

34

QUESTION PAPER
SERIES CODE
A

Registration No. :

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Centre of Exam. : _____

Name of Candidate : _____

Signature of Invigilator

ENTRANCE EXAMINATION, 2017

M.Phil/Ph.D. ECONOMICS

[Field of Study Code : ECOP (136)]

Time Allowed : 3 hours

Maximum Marks : 100

INSTRUCTIONS FOR CANDIDATES

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

- (i) Write your Name and Registration Number in the space provided for the purpose on the top of this Question Paper and in the Answer Sheet.
- (ii) **Please darken the appropriate circle of the Question Paper Series Code on the OMR Answer Sheet with a BALLPOINT PEN. Any overwriting or alteration will be treated as wrong answer.**
- (iii) The question paper has four Sections : Section—A, Section—B, Section—C and Section—D.
- (iv) Section—A has 30 questions, each carrying 1 mark. Section—B has 10 questions, each carrying 2 marks.
- (v) Answer ALL the questions of Section—A and Section—B in the OMR Sheet provided for the purpose by darkening the correct choice, i.e., (a) or (b) or (c) or (d) with a BALLPOINT PEN only against the corresponding circle. Any overwriting or alteration will be treated as wrong answer.
- (vi) **There will be negative marking and for each wrong answer, 1/4 mark would be deducted for 1 mark questions (in Section—A) and 1/2 mark would be deducted for 2-mark questions (in Section—B).**
- (vii) Answers for Section—C and Section—D should be written in the Question Paper itself in the space provided with each question.
- (viii) Pages at the end have been provided for Rough Work.
- (ix) Return the Question Paper and Answer Sheet to the Invigilator at the end of the Entrance Examination. **DO NOT FOLD THE OMR ANSWER SHEET.**

INSTRUCTIONS FOR MARKING ANSWERS

- 1. Use only Blue/Black Ballpoint Pen (do not use pencil) to darken the appropriate Circle.
- 2. Please darken the whole Circle.
- 3. Darken ONLY ONE CIRCLE for each question as shown in example below :

Wrong	Wrong	Wrong	Wrong	Correct
<input type="radio"/> (b) <input type="radio"/> (c) <input type="radio"/>	<input checked="" type="radio"/> (b) <input type="radio"/> (c) <input type="radio"/> (d)	<input checked="" type="radio"/> (b) <input type="radio"/> (c) <input checked="" type="radio"/> (d)	<input checked="" type="radio"/> (b) <input type="radio"/> (c) <input type="radio"/>	<input type="radio"/> (a) <input checked="" type="radio"/> (b) <input type="radio"/> (c) <input type="radio"/>

- 4. Once marked, no change in the answer is allowed.
- 5. Please do not make any stray marks on the OMR Answer Sheet.
- 6. Do rough work only on the pages provided for this purpose.
- 7. Mark your answer only in the appropriate space against the number corresponding to the question.
- 8. **Ensure that you have darkened the appropriate Circle of Question Paper Series Code on the OMR Answer Sheet.**

SECTION—A

Each question carries 1 mark

There are a total of 30 questions of 1 mark each. There is negative marking in this section. For each wrong answer, $\frac{1}{4}$ mark will be deducted. 1×30=30

1. Suppose that imported components account for half of the value of production of automobiles in a country. The government imposes tariffs of 20 per cent on the import of automobiles and 10 per cent tariff on the imported components. Then the effective rate of protection for automobiles is
 - (a) 10 per cent
 - (b) 20 per cent
 - (c) 30 per cent
 - (d) 40 per cent

2. A statistic $\hat{\theta}$ is an unbiased estimator of the parameter θ if and only if
 - (a) the expected value of $\hat{\theta}$ is θ
 - (b) the probability limit of $\hat{\theta}$ is θ
 - (c) the variance of $\hat{\theta}$ is 0
 - (d) None of the above

3. Given the pattern in the number sequence below, what is the missing number?
1 8 27 ? 125 216
 - (a) 36
 - (b) 45
 - (c) 46
 - (d) 64

4. The suitability of fixed effect and random effect panel data model is determined by the
 - (a) Breusch-Pagan Test
 - (b) Hausman Specification Test
 - (c) Johansen Co-integration Test
 - (d) Durbin-Watson Statistic

