (a) Explain the concept of 'p-value' as reported in regression results in a statistical software with the help of a diagram, showing the corresponding distribution of the test statistic.

(b) In an OLS regression with 45 degrees of freedom, t-values for two regressors X1 and X2 are found to be t_1= -1.34 and t_2= 2.23. The corresponding p-values are 0.18 and 0.028 respectively. Draw a t-distribution and show the position of t-values and the corresponding p-values by shaded area (draw separate diagrams for the two t-values).

(c) In the context of the previous part of this question, discuss on the significance of the two regressors X1 and X2 specifying the corresponding null hypotheses.

3+4+3 = 10

4. Consider a data set loaded in Stata where there are three variables – $exp, fsize, location$ - representing household's monthly expenditure, number of family members and rural-urban location status respectively. While exp and $fsize$ are treated as continuous variables, $location$ is a binary variable having values 0 (=rural) and 1 (=urban). You want to see how $fsize$ affects exp , assuming a linear relationship between them. But you also want to see how the relationship might change due to a change in households' rural-urban status.

Write down a set of Stata commands sequentially that will produce an appropriate regression result to help you understand the relationship. Describe any new variable that you may have created in the process.

Discuss your regression result with possible significance/insignificance of the estimated regression coefficients.

10

5. (a) Describe what is executed by Stata through the following commands
[Note: some imaginary variable names are used in the commands]

```
. destring x1 x2 x3, replace
. mvencode x1 x2, mv(99)
. recode y1 (1=1) (2  3 =2) ( 4  5  6 = 3)
. gen z = 1 if x <=10  |  y <=10
. dis "The value of e=" exp(1)
```

(b) Rewrite the following commands correctly if you think they will not be executed by the Stata software. If you think the given command is correct in its syntax, write 'correct command' against the question number.

	Stata Command	Clarification
(i)	**. replace dummy=1 if sex=2**	'dummy' is a variable with all values being 0; 'sex' is a variables with codes 1 and 2
(ii)	**. label define 1="Yes" 2= "No"**	Defining a new value label
(iii)	**. label variable "struct" "House Structure"**	Assigning a description to the variable "struct"
(iv)	**. drop in 40-60**	Rows 40 to 60 in the current data needs to be deleted
(v)	**. keep b, c - f**	Variables in the memory are a, b, c, d, e, f, g, h

5+5 = 10

[Question #6, #7, and #8 are based on a dataset which is described in details in the last page of this question paper. Read the data description carefully along with the remarks. Note the path where the file is located. Then answer the questions accordingly]

6. Using the data file described at the end, your task is to prepare a new Stata data file and save it in the same folder from where it is loaded. In doing so, ensure the following
   - *Your filename is "hh_profile" and it will be overwritten if already exists in that folder*
   - *The new file contains only the variables mentioned below:*
     hhsl
     location (with code labels 1= Rural; 2=Urban)
     tot_agri_land (total agricultural land calculated in katha)
     hd_age (Age of member1)
     hd_sex (Gender code for member1)

Assuming that you have freshly opened the Stata software in your computer, write the command lines sequentially that will accomplish the task mentioned above. 10

7. Assume that you have freshly opened the Stata software in your computer. Using the data file described at the end, suppose you want to create a new variable **pci** that represents household level per capita income. Write the command lines sequentially that will accomplish the task. Describe any new variable that you may have created and used in your command lines. 10

8. Suppose using the data file described at the end, you want to check how an individual's earning per month (variable **epm**) depends on his/her age, gender and years of education. You want to check it through estimation of a linear regression model. Assuming you have freshly opened the Stata software in your computer, write the command lines sequentially that you will execute to check it. Describe any new variable that you may have created and used in your command lines. 10

******* Data description for question #6, #7 and #8 *******

Nature of the dataset: Survey data with households as observational units
File name: **survey.dta**
Folder address: **"C:\Desktop\Exam\"**

