

ENTRANCE EXAMINATION FOR ADMISSION, MAY 2013.

M.Sc. Five Year Integrated Programme (Economics)

COURSE CODE : 309

Register Number :

*Signature of the Invigilator
(with date)*

COURSE CODE : 309

Time : 2 Hours

Max : 400 Marks

Instructions to Candidates :

1. Write your Register Number within the box provided on the top of this page and fill in the page 1 of the answer sheet using pen.
2. Do not write your name anywhere in this booklet or answer sheet. Violation of this entails disqualification.
3. Read each question carefully and shade the relevant answer (A) or (B) or (C) or (D) in the relevant box of the ANSWER SHEET using HB pencil.
4. Avoid blind guessing. A wrong answer will fetch you -1 mark and the correct answer will fetch 4 marks.
5. Do not write anything in the question paper. Use the white sheets attached at the end for rough works.
6. Do not open the question paper until the start signal is given.
7. Do not attempt to answer after stop signal is given. Any such attempt will disqualify your candidature.
8. On stop signal, keep the question paper and the answer sheet on your table and wait for the invigilator to collect them.
9. Use of Calculators, Tables, etc. are prohibited.

(Question no 1-3: Read the passage and choose the correct answer from the options)

Unemployment was the overriding fact of life when Franklin D. Roosevelt became President of the United States on March 4, 1933. An anomaly of the time was that the government did not systematically collect statistics of joblessness; actually it did not start doing so until 1940. The Bureau of Labor Statistics later estimated that 12,830,000 persons were out of work in 1933, about one-fourth of a civilian labor force of over 51,000,000. Roosevelt signed the Federal Emergency Relief Act on May 12, 1933. The President selected Harry L. Hopkins, who headed the New York relief program, to run FERA. A gifted administrator, Hopkins quickly put the program into high gear. He gathered a small staff in Washington and brought the state relief organizations into the FERA system. While the agency tried to provide all the necessities, food came first. City dwellers usually got an allowance for fuel, and rent for one month was provided in case of eviction. FERA paid for medicine, some doctor bills, but no hospital costs, work-relief, sewing rooms, and renovated hand-me-down clothing.

1. This passage is primarily about
 - (A) President Roosevelt's FERA program
 - (B) President Franklin D. Roosevelt's presidency
 - (C) the effect of unemployment on United States families
 - (D) unemployment in the 1930's

2. In 1933 the unemployment rate is about _____ percent of total labor force
 - (A) 30
 - (B) 25
 - (C) 20
 - (D) 50

3. The word 'anomaly' in the passage refers to
 - (A) providing relief to city dwellers
 - (B) government not collecting statistics on joblessness
 - (C) Bureau of Labor Statistics estimation
 - (D) FERA system

(Question No 4-6: Read the two sentences given and answer the question)

The Midwest is experiencing its worst drought in fifteen years.
Corn and soybean prices are expected to be very high this year.

4. What does the second sentence do?
 - (A) It restates the idea found in the first
 - (B) It states an effect
 - (C) It gives an example
 - (D) It analyzes the statement made in the first

All water molecules form six-sided structures as they freeze and become snow crystals. Temperature, vapor, and wind conditions in the upper atmosphere determine the shape of the crystal.

5. The above two statements present

- (A) a personal observation (B) a solution to a problem
(C) actual information (D) opposing scientific theories

The process of making plastics, called polymerization, is over a hundred years old. The newly synthesized plastics languished in polymer laboratories for decades because no one had yet found a use for the new materials.

6. The information in the above sentences indicates that

- (A) commercial use of a material does not always rapidly follow its discovery
(B) people had no need for plastics those days
(C) the introduction of plastics would have upset the world economy
(D) no practical types of plastics were invented until recently

(Question No 7-11: Fill in the blanks with most appropriate option)

7. Although some think the terms "bug" and "insect" are _____, the former term actually refers to _____ group of insects.

- (A) parallel ; an identical (B) precise ; an exact
(C) interchangeable ; a particular (D) exclusive ; a separate

8. Like foolish people who continue to live near an active volcano, many of us are _____ about the _____ of atomic warfare and its attendant destruction.