5. Capital controls are most often aimed at slowing or eliminating movements of
- (a) natural resources
 - (b) exports of goods
 - (c) foreign portfolio investment
 - (d) human capital
6. Under a system of perfectly flexible exchange rate, a country's balance-of-payments deficit would
- (a) lead to a depletion of the country's reserve of foreign currency
 - (b) not exist
 - (c) lead to increase in unemployment rate
 - (d) lead to speculation in foreign currency
7. Workers consume all their wages and capitalists save all their profits. In a closed economy without any government sector, if the investment in the economy is 50, what would be the level of profits?
- (a) 150
 - (b) 100
 - (c) 50
 - (d) 25
8. A country's GDP is 60, its exports 5, its imports 6 and its net income from abroad is 2. Its GNP must be
- (a) 63
 - (b) 44
 - (c) 59
 - (d) 62
9. The demonetization announced by the Government of India in November 2016 cancelled the legal tender status of which of the following?
- (a) Bank notes of denominations of ₹ 500 and 1000 issued by the RBI till 2010
 - (b) Bank notes of denominations of ₹ 500 and 1000 issued by the RBI up to 8 November, 2016
 - (c) Bank notes of denominations of ₹ 500 and 1000 issued by the RBI at any point of time before or after 8 November, 2016
 - (d) Bank notes of denominations of ₹ 1000 issued by the RBI
10. In the Indian economy, the sectors which account for the highest share in GDP and employment respectively are
- (a) Industry (GDP) and Agriculture (Employment)
 - (b) Services (GDP) and Services (Employment)
 - (c) Services (GDP) and Agriculture (Employment)
 - (d) Industry (GDP) and Services (Employment)

11. The Indian Constitution vests the power to levy Corporation Tax on
- (a) The Central Government
 - (b) The State Governments
 - (c) Both Central and State Governments separately
 - (d) Central and State Governments jointly
12. Which of the following combinations includes only indirect taxes?
- (a) Corporation Tax; Service Tax; Excise Duty
 - (b) Customs Duty; Sales Tax; Excise Duty
 - (c) Corporation Tax; Sales Tax; Excise Duty
 - (d) Corporation Tax; Service Tax; Sales Tax
13. Official estimates of poverty in India are measured on
- (a) Consumption Expenditure
 - (b) Income
 - (c) Assets
 - (d) A combination of consumption, income and assets
14. The 'Make in India' initiative of the Government of India refers to
- (a) information technology
 - (b) services
 - (c) manufacturing
 - (d) international trade
15. According to the official (Tendulkar) poverty line in India, the population that was income-poor in 2011-12 was approximately
- (a) 12 per cent
 - (b) 22 per cent
 - (c) 34 per cent
 - (d) 45 per cent

- 16.** India's savings rate as a proportion of GDP in 2014–15 is approximately
- (a) 10 per cent
 - (b) 20 per cent
 - (c) 30 per cent
 - (d) 40 per cent
- 17.** The Finance Commission in India determines
- (a) the rates of income tax
 - (b) the composition of taxes between direct and indirect taxes
 - (c) the distribution of tax revenues between Centre and States
 - (d) the rules by which financial institutions must operate
- 18.** What is the arithmetic mean of the five numbers 1, 2, 3, 4, 5?
- (a) 2.5
 - (b) 3
 - (c) 4
 - (d) None of the above
- 19.** What is the median of the five numbers 5, 4, 3, 2, 1?
- (a) 2
 - (b) 2.5
 - (c) 3
 - (d) None of the above
- 20.** What is the mode of the six numbers 5, 5, 4, 3, 2, 1?
- (a) 2.5
 - (b) 3
 - (c) 5
 - (d) None of the above

21. The probability distribution of a random variable X is as follows :

Value of X	Probability
0	0.5
1	0.5

What is $E(X)$, the expected value of X , equal to?

- (a) 0.25
(b) 0.50
(c) 0.75
(d) 1
22. The probability distribution of a random variable X is as follows :

Value of X	Probability
0	0.5
1	0.5

What is variance (X) equal to?