Variable	Description	Remarks
hhsl	Household's unique serial number	Values 1 to 1000
location	Rural/Urban category codes	Values 1 and 2 (1=Rural; 2=urban)
agri_k	Household's agricultural land (in Katha unit)	May have missing values
agri_b	Household's agricultural land (in Bigha unit; 1 bigha=20 katha)	May have missing values
light	Codes for household's main source of light	Values 1, 2 or 3
fuel	Codes for household's main source of cooking fuel	Values 1, 2, 3 or 4
age1	Age of the member1 (in completed years)	Integer values
sex1	Gender code for member1	Values 1 or 2 (1=Male; 2=Female)
edu1	Educational status of memer1 (number of years of study)	Integer values
epm1	Earning per month by member1 (Rs)	May have missing values
age2	Age of the member2 (in completed years)	Integer values
sex2	Gender code for member2	Values 1 or 2 (1=Male; 2=Female)
edu2	Educational status of memer2 (number of years of study)	Integer values
epm2	Earning per month by member2 (Rs)	May have missing values
age3	Age of the member3 (in completed years)	May have missing values
sex3	Gender code for member3	May have missing values
edu3	Educational status of memer3 (number of years of study)	May have missing values
epm3	Earning per month by member3 (Rs)	May have missing values
age4	Age of the member4 (in completed years)	May have missing values
sex4	Gender code for member4	May have missing values
edu4	Educational status of memer4 (number of years of study)	May have missing values
epm4	Earning per month by member4 (Rs)	May have missing values
age5	Age of the member5 (in completed years)	May have missing values
sex5	Gender code for member5	May have missing values
edu5	Educational status of memer5 (number of years of study)	May have missing values
epm5	Earning per month by member5 (Rs)	May have missing values
age6	Age of the member6 (in completed years)	May have missing values
sex6	Gender code for member6	May have missing values
edu6	Educational status of memer6 (number of years of study)	May have missing values
epm6	Earning per month by member6 (Rs)	May have missing values

M.A. Examination, 2025

Semester-II

Economics

Course: ECPCO7(New)/C7(Old)

(Macro Economics-II)

Time: 3 Hours **Full marks: 40**

Questions are of value as indicated in the margin.

Answer **any four** from the following questions

1. a. In an asset market, derive the interest rate parity condition when domestic and foreign assets are perfect substitutes.

   b. Illustrate the above condition to show that – (i) if foreign interest rate goes up, the home currency depreciates and (ii) currency indeed depreciates, if we expect it to depreciate.

   4+(3+3)

2. Combining both the nominal and PPP adjusted exchange rates, in the presence of asset market, show that an increase in home money supply growth rate would cause interest rate at home to go up but home currency to depreciate.

   10

3. a. Are nominal and PPP adjusted exchange rates always identical? Give reasons.

   b. Why do we need a real exchange rate? Show that between home market and foreign market, if relative output supply at home market goes up, real exchange rate depreciates but its effect on nominal exchange rate is ambiguous in the long run.

   2+(2+6)

4. In the context of DD & AA schedules, examine the effectiveness of both monetary and fiscal policies in ensuring the desired output and exchange rates in the long run.

   10

5. a. Define the Natural Rate of unemployment

b. How does the wage-setting and price-setting relation determine it?

c. What will be the impact of an increase in the unemployment benefit policy on the natural unemployment rate?

2+3+5

6. a. Derive the equation of the Phillips curve.

b. How does Lucas criticize this equation of the Phillips curve?

7+3

7. a. What is a liquidity trap? Explain with the help of IS and LM curves.

b. What will be the impact of monetary and fiscal policies in the liquidity trap? Explain with the help of a diagram.

3+(3+4)

8. a. What is the difference between the Right to Manage model and the Efficient Bargaining Model of the unionized wage market?

b. How is the final effect of unemployment on efficiency determined in a generalized efficiency wage model?

2+8

MA Examination, 2025
Semester- II
Economics
Course: ECPC08(Regular)/C-8 (Back)
(Development Economics)

Time: Three Hours **Full Marks: 40**

Questions are of value as indicated in the margin
Answer any four questions

1. Discuss in detail the context of the genesis of traditional development economics of the early 20th century. How did this context shape the mid-20th century development discourse?