- (A) worried...possibility (B) unconcerned...threat
(C) excited...power (D) cheered...possession

9. In order that future generations may _____ the great diversity of animal life, it is the task of the International Wildlife Preservation Commission to prevent endangered species from becoming _____.

- (A) recollect...tamed (B) value...evolved
(C) enjoy...extinct (D) anticipate...specialize

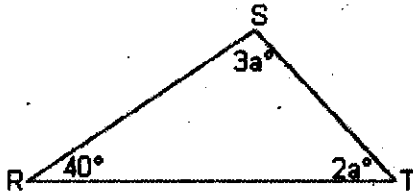
10. For all the _____ involved in the study of seals, we Arctic researchers have occasional moments of pure _____ over some new discovery.

- (A) hardships...exhilaration (B) confusions...bewilderment
(C) inconvenience...panic (D) thrills...delight

11. If there is nothing to absorb the energy of sound waves, they travel on _____, but their intensity _____ as they travel further from their source.
- (A) erratically – mitigates (B) forever - increases
(C) steadily – stabilizes (D) indefinitely – diminishes
12. A football league is divided into n divisions. Each division has t teams, and each team has p players. How many players are there in the entire league?
- (A) $n + t + p$ (B) ntp (C) pt / n (D) nt / p
13. If it is now June, what month will it be 100 months from now?
- (A) January (B) April (C) June (D) October
14. If p pencils cost c paise, how many pencils can be bought for k rupees?
- (A) $100ckp$ (B) $kp / 100c$ (C) $100ck / p$ (D) $100kp / c$
15. A rocket doubles its speed by every minute. If the rocket starts at 1 mile a minute, how fast will it go after 5 minutes?
- (A) 2 miles a minute (B) 32 miles a minute
(C) 64 miles a minute (D) 16 miles a minute
16. How many numbers are there between 81 and 65, inclusive?
- (A) 15 (B) 17 (C) 16 (D) 18
17. X and Y are digits. Find them, if $X6+6Y=81$
- (A) $y=1, x=8$ (B) $y=5, x=2$ (C) $y=5, x=1$ (D) None
18. Which of the following numbers is divisible by both 6 and 10?
- (A) 144566 (B) 12565 (C) 2350 (D) 1234567890
19. Which of these numbers isn't divisible by 11?
- (A) 242 (B) 687 (C) 4565 (D) 572
20. There are 16 teams in a soccer mini-tournament. If everyone plays against everyone exactly once, how many games are there going to be?
- (A) 120 (B) 128 (C) 256 (D) 240
21. $1/4$ is the average of $1/5$ and which of the following number?
- (A) $9/20$ (B) $3/10$ (C) $1/20$ (D) $1/3$
22. If $a = 0.99$, which of the following is less than a ?
- (A) a^2 (B) $2/a$ (C) \sqrt{a} (D) $1/a$

23. If $\frac{3}{11}$ of a number is 22, what is $\frac{6}{11}$ of that number?

- (A) 33 (B) 12 (C) 44 (D) 11



24. In the figure above, what is the value of a ?

- (A) 10 (B) 28 (C) 20 (D) 30

25. If $m^2 = 17$, then what is the value of $(m + 1)(m - 1)$?

- (A) $\sqrt{17} - 1$ (B) $\sqrt{17} + 1$ (C) 16 (D) 18

26. If a is increased by 10% and b is decreased by 10%, the resulting numbers will be equal. What is the ratio of a to b ?

- (A) $9/11$ (B) $9/10$ (C) $10/9$ (D) $11/9$

27. Find the slope of the line $6x - 6y = 7$

- (A) $7/6$ (B) 6 (C) 1 (D) -1

(Questions 28-30: choose the correct synonym from the options)

28. Smooth

- (A) soft (B) even (C) elastic (D) none of these

29. Plenty

- (A) abundant (B) scarce (C) sufficient (D) none of these

30. Ugly

- (A) unattractive (B) gorgeous (C) beautiful (D) none of these

(Questions 31-33: choose the correct antonym from the options)