- (a) 0.25
(b) 0.50
(c) 0.75
(d) 1
23. If $x = 3$, what is $|x - 5|$ equal to?
(a) -2
(b) 3
(c) 7
(d) None of the above
24. If you differentiate $6x + \log(x)$ with respect to x , where $\log(x)$ denotes the natural logarithm of x , the answer is
(a) $6 + 1/x^2$
(b) $3 + 2x$
(c) $6 + 1/x$
(d) None of the above
25. If you differentiate $1/x^2$ with respect to x , the answer is
(a) $-2/x^3$
(b) $2/x^3$
(c) $-2/x^2$
(d) None of the above

26. Let $f(x) = (\log(x))/x$, where $0 < x < 1$. For all x such that $0 < x < 1$, which one of the following statements is correct?
- (a) $f'(x) < 0$
 - (b) $f'(x) > 0$
 - (c) $f'(x) > 0$, if $0 < x < 0.5$ and $f'(x) < 0$, if $0.5 \leq x < 1$
 - (d) Cannot say anything about the sign of $f'(x)$
27. $\int_1^2 3x^2 dx$ is equal to
- (a) 0
 - (b) 2
 - (c) 7
 - (d) 1
28. $\lim_{x \rightarrow \infty} \left(\frac{1}{x} + 5 \right)$ is equal to
- (a) 5
 - (b) -5
 - (c) 0
 - (d) ∞
29. Consider the function $f(x) = x^2$, $x \in [-10, 10]$. The function has a maxima at
- (a) $x = 10$ and $x = -10$
 - (b) $x = 0$
 - (c) $x = -2.5$
 - (d) $x = 5$
30. A variable X takes the value 30 in year 1 and 35 in year 2. Therefore, the annual growth rate of X is
- (a) 5%
 - (b) $\frac{5}{30}\%$
 - (c) $\frac{500}{30}\%$
 - (d) None of the above

SECTION—B

Each question carries 2 marks

There are a total of 10 questions of 2 marks each. There is negative marking in this section. For each wrong answer, $\frac{1}{2}$ mark will be deducted. 2×10=20

31. Suppose you choose at random a real number X from the interval $[2, 10]$. What is the probability that $5 < X < 9$?
- (a) 0.4
 - (b) 0.5
 - (c) 0.9
 - (d) 1
32. A person must choose one out of three options : A , B or C . She is equally likely to choose option A or option B and three times more likely to choose option C . What is the probability that she chooses option B ?
- (a) $1/5$
 - (b) $1/3$
 - (c) $3/5$
 - (d) None of the above
33. If there is not enough demand for loans in the market relative to the availability of loanable funds at any given interest rate, the value of the money multiplier would be
- (a) equal to the reciprocal of the reserve ratio
 - (b) greater than the reciprocal of the reserve ratio
 - (c) less than the reciprocal of the reserve ratio
 - (d) indeterminate
34. In Keynesian liquidity-trap situation of very low interest rate, people would
- (a) be indifferent between holding money and bonds
 - (b) prefer to hold money over bonds
 - (c) prefer to hold bonds over money
 - (d) Neither hold money nor bonds
35. Suppose the nominal GDP grows by 6%, the population grows by 1.5% and the price level increases by 4.5%. What is the percentage change in real per-capita GDP?
- (a) 0
 - (b) 5
 - (c) 1.5
 - (d) 2.5

36. Consider a commercial banking sector. The initial total primary deposit is ₹ 200. Every bank has to maintain 10% of its deposit as reserve. Transactions are made through cheques only. The total volume of credit created out of the primary deposit is
- ₹ 200
 - ₹ 1,800
 - ₹ 2,000
 - None of the above
37. When capital flows into a small open economy, the money supply
- necessarily increases
 - increases if there is no sterilization by the Central Bank
 - depends on people's choice of holding money or bonds
 - is not affected
38. The investment (I) function is given by $I = 250 + 0.25Y$ where Y is total income. In the money market, the equilibrium is established through $M = 100 + 5i$ where i is the nominal rate of interest and the money supply is 150. Consumption (C) function is given by $C = 500 + 0.5Y$. If the rate of inflation is 10 percent, what is the equilibrium combination of output and real rate of interest?
- $Y = 3000; r = 10$
 - $Y = 2000; r = 0$
 - $Y = 3000; r = 5$
 - $Y = 3000; r = 0$
39. The three solutions of the equation $f(x) = 0$ are $-4, 0$ and 2 . Therefore, the three solutions of the equation $f(x - 4) = 0$ are
- $-8, -4$ and -2
 - $-4, 0$ and 2
 - $0, 4$ and 6
 - None of the above
40. A and B are events. It is known that (a) $P(A)$, the probability of event A , is $1/3$; (b) $P(B)$, the probability of event B , is $1/2$; and (c) $P(A \cap B)$, the probability of event $A \cap B$, is $1/5$. What is $P(A \cup B)$?
- $5/6$
 - 1
 - $29/30$
 - $19/30$

