Centre Name : _____

Roll No. : _____

Name of Candidate : _____

S A U

Entrance Test for M. Phil./Ph.D. (Economics), 2014

[PROGRAMME CODE : PEC]

Time : 3 hours   Maximum Marks : 100

INSTRUCTIONS FOR CANDIDATES

Candidates must carefully read the following instructions before attempting the Question Paper :

(i) Write your Name, Roll Number and Centre Name in the space provided for the purpose on the top of this Question Paper and in the OMR/Answer Sheet.

(ii) This Question Paper has Two Parts : Part—A and Part—B.

(iii) Part—A (Objective-type) has 25 questions of **two** marks each. All questions are compulsory.

(iv) Part—B (Subjective/Essay-type/Long Answer) has 10 questions out of which 5 questions are to be answered. Each question carries **ten** marks.

(v) **Please darken the appropriate Circle of 'Question Paper Series Code' and 'Programme Code' on the OMR in the space provided.**

(vi) Part—A (Multiple Choice) questions should be answered on OMR Sheet and answers for Part—B should be written in the Answer Book.

(vii) Answers written by the candidates inside the Question Paper will NOT be evaluated.

(viii) Calculators and Log Tables may be used. Mobile Phones are NOT allowed.

(ix) A page at the end has been provided for Rough Work.

(x) **Return the Question Paper and the OMR/Answer Sheet** to the invigilator at the end of the Entrance Test.

(xi) **DO NOT FOLD THE OMR/ANSWER SHEET.**

/8-A

INSTRUCTIONS FOR MARKING ANSWERS IN THE 'OMR SHEET'
Use BLUE/BLACK Ballpoint Pen Only

1. **Please ensure that you have darkened the appropriate Circle of 'Question Paper Series Code' and 'Programme Code' on the OMR Sheet in the space provided.**

   Example :

Question Paper Series Code	**Programme Code**

   Write Question Paper Series Code A or B and darken appropriate circle.

   Write Programme Code out of 14 codes given and darken appropriate circle.

   ☐ A or B

   Write Programme Code ☐

   ● (marked circle)

   Ⓑ

MEC	○	MAM	○	PCS	○
MSO	○	MLS	○	PBT	○
MIR	○	PEC	●	PAM	○
MCS	○	PSO	○	PLS	○
MBT	○	PIR	○		

2. Use only Blue/Black Ballpoint Pen to darken the Circle. Do not use Pencil to darken the Circle for Final Answer.

3. Please darken the whole Circle. ●

4. Darken <u>ONLY ONE CIRCLE</u> for each question as shown below in the example :

   Example :

Wrong	Wrong	Wrong	Wrong	Correct
● ⓑ © ●	⍉ ⓑ © ⓓ	⍉ ⓑ © ⍚	⊙ ⓑ © ●	ⓐ ⓑ © ●

5. Once marked, no change in the answer is allowed.

6. Please do not make any stray marks on the OMR Sheet.

7. Please do not do any rough work on the OMR Sheet.

8. Mark your answer only in the appropriate circle against the number corresponding to the question.

9. There will be <u>no negative marking</u> in evaluation.

10. Write your six digits Roll Number in small boxes provided for the purpose; and also darken appropriate circle corresponding to respective digits of your Roll Number as shown in the example below.

    Example :

    ROLL NUMBER

1	3	5	7	2	0
●	①	①	①	①	①
②	②	②	②	●	②
③	●	③	③	③	③
④	④	④	④	④	④
⑤	⑤	●	⑤	⑤	⑤
⑥	⑥	⑥	⑥	⑥	⑥
⑦	⑦	⑦	●	⑦	⑦
⑧	⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨	⑨
⓪	⓪	⓪	⓪	⓪	●

Perhaps the most important thematic deficiency of traditional development economics is its concentration on national product, aggregate income and total supply of particular goods rather than on 'entitlements' of people and the 'capabilities' these entitlements generate. Ultimately, the process of economic development has to be concerned with what people can or cannot do, e.g., whether they can live long, escape avoidable morbidity, be well-nourished, be able to read and write and communicate, take part in literary and scientific pursuits, and so forth. It has to do, in Marx's words, with "replacing the domination of circumstances and chance over individuals by the domination of individuals over chance and circumstances".