31. Obvious

- (A) punctual (B) clear (C) latent (D) early

32. Social

- (A) acrimonious (B) solitary (C) jovial (D) none of these

33. Tolerant
 (A) bigot (B) ingenious (C) liberal (D) none of these
 (Questions 34-35: choose the plural form)
34. Human
 (A) human (B) humans (C) humen (D) none of these
35. Mouse
 (A) mice (B) mouse (C) maze (D) none of these
 (Questions 36-37: choose the TRUE statement)
36. Fertilizer consumption in India in 1984-85 was 8.21 MT. By 1990 it was 13.75 MT and by 2000 it is expected to reach 16 MT. What is your conclusion?
 (A) Fertilizer consumption is steady
 (B) There is a steady decrease in fertilizer consumption
 (C) Fertilizer consumption does not show any trend
 (D) There is a steady increase of fertilizer consumption
37. All guilty politicians were arrested. Tom and Gopal were among those arrested.
 (A) Tom and Gopal were guilty
 (B) Tom and Gopal were not politicians
 (C) All arrested people are politicians
 (D) All politicians are guilty
38. Botany: Plants:: Entomology:?
 (A) Birds (B) Plants (C) Insects (D) Snakes
39. AZBY: DWEV:: HSIR:?
 (A) JQKO (B) KPOL (C) KPLO (D) KOLP
40. Flow: River:: Stagnant:?
 (A) Pool (B) Rain (C) Stream (D) Canal
41. A is the sister of B, B is the brother of C, C is the son of D. How is D related to A?
 (A) Mother (B) Daughter (C) Son (D) Uncle

42. If '+' stands for Multiplication, 'x' stands for Division, '-' stands for Addition and '÷' stands for Subtraction, what would the following equation stand for?

$$20 - 8 \times 4 \div 3 + 2 = ?$$

- (A) 41 (B) 19 (C) 16 (D) 18
43. When the data are arranged either in ascending or descending order of magnitude the value of the middle most observation is called the ----- of the data

- (A) Frequency (B) Mode (C) Variance (D) Median

44. If $\text{Log}_x (1/2) = -1/2$, then x is equal to

- (A) -2 (B) 4 (C) 2 (D) 1/4

(Questions 45-47: identify the missing number of the series)

45. 3, 11, 19, 27, ?

- (A) 35 (B) 29 (C) 19 (D) 32

46. 98, 94, ?, 70, 38

- (A) 74 (B) 77 (C) 86 (D) 88

47. 86, ?, 79, 75, 72, 68

- (A) 80 (B) 85 (C) 82 (D) 83

(Questions 48-50: identify the missing number)

- 48.

7	4
5	6

- (A) 36 (B) 35

49	16
25	?

- (C) 18 (D) 41

- 49.

256	121
100	144

- (A) 11 (B) 14

16	?
10	12

- (C) 15 (D) 21

- 50.

5	?
20	40

- (A) 10 (B) 12

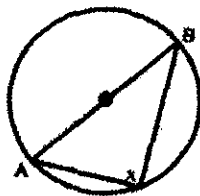
3	6
12	24

- (C) 7 (D) 8

51. A train travelling at 60 mph enters a tunnel that is 5 miles long. The train is one mile long. How many minutes does it take for the whole train to pass through the tunnel?
 (A) 10 (B) 6 (C) 7 (D) 5
52. It costs a manufacturer X rupees per component to make the first 1000 component. All subsequent components cost $X/3$ each. When $X = 1.50$ rupees, how much it will cost to produce 4000 components?
 (A) 3500 (B) 3000 (C) 3250 (D) 3750
53. 20% of 1 is equal to
 (A) 1 (B) 2 (C) 0.02 (D) 0.05
54. Find two numbers whose sum is 35 and whose product is 306
 (A) 17, 18 (B) 19, 16 (C) 20, 15 (D) 21, 14
55. The geometric mean of 16 and 64 is
 (A) 36 (B) 40 (C) 32 (D) 42
56. The harmonic mean of 16 and 64 is.
 (A) 25 (B) 25.6 (C) 32.6 (D) 40
57. The circumference of a circle is equal to 84π . Find the radius of this circle
 (A) 42 (B) 36 (C) 39 (D) π
58. The price of a pair of shoes was decreased by 22% to Rs.780. What was the original price of the shoes?
 (A) 1360 (B) 800 (C) 1000 (D) 1780
59. $\frac{d}{dx}(\ln e^{3x}) = ?$
 (A) $\frac{1}{3e^x}$ (B) 3 (C) $3x$ (D) $\frac{3}{3e^x}$
60. Order the following numbers from least to greatest $3\pi, \sqrt{62}, 8.7, 19/2$
 (A) $3\pi, \sqrt{62}, 8.7, 19/2$ (B) $\sqrt{62}, 8.7, 3\pi, 19/2$
 (C) $\sqrt{62}, 3\pi, 8.7, 19/2$ (D) $3\pi, \sqrt{62}, 19/2, 8.7$
61. If $y = |x| + 3$, then when is y a positive number?
 (A) always (B) never (C) when $x > -3$ (D) when $x > 3$
62. Simplify $\sqrt{20}$
 (A) 10 (B) $4\sqrt{5}$ (C) $5\sqrt{2}$ (D) $2\sqrt{5}$