SECTION—C

Each question carries 5 marks

Answer *any seven* questions

Short Answer Questions : Answer the questions in the space given below. 5×7=35

41. Random variable X is uniformly distributed on the interval $(-4, 4)$. Let random variable $Y = 2X + 6$. What is the probability that the realization of random variable Y is less than 2 ?

- 42.** You take a stick of unit length and break it into two pieces, choosing the break point at random. What is the probability that the longer of the two pieces is at least three times the length of the shorter piece?

43. In a poker hand, Mr. A has a strong hand and bets ₹ 5. The probability that Ms. B has a better hand is 0.10. If Ms. B had a better hand, she would raise the bet with probability 0.90, but with a poorer hand she would only raise with probability 0.10. If Ms. B raises, what is the probability that she has a better hand than Mr. A does?

44. Random variable X has a density function of the following form :

(a) $f(x) = A/x$ if $x \in [2, 10]$

(b) $f(x) = 0$ if $x \notin [2, 10]$

A is a constant. Find A .

45. X , Y and Z are independent random variables. X is uniformly distributed on the interval $(0, 1)$. Y is uniformly distributed on the interval $(0, 1)$. Z is normally distributed with mean equal to 1 and variance equal to 4. Construct the random variable L as follows :

$$L = X \times Y^2 \times Z^2$$

What is the expected value of L ?

- 46.** Consider the economy in the Solow growth model without technological change where the aggregate production function is given by $Y = 73K^{0.2}L^{0.8}$, the rate of growth of the labour force is 0.025, the rate of depreciation of capital is 0.05 and the saving rate is 0.3. Is the steady state growth path dynamically efficient?

- 47.** What is the difference between GDP at factor cost and GDP at market prices? Which of these would change if there is a reduction in fertilizer subsidies, and in what direction?

48. In a closed economy with no government, the marginal propensity to consume of the capitalists is 0.7 and that of the workers and others is 0.9. Suppose that the aggregate share of profits in national income (which is earned only by the capitalists) is 50%. If there is ₹ 100 billion increase in autonomous investment, what would be the change in aggregate income, consumption expenditure and ex-post aggregate savings of that economy? Suppose the share of profits increased from 50% to 75%. Now what would be the change in these three variables consequent on ₹ 100 billion increase in autonomous investment? Give reasons for your answer.

49. Consider an economy with two classes : workers and capitalists; and two sectors : consumption goods and investment goods. Workers consume all their wages and capitalists consume one fourth of their profits. Both the sectors have a wage share of three fourths. If investment rises by 100 units, what would be the rise in overall output, assuming that there is unutilised capacity and unemployment in the economy? How is equilibrium achieved if there was full capacity utilization in the consumption goods sector before the increase in investment took effect?

- 50.** In an economy where all wages are consumed and only a part of profit is consumed, what is the value of the balanced budget multiplier if taxes fall entirely on wages? Does your answer change if taxes fall only on the profits?

SECTION—D

Answer any one question.

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51. Does agricultural performance still affect macroeconomic variables like output, inflation and employment in India? In what ways?
52. "The growing significance of China in global trade and capital flows means that it has emerged as an alternative growth pole in the global economy." Do you agree with this argument?
53. The Economic Survey 2017 has proposed a 'Universal Basic Income (UBI)' scheme by gradually phasing out various subsidies including food and employment guarantee scheme. Do you think India is ready for such a scheme? Discuss the feasibility and desirability of UBI in the current context.
54. In the past two decades, the Indian economy has experienced deceleration in employment growth along with acceleration of GDP growth. Can this be called 'jobless growth' and if so, what explains it?
55. Comment on the proposition that some amount of inequality is acceptable as long as the economy is growing at a reasonably high rate.

SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK

/34-A

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E7—450×3