4 + 6 = 10

2. Compare and contrast the Lewisian and Kaleckian processes of structural transformation in an underdeveloped labour-surplus economy.

5 + 5 = 10

3. Discuss in detail the concepts of Primitive Capitalist Accumulation and Primitive Socialist Accumulation.

6 + 4 = 10

4. Discuss in brief the non-Senian criticisms against the traditional development economics discourse of the mid-20th century.

10

5. Discuss in detail Amartya Sen's interventions in the context of the traditional development economics discourse of the mid-20th century?

10

6. Critically analyse the roles of the state and the market in shaping economic development in East Asian countries such as Japan and South Korea. How does this differ from conventional free-market development models?

7 + 3 =10

7. How does gender equality influence the achievement of the Sustainable Development Goals? Critically evaluate with reference to the Global Gender Gap Index.

6 + 4 = 10

8. Write short notes on any two of the following: 2 X 5=10

   a) What is the relationship between Human Development Index (HDI) and economic growth?
   b) What is meant by 'inclusive growth'? How is it different from pro-poor growth?
   c) What were the major factors behind the East Asian Crisis of 1997?
   d) State two development gains from China's rural reform policies.

M.A. Examination, 2025

Semester-II

Subject: ECONOMICS

Paper-ECPC09 (Computer Application)

[Course: C-9 for back candidates]

Time: Three Hours **Full Marks: 40**

Questions are of value as indicated in the margin

Answer ***any four*** questions

1. (a) What types of charts would you prefer to describe the following data?
   (i) Weekly rate of inflation over one year
   (ii) Share of different manufacturers in the small car market of India in 2024.
   (iii) Daily maximum and minimum temperatures in Sriniketan for last one year.
   (iv) Per-capita income of different states of India in 2023-24 financial year.
   (v) Gender distribution of students in five different classes in the Department of Economics in 2024-25.

   (b) What will be your unit of analysis against each of the following broad research issues?
   (i) People's usage of digital payment instruments
   (ii) Women's activism in politics
   (iii) Role of irrigation in crop productivity
   (iv) Factors affecting dropout of children from schools
   (v) Financial performance of Self-Help Groups

5+5 = 10

2 (a) Suppose you are formulating some household survey questions to collect information on the following characteristics of the respondent households:
   (i) Whether the household has access to sanitary latrine
   (ii) Household's usage of cooking fuel
   (iii) Extent of education of the household head
   (iv) Household's agricultural landholding
   (v) Households' sources of earning (few broad categories)

Formulate appropriate close-ended and pre-coded questions for collecting this information. Specify the codes you would like to use.

(b) A regression output produced by Excel, typically provides the ANOVA for the regression. Following is an example of such a result:

	A	B	C	D	E	F
1	ANOVA					
2		*df*	*SS*	*MS*	*F*	*Significance F*
3	Regression	5	25831	5166	6.52	0.0015
4	Residual	17	13471	792		
5	Total	22	39302			

(i) What do you mean by 'significance F'? How significant is the regression result here?

(ii) What should be the value of R^2 in this regression result? (give formula only, using cell references)

6+4=10

3. Following is part of an OLS regression result produced by Excel using a household survey dataset, where the dependent variable is household's monthly per-capita consumption expenditure (**mpce**):

Variable description	Regressor	Coefficient	t-value	p-value
Total number of household members	fsize	-365	-3.77	0.003
Age of the household head (Years)	hdage	10.5	2.48	0.014
Gender of the household head (0=Male; 1= Female)	hdsex	-.41	-1.30	0.195
Location status (0 = Urban; 1 = rural)	rural	-1495	-5.74	0.001
Amount of agricultural land (Katha)	agri_land	155	3.64	0.005
Total value of livestock holding (in thousand rupees)	livestock	22.2	0.66	0.508
	Constant	5388	3.55	0.006
Number of observations=1136, R-squared=0.238, F-value=50.297, Prob>F=0.000				

(a) Describe your understanding of the behaviour of ***mpce*** with respect to each of the regressors separately.

(b) What is the marginal effect of *fsize* on *mpce*? Do you have any plausible explanation for its sign?