Entitlement refers to the set of alternative commodity bundles that a person can command in a society using the totality of rights and opportunities that he or she faces. Entitlements are relatively simple to characterize in a purely market economy. If a person can, say, earn $200 by selling his labour power and other saleable objects he has or can produce, then his entitlements refer to the set of all commodity bundles costing no more than $200. He can buy any such bundle, but no more than that, and the limit is set by his ownership (endowment) and his exchange possibilities (exchange entitlement), the two together determining his overall entitlement. On the basis of this entitlement, a person can acquire some capabilities, i.e., the ability to do this or that (e.g., be well-nourished), and fail to acquire some other capabilities. The process of economic development can be seen as a process of expanding the capabilities of people. Given the functional relation between entitlements of persons over goods and their capabilities, a useful—though derivative—characterization of economic development is in terms of expansion of entitlement.

For most of humanity, about the only commodity a person has to sell is labour power, so that the person's entitlements depend crucially on his or her ability to find a job, the wage rate for that job, and the prices of commodities that he or she wishes to buy. The problems of starvation, hunger and famines in the world could be better analyzed through the concept of entitlement than through the use of the traditional variables of food supply and population size. The intention here is not, of course, to argue that the supply of goods—food in this case—is irrelevant to hunger and starvation, which would be absurd, but that the supply is just one influence among many; and, in so far as supply is important, it is so precisely because it affects the entitlements of the people involved, typically through prices. Ultimately, we are concerned with what people can or cannot do, and this links directly with their 'entitlements' rather than with overall supplies and outputs in the economy.

1. Entitlement of a person is dependent on his/her

    (a) ability to work

    (b) labour power and 'exchange entitlement'

    (c) capabilities

    (d) labour power, non-labour endowments, and his/her ability to sell both

2. Suppose a person depends exclusively on his ability to work in order to survive. Under normal circumstances, he can work for 10 hours per day, and his labour fetches an hourly wage of $ 2. However, during a major famine that affects the working of both labour and commodity markets, he cannot find any work. Subsequently the government steps in and provides a daily relief payment of $20. Consequently, the entitlement of this person

    (a) will remain same as before

    (b) will increase

    (c) will decrease

    (d) Cannot be determined from the given information

3. Suppose a country faces a major disruption in food production due to a natural disaster. In this situation, the ability of a person to avoid hunger will ultimately depend on

    (a) his/her endowments and exchange entitlements

    (b) the import of food from abroad

    (c) the price of food

    (d) his/her endowments, exchange entitlements, and public provisioning of food

4. Theil entropy index is a measure of

    (a) absolute poverty

    (b) relative poverty

    (c) chronic poverty

    (d) multidimensional poverty

5. Non-enforcement of private property rights over productive resources may create more employment and income opportunities, but may lead to non-optimal use of the resources. In the literature, this phenomenon is referred to as the problem of

    (a) adverse selection

    (b) tragedy of commons

    (c) knife-edge instability

    (d) external diseconomies

6. Consider two events A and B with $\Pr(A) = 0 \cdot 4$ and $\Pr(B) = 0 \cdot 7$. The maximum and minimum possible values of $\Pr(A \cap B)$ are

    (a) $0 \cdot 7$ and $0 \cdot 5$

    (b) 1 and $0 \cdot 1$

    (c) 1 and $0 \cdot 3$

    (d) $0 \cdot 7$ and $0 \cdot 1$

7. Suppose that one word is to be selected at random from the sentence IT IS A SUNNY DAY. If X denotes the number of letters in the word that is selected, then the value of $E(X)$ is

(a) 4/13

(b) 17/4

(c) 5

(d) 13/5

8. A point (x, y) is to be selected from the square S containing all points (x, y) such that $0 \leq x \leq 1$ and $0 \leq y \leq 1$. Suppose that the probability that the selected point will belong to each specified subset of S is equal to the area of that subset. Then the porbability of the subset of points such that $x = y$ is

(a) 0·5

(b) 0·2

(c) 0

(d) 1

9. Suppose that a random variable X has a discrete distribution with the following probability function

$$f(x) = \begin{cases} \dfrac{c}{2^x} & \text{for } x = 0, 1, 2, \ldots \\ 0 & \text{otherwise} \end{cases}$$