63. What is the value of $\sin(-240^\circ)$?
- (A) $3/2$ (B) $\sqrt{3}/2$ (C) $-1\sqrt{3}$ (D) $2/\sqrt{3}$
64. Which of the following are likely to be dependent events?
- (A) the weather and the number of books on your shelf
 (B) the color of your car and its gas mileage
 (C) the weight of your car and its gas mileage
 (D) the size of your house and the size of your shoes
65. Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?
- (A) $9/20$ (B) $8/20$ (C) $1/2$ (D) $2/5$
66. In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither red nor green?
- (A) $1/3$ (B) $8/21$ (C) $6/21$ (D) $15/21$
67. In a lottery, there are 10 prizes and 25 blanks. A lottery is drawn at random. What is the probability of getting a prize?
- (A) $2/5$ (B) $2/7$ (C) $5/7$ (D) $10/25$
68. Two dice are tossed. The probability that the total score is a prime number is:
- (A) $5/15$ (B) $1/6$ (C) $5/12$ (D) $1/2$
69. The measure of location which is the most likely to be influenced by extreme values in the data set is the
- (A) range (B) mean (C) median (D) mode
70. If $A = \begin{bmatrix} 0 & 1 \\ 2 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -1 \\ 5 & 2 \end{bmatrix}$ which of the following is false?
- (A) $A^2 = \begin{bmatrix} 0 & 1 \\ 4 & 9 \end{bmatrix}$ (B) $AB = \begin{bmatrix} 5 & 2 \\ 17 & 4 \end{bmatrix}$
 (C) $A + B = \begin{bmatrix} 1 & 0 \\ 7 & 5 \end{bmatrix}$ (D) $3A - 4B = \begin{bmatrix} -4 & 7 \\ 14 & 1 \end{bmatrix}$
71. What is the size of the matrix $A = \begin{bmatrix} 1 & 3 \\ 5 & 3 \\ 3 & 6 \end{bmatrix}$?
- (A) 2×3 (B) 3×2 (C) 3×3 (D) 3×6

72. What is the (2, 3) entry in the matrix $A = \begin{bmatrix} 1 & 3 & 2 \\ 5 & 3 & 1 \\ 3 & 6 & 3 \end{bmatrix}$?
- (A) 6 (B) 3 (C) 1 (D) 2
73. If A is 3×2 matrix and B is 2×4 matrix, how many columns does AB have?
- (A) 3 (B) 2 (C) 8 (D) 4
74. Find the value of a if the matrix $\begin{bmatrix} -4 & 2 \\ -6 & a \end{bmatrix}$ is singular
- (A) -3 (B) 3 (C) 2 (D) 4
75. The first derivative of $y = \sqrt{x}$ is
- (A) $1/2\sqrt{x}$ (B) $\sqrt{x/2}$ (C) $2\sqrt{x}$ (D) $4\sqrt{x}$
76. Given the circle below with diameter \overline{AB} , find x .