(c) Draw an appropriate probability distribution for the estimated coefficient of the regressor '*hdage*'. Indicate the area outside the corresponding estimated t-statistic. 5+2+3= 10

4 (a) Following is part of a regression result of Y on X1, X2 and X3:

Variable	Coefficient	t-stat	p-value
INTERCEPT	102.33	T0= 5.18	0.000
X1	0.01	T1= 1.79	0.078
X2	-3.33	T2= -2.25	0.029
X3	3.38	T3= 2.97	0.005
F= 3.69		Significance F = 0.018	

(i) Do you think the regression line for Y passes through the origin?

(ii) Which of the regressors are significant at 5% level but not at 1% level?

(iii) Which of the regressors are significant at 1% level?

(b) Suppose you need to estimate the parameters of a production function

$Q = A.L^{\alpha}.K^{\beta}.u$ (where u is an error term)

Raw data on production (Q), labour input (L) and capital employed (K) is already loaded in Stata. You need to estimate the parameters of the model A, α *and* β. Write down the corresponding command lines and describe how you would obtain the estimated parameter values from the results generated by your commands.

3+7 = 10

5. (a) Describe what is executed by Stata through the following commands

[Note: some imaginary variable names are used in the commands]

```
. drop in 40/60

. sum x1 x2 x3

. table x1 x2

. gen  z = 1  if x1 <=10  |  x2 <=10

. replace z=0  if  z==.
```

(b) Rewrite the following commands correctly if you think they will not be executed by the Stata software. If you think the given command is correct in its syntax, write 'correct command' against the question number.

	Stata Command	Clarification
(i)	**. recode location (1 0) (2 1)**	'location' is a variable with values being 1 and 2 representing rural and urban respectively
(ii)	**. label define loc 0 = "Rural" , 1 = "Urban"**	Defining a new value label
(iii)	**. label variable location=loc**	Assigning the value labels to the location variable
(iv)	**. destring x1, x2, x3, replace**	Variables x1, x2, x3 are all numeric in value but they are stored as string variables
(v)	**. mvencode x1 x2, (0)**	Replacing the missing values in x1 and x2 variables with zero

5+5 = 10

[Question #6, #7, and #8 are based on a dataset which is described in details in the last page of this question paper. Read the data description carefully along with the remarks. Note the path where the file is located. Then answer the questions accordingly]

6. Using the data file described at the end, your task is to prepare a new Stata data file and save it in the same folder from where it is loaded. In doing so, ensure the following

- *Your filename is "mem1" and it will be overwritten if already exists in that folder*
- *The new file contains only the variables mentioned below:*
  hhsl
  location (with code labels 1= Rural; 2=Urban)
  all other individual information relating to member1 only
- *Your saved file contains a new variable 'fhead' which is defined as =0 if the household head is male; =1 if the household head is female.*

Assuming that you have freshly opened the Stata software in your computer, write the command lines sequentially that will accomplish the task mentioned above. 10

7. Assume that you have freshly opened the Stata software in your computer. Using the data file described at the end, suppose you want to create a new variable **fratio** and **earn_prop** that represents 'proportion of female members in the household' and 'proportion of earning members is the household' respectively. Write the command lines sequentially that will accomplish the task. Describe any new variable that you might have created and used in your command lines. 10

8. Suppose using the data file described at the end, you want to check how an individual's earning per month (variable **epm**) depends on his/her age, sex and years of education. You want to check it through estimation of a linear regression model. Assuming you have freshly opened the Stata software in your computer, write the command lines sequentially that you will execute to check it. 10

3. Following is part of an OLS regression result produced by Excel using a household survey dataset, where the dependent variable is household's monthly per-capita consumption expenditure (**mpce**):

Variable description	Regressor	Coefficient	t-value	p-value
Total number of household members	fsize	-365	-3.77	0.003
Age of the household head (Years)	hdage	10.5	2.48	0.014
Gender of the household head (0=Male; 1= Female)	hdsex	-.41	-1.30	0.195
Location status (0 = Urban; 1 = rural)	rural	-1495	-5.74	0.001
Amount of agricultural land (Katha)	agri_land	155	3.64	0.005
Total value of livestock holding (in thousand rupees)	livestock	22.2	0.66	0.508
	Constant	5388	3.55	0.006
Number of observations=1136, R-squared=0.238, F-value=50.297, Prob>F=0.000				

(a) Describe your understanding of the behaviour of ***mpce*** with respect to each of the regressors separately.

