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1B4A24172 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester BA Economics Degree Examination, April 2024

BEC4C04 - Mathematical Methods for Economics IV

(2022 Admission onwards)

Time: 1 ½ hours Max. Marks : 40

Section A

Short Answer Questions. Maximum marks in this section is10.
Students can attempt allquestions.
Each question carries a maximum of 2 marks.

1. Find the utility function of the commodity X given the marginal utility function, $MU(x) = 13x + 100x^2$.
2. Define MRTS.
3. What are Initial Conditions and Boundary Conditions?
4. Write any two applications of integral calculus in Economics.
5. Define the objective function of a LPP.
6. Integrate $\int(10x^4 + 5x^3 + 8)dx$
7. Explain consumer surplus using integral calculus

Section B

Short Essay/Paragraph Questions. Maximum marks in this section is 20.
Students canattempt all questions.
Each question carries a maximum of 5 marks.

8. Write a note on Slack variables and Surplus variables
9. Find the solution $\int \frac{6x^2+4}{4x^3+8x} dx$ using the substitution method
10. Explain the relationship between Total Product, Average Product, and Marginal Product functions.
11. Write a note on the Equilibrium of discriminating monopoly using a suitable diagram.
12. Write a short note on price elasticity, cross elasticity, and income elasticity.

Section C

Long Essay Questions. Answer any one questions.
The question carries a maximum of 10marks.

13. The domestic demand and supply functions of Commodity X in Country A are given (notationscarry their usual meanings).

    $Q^d = 10 - 0.5P$

    $Q^s = 2P$

    Suppose world price of commodity X is $2.

    Using integral calculus, find the Consumer surplus and producer surplus with and without international trade. (Note: with trade, domestic price = world price).

14. Explain in detail the Economic applications, advantages and disadvantages of LPP.

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester BA Economics Degree Examination, April 2024

BEC4B05 - Quantitative Methods for Economic Analysis – II

(2022 Admission onwards)

Time: 2 ½ hours Max. Marks : 80

Section-A
(Each question carries 2 Marks.
Maximum Marks that can be scored in this section is 25)

1. What is Mutually Exclusive event? Give Example
2. What is Conditional Probability?
3. Consider a box containing 8 red marbles and 6 green marbles. Two marbles are drawn from the box without replacement. What is the probability that the first marble drawn is red and the second marble drawn is green?
4. A bag contains 10 red balls and 5 blue balls. Two balls are drawn from the bag without replacement. Determine whether the events of drawing a red ball and a blue ball are independent.
5. Distinguish between discrete and continuous random variables?
6. What is standard error?
7. A coin is flipped 8 times and it follows binomial distribution. What is the probability of getting exactly 4 heads?
8. In a call centre, calls are received at an average rate of 25 calls per day. What is the probability that exactly 30 calls are received in the next day?
9. Difference between parameter and statistics?
10. Consistency
11. What is Level of Significance
12. What is null and alternative hypothesis?
13. Tail of a test?
14. Rank correlation?
15. Scatter Diagram?

Section-B
(Each question carries 5 Marks.
Maximum Marks that can be scored in this section is 35)

16. What are the various approaches to measuring probability?
17. Three cards are drawn successively, without replacement from a pack of 52 well shuffled cards. What is the probability that first two cards are kings and the third card drawn is an ace?
18. What is normal distribution and why it is standardising? Explain the features of normal distribution?
19. Consider a population with a mean of 150 and a standard deviation of 25. If samples of size 35 are drawn from this population, calculate the mean and standard deviation of the sampling distribution of the sample mean.
20. Suppose there are 5 students in a class, and their scores (out of 100) on a mathematics test are as follows: 75, 80, 85, 90, and 95. If we randomly select samples of size 3 from this population, calculate the sampling distribution of the sample mean and find the mean and variance of this sampling distribution.
21. Define the binomial distribution and discuss its characteristics.
22. What is the process of hypothesis testing?
23. Discuss the concept of correlation and its types. Explain how correlation is measured?

Section-C
(Answer any two Questions and each carry 10 marks)

24. What is Bayes theorem?A factory produces two types of products: Product A and Product B. Product A has a defect rate of 2%, while Product B has a defect rate of 5%. If 30% of the factory's output is Product A and the rest is Product B, and a randomly selected defective product is found, what is the probability that it is Product A?
25. Compare and contrast the strengths and weaknesses of probability and non-probability sampling methods.
26. A researcher claims that the average IQ score of students in a school is 100. To test this claim, a random sample of 25 students is selected, and their IQ scores are recorded. The sample has a mean IQ score of 105 with a standard deviation of 15. Using a 1% level of significance, can we conclude that the average IQ score of students in the school is different from 100?

27. Suppose you are conducting a study to analyze the relationship between the age of employees and their job satisfaction levels in a company. The ages (in years) and job satisfaction scores (on a scale of 1 to 10) of ten employees are recorded as follows:

Employee	Age (X)	Job Satisfaction (Y)
1	35	7
2	42	6
3	28	8
4	48	5
5	37	7
6	31	9
7	45	4
8	29	8
9	40	6
10	33	7

Calculate the Pearson correlation coefficient to determine the strength and direction of the linear relationship between the age of employees and their job satisfaction levels.

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester BA Economics Degree Examination, April 2024

BEC4B06 - Indian Economic Development: National And Regional II

(2022 Admission onwards)

Time: 2 ½ hours Max. Marks : 80

PART – A
Answer *all* questions.
Each question carries Two mark.
Ceiling -25 Marks

1 Distinguish between FDI AND FPI?

2 Agricultural Marketing

3 Explain the role of small scale industries in India?

4 New Agricultural Strategy

5 What is disinvestment?

6 Land Ceiling

7 Industrial Sicknesses

8 Make in India Initiative

9 Migration

10 What do you mean by Market Intervention Policy?

11 What are the major components of New Economic Reforms?

12 What is current account with example?

13 What is the difference between FEMA and FERA?

14 What are the cropping patterns in Kerala economy?

15 What is the composition of India's exports?

PART – B

Answer *all* questions.
Each question carries Five marks.
Ceiling -35 Marks

16 What are the effects of new agricultural strategy?

17 Briefly explain need for Land Reforms in India?

18 What are the problems faced by public sector enterprises in India?

19 Lists the major policy changes in IPR 1991

20 What is the impact of MNCs in Indian economy?

21 What are the different types of convertibility currency?

22 Define migration and its types?

23 What is special about Kerala tourism?

PART - C

Answer any *two* questions.
Each question carries Ten marks.

24 Explain importance of Agriculture in Indian economy? What are the major challenges facing Indian agriculture today?

25 What are the stages of industrial policy prior to 1991?

26 Explain the general status of import and export in India?

27 What is the role of FCI in PDS system? What is the significance of Food security Act 2013?

2 x 10 = 20 Marks