- (A) 30° (B) 90° (C) 60° (D) 80°
77. Which of the following equations of a circle has center at (1, -3) and radius of 5?
- (A) $(x - 1)^2 + (y + 3)^2 = 25$ (B) $(x + 1)^2 + (y - 3)^2 = 25$
- (C) $(x - 1)^2 + (y - 3)^2 = 25$ (D) $(x)^2 + (y)^2 = 25$
78. What is the equation of a circle whose diameter is 24 and whose center is at the origin?
- (A) $x^2 + y^2 = 24$ (B) $x^2 + y^2 = 576$
- (C) $x^2 + y^2 = 144$ (D) $x^2 + y^2 = 64$
79. What are the coordinates of the center of this circle $(x + 3)^2 + (y - 5)^2 = 16$?
- (A) (3, 5) (B) (-3, 5) (C) (-3, -5) (D) (3, -5)
80. Two sides of an isosceles triangle measure 3 and 7. Which of the following could be the measure of the third side?
- (A) 3 (B) 5 (C) 9 (D) 7
81. Which of the following lengths are the sides of a right-angle triangle?
- (A) 2.4, 3.2, 4 (B) 4.3, 4.4, 4.5
- (C) 3.1, 4.2, 4.8 (D) All of the above

82. The vectors a , b and $a + b$ are
 (A) Collinear (B) Non-coplanar (C) Coplanar (D) None of these
83. If a and b are two non-zero and non-collinear vectors, then $a + b$ and $a - b$ are.
 (A) Linearly dependent vectors
 (B) Linearly dependent and independent vectors
 (C) Linearly independent vectors
 (D) None of these
84. A zero vector has
 (A) Any direction (B) Many directions
 (C) No direction (D) None of these
85. Who is the present economic advisor to the prime minister of India?
 (A) C.Rangarajan (B) Raghuram Rajan
 (C) Amartya Sen (D) Kaushik Basu
86. Who is the chairman of 14th Finance Commission?
 (A) Abhijith Sen (B) D.Subba Rao
 (C) Y.V. Reddy (D) M S Ahluwalia
87. In India inflation is measured by the
 (A) Wholesale Price Index
 (B) Consumer Price Index
 (C) GDP deflator
 (D) CPI for agriculture
88. For $r = 4$ and ${}_nP_r = 360$, what is the value of n ?
 (A) 90 (B) 6 (C) 4 (D) 3
89. For ${}_nC_r = 56$ and ${}_nP_r = 6720$, what is the value of r ?
 (A) 5 (B) 7 (C) 12 (D) 8
90. The value of ${}_{400}C_{300} / {}_{400}C_{100}$ is
 (A) 5 (B) 200 (C) 2 (D) 1

91. Where is the headquarters of the Reserve Bank of India located?
(A) Mumbai (B) Delhi (C) Chennai (D) Kolkata
92. If $x^2 + kx - 6 = (x - 2)(x + 3)$, then $k =$
(A) 6 (B) 3 (C) 1 (D) 0
93. A sum of money at simple interest amounts to Rs. 815 in 3 years and to Rs. 854 in 4 years. The sum is:
(A) Rs. 650 (B) Rs. 690 (C) Rs. 698 (D) Rs. 700
94. A sum of Rs. 12,500 amounts to Rs. 15,500 in 4 years at the rate of simple interest. What is the rate of interest?
(A) 3% (B) 4% (C) 5% (D) 6%
95. The cost price of 20 articles is the same as the selling price of x articles. If the profit is 25%, then the value of x is:
(A) 15 (B) 16 (C) 18 (D) 25
96. The sum of ages of 5 children born at the intervals of 3 years each is 50 years. What is the age of the youngest child?
(A) 4 years (B) 8 years (C) 10 years (D) None of these
97. A is two years older than B who is twice as old as C. If the total of the ages of A, B and C be 27, the how old is B?
(A) 7 (B) 8 (C) 9 (D) 10
98. Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is:
(A) 2:5 (B) 3:5 (C) 4:5 (D) 6:7
99. A sum of money is to be distributed among A, B, C, D in the proportion of 5 : 2 : 4 : 3. If C gets Rs. 1000 more than D, what is B's share?
(A) 500 (B) 1500 (C) 2000 (D) None of these
100. What decimal of an hour is a second?
(A) 0.0025 (B) 0.0256 (C) 0.00027 (D) 0.000126