The value of the constant c is

(a) 1/4

(b) 1

(c) 1/2

(d) 1/8

10. Suppose that X and Y are random variables such that (X, Y) must belong to the rectangle in the xy-plane containing all points (x, y) for which $0 \le x \le 3$ and $0 \le y \le 4$. Suppose also that the joint c.d.f. of X and Y at every point (x, y) in this rectangle is specified as follows :

$$F(x, y) = \frac{1}{156} xy(x^2 + y)$$

Then the joint p.d.f. of X and Y is

(a) $\dfrac{1}{156}(3x^2 y + y^2)$

(b) $\dfrac{1}{156}(x^2 + y)$

(c) $\dfrac{1}{156}(3x^2 + 2y)$

(d) $\dfrac{1}{156}(x^3 + 2y^2)$

11. Suppose Bhagat has the option to taking a job as an executive associate that pays $75,000 per month with certainty or choosing a career in business administration. Bhagat's opportunity cost of not selecting either is zero. If Bhagat chooses the career in business administration, there is a 50 per cent chance the market will be 'bullish' and he will earn $105,000 per month. However, there is a 50 per cent chance that the market will be 'bearish' and he will earn $45,000. Assume that Bhagat is risk-averse and that his utility function with respect to income is

$$U(I) = (I)^{\frac{1}{2}}$$

Bhagat should prefer to choose to be

(a) executive associate

(b) business administrator

(c) Bhagat should be indifferent about the two

(d) Bhagat should not choose either

12. Let R be a weak preference relation defined over a consumption set X. Let P stands for the strict preference relation and I stands for the indifference relation, derived from R the usual way. Suppose a consumer has a ranking over $X = \{x, y, z\}$ as xIy and yIz and xPz. Then which of the following is true?

(a) Consumer's indifference relation I is transitive

(b) Consumer's strict preference relation P is transitive

(c) Consumer's strict preference relation P is not transitive

(d) One cannot conclude anything about the transitivity of I or P

13. A consumer's utility function is given by $U = 2x + 5y$. Suppose the consumer's income is 100, and the prices of x and y are 4 and 10 respectively. Then

   (a) there will be infinite points of equilibria

   (b) only one equilibrium point exists, at (25,0)

   (c) only one equilibrium point exists, at (0,10)

   (d) None of the above is true

14. Consider a Leontief production function $Q = \min[K/2, L/3]$, where Q is the output, and K and L are the two inputs in the production process. This production function is

   (a) homogeneous but not homothetic

   (b) homothetic but not homogeneous

   (c) both, homogeneous and homothetic

   (d) neither homogeneous nor homothetic

15. A monopoly faces the demand curve $P = 8 - Q$. The monopoly has a constant unit cost equals to 7 for $Q \leq 2$ and a constant unit cost equals to 5 for $Q > 2$. Its profit-maximizing output equals to

   (a) $\dfrac{1}{2}$

   (b) 2

   (c) $\dfrac{3}{2}$

   (d) both $\dfrac{1}{2}$ and $\dfrac{3}{2}$

16. Financial investors typically hold a part of their portfolio in the form of risk-free assets like government bonds, despite these assets offering a very low rate of return. Which of the following could be a possible reason for such behavior?

   (a) Risk aversion of investors

   (b) Incomplete markets, leading to lack of adequate options to diversify risk

   (c) Both (a) and (b)

   (d) Neither (a) nor (b)

17. If all agents participating in an asset market form their expectations rationally in a forward-looking manner, in which of the following situtations do we say that there is a bubble in the asset market?

   (a) There is a sudden increase or decrease in the prices of asset

   (b) The asset prices deviate from their fundamentals, or the solution to the deterministic component of the asset price

   (c) Everyone wants to buy in the asset market

   (d) None of the above bubbles are not possible as long as all agents continue to form their expectations rationally

18. Consider a basic Solow's model of growth, where the output is determined by a linearly homogeneous, increasing and concave production function satisfying the Inada conditions, with no technological progress. The rate of growth of population, the rate of depreciation and the propensity to save is constant. Suppose, to begin with, the economy saves at a rate lower than the optimal savings rate (i.e., the savings rate which maximizes steady state per capita consumption). An increase in savings rate, bringing it closer to the optimal savings rate, would lead to

(a) a reduction in per capita consumption in steady state

(b) an increase in per capita consumption in steady state

(c) initially a decrease, and then, an increase in per capita consumption in steady state

(d) initially an increase, and then, a decrease in per capita consumption in steady state

19. Between 2002 and 2003, Afghanistan introduced a new currency, the new Afghani, at an exchange rate of 43 Afghani to the US dollar. This new Afghani replaced its two previous versions at two different rates : the currency issued by the government of President Burhanuddin Rabbani was replaced at the rate of 1000 to the new Afghani, whereas the currency issued by the government of Abdul Rashid Dostum was replaced at the rate of 2000 to the new Afghani. The central bank issued instructions that the new currency should be used to make all domestic transactions, replacing all other currencies in use. All existing contracts were to be rewritten in terms of the new Afghani at the specified exchange rates. Assuming that the government was successful in carrying out this exercise, what will be the impact of this change on output and employment?