(b) What is the marginal effect of *fsize* on *mpce*? Do you have any plausible explanation for its sign?

(c) Draw an appropriate probability distribution for the estimated coefficient of the regressor '*hdage*'. Indicate the area outside the corresponding estimated t-statistic. 5+2+3= 10

4 (a) Following is part of a regression result of Y on X1, X2 and X3:

Variable	Coefficient	t-stat	p-value
INTERCEPT	102.33	T0= 5.18	0.000
X1	0.01	T1= 1.79	0.078
X2	-3.33	T2= -2.25	0.029
X3	3.38	T3= 2.97	0.005
F= 3.69		Significance F = 0.018	

(i) Do you think the regression line for Y passes through the origin?

(ii) Which of the regressors are significant at 5% level but not at 1% level?

(iii) Which of the regressors are significant at 1% level?

(b) Suppose you need to estimate the parameters of a production function

$Q = A.L^{\alpha}.K^{\beta}.u$ (where u is an error term)

Raw data on production (Q), labour input (L) and capital employed (K) is already loaded in Stata. You need to estimate the parameters of the model A, α *and* β. Write down the corresponding command lines and describe how you would obtain the estimated parameter values from the results generated by your commands.

3+7 = 10

******* Data description for question #6, #7 and #8 *******

Nature of the dataset: Survey data with households as observational units
File name: **survey.dta**
Folder address: **"C:\Desktop\Exam\"**

Variable	Description	Remarks
hhsl	Household's unique serial number	Values 1 to 1000
location	Rural/Urban category codes	Values 1 and 2
agri_k	Household's agricultural land (in Katha unit)	May have missing values
agri_b	Household's agricultural land (in Bigha unit; 1 bigha=20 katha)	May have missing values
light	Codes for household's main source of cooking fuel	Values 1, 2 or 3
fuel	Codes for household's main source of cooking fuel	Values 1, 2, 3 or 4
age1	Age of the member1 (in completed years) [member 1 is head]	Integer values
sex1	Gender code for member1	Values 1 or 2 (1=Male; 2=Female)
edu1	Educational status of memer1 (number of years of study)	Integer values
epm1	Earning per month by member1 (Rs)	May have missing values
age2	Age of the member2 (in completed years)	Integer values
sex2	Gender code for member2	Values 1 or 2
edu2	Educational status of memer2 (number of years of study)	Integer values
epm2	Earning per month by member2 (Rs)	May have missing values
age3	Age of the member3 (in completed years)	May have missing values
sex3	Gender code for member3	May have missing values
edu3	Educational status of memer3 (number of years of study)	May have missing values
epm3	Earning per month by member3 (Rs)	May have missing values
age4	Age of the member4 (in completed years)	May have missing values
sex4	Gender code for member4	May have missing values
edu4	Educational status of memer4 (number of years of study)	May have missing values
epm4	Earning per month by member4 (Rs)	May have missing values
age5	Age of the member5 (in completed years)	May have missing values
sex5	Gender code for member5	May have missing values
edu5	Educational status of memer5 (number of years of study)	May have missing values
epm5	Earning per month by member5 (Rs)	May have missing values
age6	Age of the member6 (in completed years)	May have missing values
sex6	Gender code for member6	May have missing values
edu6	Educational status of memer6 (number of years of study)	May have missing values
epm6	Earning per month by member6 (Rs)	May have missing values

** For 'epm' variables, a missing value implies 'not earning'*

M.A. Examination, 2025
Semester-II
Economics
Course: ECPC06(Regular)/C6 (Back)
(Microeconomics-II)

Time: Three Hours **Full Marks: 40**

Questions are of value as indicated in the margin.
Answer ***any of the four*** questions.