(a) Output and employment will fall, since less currencies are in circulation

(b) Output and employment will rise, since production will benefit from a stable currency

(c) Output and employment will remain unchanged, since the contracts are rewritten in terms of new currency

(d) Cannot be determined from the given information

20. Suppose the central bank of Pakistan conducts open-market operations, which leads to an expansion of its monetary base. For this to actually result in an increase in money supply, one of the assumptions is

(a) full employment level of output

(b) a stable demand function for money

(c) a stable production function

(d) a low rate of inflation

21. Integration of

$$y = \int \left(\frac{10}{x} + e^x \right) dx$$

is

(a) $10 \log x + e^x + c$

(b) $10 \log x + e^{x^2} + c$

(c) $\log x + 10 e^x + c$

(d) None of the above

22. The demand curve of a monopolist is given by

$$p = 100 - x - x^2$$

The marginal revenues at $x = 2$ and $x = 0$ are

(a) 74 and 10

(b) 84 and 100

(c) 100 and 84

(d) 74 and 90

23. The profit-maximizing output for the revenue function $R(Q) = 1000Q - 2Q^2$ and cost function $C(Q) = Q^3 - 59Q^2 + 1315Q + 2000$ is

(a) 30

(b) 3

(c) 35

(d) 40

24. Integration of

$$y = \int \frac{1}{x \log x} dx$$

is

(a) $x \log x + c$

(b) $\log (\log x) + c$

(c) $\log (1 + e^x) + c$

(d) $(\log x)^2 + c$

25. The determinant of the matrix

$$\begin{pmatrix} \log_a^b & 1 \\ 1 & \log_b^a \end{pmatrix}$$

is

(a) 1

(b) 0

(c) 2

(d) None of the above

PART—B

Answer *any* **five** questions

26. Evaluate the use of Randomized Controlled Trials(RCT) as a research methodology to analyze major development problems.

27. The interlinkage between economic growth, poverty and inequality has been widely debated in development economics. Examine this interlinkage in the context of the recent growth experience in South Asia.

28. Which of the following can cause OLS estimators to be biased? Provide brief explanations for each :

(a) Heteroscedasticity

(b) Omitting a relevant variable

(c) A sample correlation coefficient of 0·95 between two independent variables both included in the model

29. Suppose that X and Y have a continuous joint distribution for which the joint p.d.f. is defined as follows :

$$f(x, y) = \begin{cases} cy^2 & \text{for } 0 \le x \le 2 \text{ and } 0 \le y \le 1 \\ 0 & \text{otherwise} \end{cases}$$

Determine (a) the value of the constant c, (b) $\Pr(X + Y > 2)$, (c) $\Pr(Y < 1/2)$, (d) $\Pr(X \le 1)$ and (e) $\Pr(X = 3Y)$.

30. A consumer's utility function is $U(x, y) = \max(ax, ay) + \min(x, y)$, where $0 < a < 1$. Suppose the consumer has a positive income m and both commodities have positive prices given by Px and Py. Derive the Marshallian demand functions for x and y.

31. If a rice farmer's income (y) is made stochastic due to its dependence on say, rainfall, explain that the concavity of $U(y)$, his utility function, is both 'necessary' and 'sufficient' for the farmer to be 'risk-averse'. Illustrate your argument by means of a suitable graph.

32. Consider a decentralized, competitive market economy consisting of the government, representative firm and a single dynasty of identical, representative and infinitely lived households. The households maximize intertemporal utility, while the producers have a technology represented by a production function which is homogeneous of degree one and no technological progress. The growth rate or workforce as well as the rate of depreciation of the capital stock is constant. Show that the optimal consumption path depends on government expenditure, but not on how this expenditure is financed.

33. Consider a model of overlapping generations where each household lives for two periods. In the first period it inelastically supplies one unit of labour, while in the second period it lives off its wealth or savings. Savings can be held only in the form of one asset, the capital stock. Production is conducted by firms, who have a production function which is linearly homogeneous and without technological progress. The rate of growth in birth as well as the rate of depreciation of capital stock is constant. Show that the steady state per worker capital stock need not necessarily be Pareto Optimal.

34. Solve the following differential equations :

(a) $\dfrac{dy}{dx} = \dfrac{3xy + y^2}{3x^2}$

(b) $\dfrac{d^2y}{dx^2} - 4\dfrac{dy}{dx} + 3y = 0$

35. The demand and supply functions for the cobweb model are given as

$$Q_{st} = -20 + 2P_{t-1}$$
$$Q_{dt} = 60 - 4P_t$$

What is intertemporal equilibrium price and time path P_t? Also discuss the nature of time path.

★ ★ ★