1. State and prove the Expected Utility Theorem.What are some of the exceptions to the Expected Utility theorem? 8+2

2. (a) Consider a market where there are two firms: an incumbent firm, A and a potential entrant, E. Entrant E will have to decide whether to enter the market (E) or not to enter (NE). The incumbent firm A will have to decide whether to accommodate entrant E (Ac.) or go for a price war (G.P.). Their strategic payoff matrix is given below: -

		A	
		Ac	G.P.
E	NE	(0, 10)	(0, 10)
	E	(4,4)	(-1, -1)

Given the payoffs, explain what strategy will be taken by A and E. How will you describe the solution in game theory?

2 (b). Consider the pay-off matrix below for two people, A and B, who have been arrested for criminal charges. Both A and B have two options: either to confess (C) or not to confess (NC). Their pay-off matrix is given below: -

		B	
		C	NC
A	C	(1,1)	(3, 0)
	NC	(0,3)	(2,2)

Given the payoffs, explain what strategy will be taken by A and B. How will you describe the solution in game theory?

5+5

3. Using the Bernoulli Utility function, analyze either geometrically or mathematically the concavity of the utility function for a risk-averse person. Under the circumstances, distinguish between strictly risk-averse and risk-neutral. 7+3

4. A risk-averse person will take some measures to buy insurance for herself/himself if she/he falls sick. Frame a model of the decision maker's problem. Under what conditions does the decision-maker insure herself/himself completely? 4+6

5. Explain the conditions under which the preference relation on the space of simple lotteries is (i) continuous and (ii) satisfies the independence axiom. Give examples to justify your case. In this context, explain the importance of the independent axiom in the theory of choice under uncertainty. 5+3+2

6. Define a von Neumann-Morgenstern (v.N-M) expected utility function. In this context, show that a utility function has an expected utility form if and only if it is linear. 3+7

7. Distinguish between a simple lottery and a compound lottery. Show that if the preference relation on the choice of lotteries is represented by a utility function that has the expected utility form, then preference satisfies the independence axiom 5+5

8. Write short notes on the following: - 5+5
   (a) Arrow-Pratt measurement of risk aversion
   (b) Mixed strategy in Game theory

---

3. Following is part of an OLS regression result produced by Excel using a household survey dataset, where the dependent variable is household's monthly per-capita consumption expenditure (**mpce**):

Variable description	Regressor	Coefficient	t-value	p-value
Total number of household members	fsize	-365	-3.77	0.003
Age of the household head (Years)	hdage	10.5	2.48	0.014
Gender of the household head (0=Male; 1= Female)	hdsex	-.41	-1.30	0.195
Location status (0 = Urban; 1 = rural)	rural	-1495	-5.74	0.001
Amount of agricultural land (Katha)	agri_land	155	3.64	0.005
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	Constant	5388	3.55	0.006
Number of observations=1136, R-squared=0.238, F-value=50.297, Prob>F=0.000				

(a) Describe your understanding of the behaviour of ***mpce*** with respect to each of the regressors separately.

(b) What is the marginal effect of *fsize* on *mpce*? Do you have any plausible explanation for its sign?

(c) Draw an appropriate probability distribution for the estimated coefficient of the regressor '*hdage*'. Indicate the area outside the corresponding estimated t-statistic. 5+2+3= 10

4 (a) Following is part of a regression result of Y on X1, X2 and X3:

Variable	Coefficient	t-stat	p-value
INTERCEPT	102.33	T0= 5.18	0.000
X1	0.01	T1= 1.79	0.078
X2	-3.33	T2= -2.25	0.029
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F= 3.69		Significance F = 0.018	

(i) Do you think the regression line for Y passes through the origin?

(ii) Which of the regressors are significant at 5% level but not at 1% level?

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3+7 = 10

5. (a) Describe what is executed by Stata through the following commands

[Note: some imaginary variable names are used in the commands]

```
. drop in 40/60

. sum x1 x2 x3

. table x1 x2

. gen  z = 1  if x1 <=10  |  x2 <=10

. replace z=0  if  z==.
```

(b) Rewrite the following commands correctly if you think they will not be executed by the Stata software. If you think the given command is correct in its syntax, write 'correct command' against the question number.

	Stata Command	Clarification
(i)	**. recode location (1 0) (2 1)**	'location' is a variable with values being 1 and 2 representing rural and urban respectively
(ii)	**. label define loc 0 = "Rural" , 1 = "Urban"**	Defining a new value label
(iii)	**. label variable location=loc**	Assigning the value labels to the location variable
(iv)	**. destring x1, x2, x3, replace**	Variables x1, x2, x3 are all numeric in value but they are stored as string variables
(v)	**. mvencode x1 x2, (0)**	Replacing the missing values in x1 and x2 variables with zero

5+5 = 10

[Question #6, #7, and #8 are based on a dataset which is described in details in the last page of this question paper. Read the data description carefully along with the remarks. Note the path where the file is located. Then answer the questions accordingly]

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- *Your filename is "mem1" and it will be overwritten if already exists in that folder*
- *The new file contains only the variables mentioned below:*
  hhsl
  location (with code labels 1= Rural; 2=Urban)
  all other individual information relating to member1 only
- *Your saved file contains a new variable 'fhead' which is defined as =0 if the household head is male; =1 if the household head is female.*

Assuming that you have freshly opened the Stata software in your computer, write the command lines sequentially that will accomplish the task mentioned above. 10

7. Assume that you have freshly opened the Stata software in your computer. Using the data file described at the end, suppose you want to create a new variable **fratio** and **earn_prop** that represents 'proportion of female members in the household' and 'proportion of earning members is the household' respectively. Write the command lines sequentially that will accomplish the task. Describe any new variable that you might have created and used in your command lines. 10

8. Suppose using the data file described at the end, you want to check how an individual's earning per month (variable **epm**) depends on his/her age, sex and years of education. You want to check it through estimation of a linear regression model. Assuming you have freshly opened the Stata software in your computer, write the command lines sequentially that you will execute to check it. 10

******* Data description for question #6, #7 and #8 *******

Nature of the dataset: Survey data with households as observational units
File name: **survey.dta**
Folder address: **"C:\Desktop\Exam\"**

Variable	Description	Remarks
hhsl	Household's unique serial number	Values 1 to 1000
location	Rural/Urban category codes	Values 1 and 2
agri_k	Household's agricultural land (in Katha unit)	May have missing values
agri_b	Household's agricultural land (in Bigha unit; 1 bigha=20 katha)	May have missing values
light	Codes for household's main source of cooking fuel	Values 1, 2 or 3
fuel	Codes for household's main source of cooking fuel	Values 1, 2, 3 or 4
age1	Age of the member1 (in completed years) [member 1 is head]	Integer values
sex1	Gender code for member1	Values 1 or 2 (1=Male; 2=Female)
edu1	Educational status of memer1 (number of years of study)	Integer values
epm1	Earning per month by member1 (Rs)	May have missing values
age2	Age of the member2 (in completed years)	Integer values
sex2	Gender code for member2	Values 1 or 2
edu2	Educational status of memer2 (number of years of study)	Integer values
epm2	Earning per month by member2 (Rs)	May have missing values
age3	Age of the member3 (in completed years)	May have missing values
sex3	Gender code for member3	May have missing values
edu3	Educational status of memer3 (number of years of study)	May have missing values
epm3	Earning per month by member3 (Rs)	May have missing values
age4	Age of the member4 (in completed years)	May have missing values
sex4	Gender code for member4	May have missing values
edu4	Educational status of memer4 (number of years of study)	May have missing values
epm4	Earning per month by member4 (Rs)	May have missing values
age5	Age of the member5 (in completed years)	May have missing values
sex5	Gender code for member5	May have missing values
edu5	Educational status of memer5 (number of years of study)	May have missing values
epm5	Earning per month by member5 (Rs)	May have missing values
age6	Age of the member6 (in completed years)	May have missing values
sex6	Gender code for member6	May have missing values
edu6	Educational status of memer6 (number of years of study)	May have missing values
epm6	Earning per month by member6 (Rs)	May have missing values

** For 'epm' variables, a missing value implies 'not earning'*