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1B4M18165 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester BA Degree Examination, March 2018

ECO4C04 – Mathematical Tools for Economics IV

(2016 Admission onwards)

Max. Time: 1.30 hours Max. Marks: 40

PART A -Answer *all* questions
Multiple Choice questions

1. The partial derivative of 'z'with respect to 'y'while 'x' is held constant is denoted by

   (a) $\frac{dz}{dy}$ (b) $\frac{dz}{dx}$ (c) $\frac{\partial z}{\partial y}$ (d) $\frac{\partial z}{\partial x}$

2. By Young's theorem , if both cross partial derivatives are continuous, they will be

   (a)different (b)identical (c)zero (d) positive

3. If all inputs are increased by a given proportion 'k' and output increased by the same proportion, then the return is

   (a) constant return to scale (b)constant return to factor

   (c) homogeneous return (d) non homogeneous return

4. $\int \frac{1}{x}\, dx$ is :

   (a) $x^{-1}+c$ (b) logx+c (c) x+c (d) $x^{-2}+c$

5. The definite integral $\int_a^b f(x)dx$ is a function of

   (a) dx (b) x (c) b (d) neither (a) nor (b)

6. $\int MR\, dQ$ where MR $=2Q-3Q^2$ is

   (a) 2-6Q (b) Q^2-Q^2 c)Q^2-Q^3 (d) $2Q-6Q^3$

(6×½=3 Marks)

Part B (Very Short Answer Type Questions)
Answer *any Five* questions

7. Define partial derivative? Given a function z=f(x, y) ,state the first and second derivative
8. State the significance of Lagrange multiplier in a utility function
9. If $Q=36KL-2K^2-3L^2$ measure the marginal product of labour.
10. Explain homogeneous production function.
11. Explain the concept of integration with an example.
12. Find the $\int 2dx$, given the boundary condition y=1 when x=3
13. Find the value of $\int 10^{2x}\, dx \text{ at } x = 1$
14. State the process of integration by parts.

(5×2=10 Marks)

Part C (Short Essay)
Answer *any Three* questions

15. Find the first and second order partial derivative of $Z=x^{0.4}y^{0.6}$

16. Given the profit function $\pi= 160x-3x^2-2xy-2y^2+120y-18$ for a firm producing two goods x and y (a) obtain the level of out put x and y which maximize the profit (b)find the maximum profit that the firm can attain

17. Find $\int x(1-x^2)dx$

18. Prove that $\int_0^4 6x\,dx = \int_0^2 6xdx + \int_2^4 6xdx$

(3×5=15 Marks)

Part D (Essay Questions)
Answer any *one* of the following questions

19. Obtain the optimal values of the function $Z=4x^2-2xy+6y^2$ subject to $x+y=72$

20. Evaluate the area between the curves if $y_1=7-x$ and $y_2=4x-x^2$ over the interval from $x=1$ to $x=4$

(1×12=12 Marks)

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1B4M18166 (Pages : 4) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester BA Degree Examination, March 2018

ECO4B05 – Quantitative methods for Economic Analysis – II

(2016 Admission onwards)

Max. Time: 3 hours Max. Marks: 80

Section-A

[Answer *all* Questions. Each question carries 1/2 marks]

1. Laspeyere's index number shows an

   (a) Downward bias (b) Upward bias (c) both (a) and (b) (d) None of the above

2. The value of $\underset{x\to 2}{Lt}\dfrac{x^2-4}{x-2}$ is

   (a) 0 (b) 3 (c) 4 (d) 5

3. In consumer price index number weights are determining on the basis of -------

   (a) Actual price of the index (b) The consumption pattern of the class of population

   (c)Actual consumption expenditure (d) both price and consumption expenditure

4. If A and B are two mutually exclusive events then $P(A\cup B)=$ .....

   (a) $P(A)+P(B)$ (b) $P(A)P(B)$ (c) $\dfrac{P(A)}{P(B)}$ (d) None of these

5. Recurrent variations in time series that usually last longer than a year is known as

   (a) Secular trend (b) cyclic variation (c) seasonal variation (d) irregular variation

6. Vital Statistics is obtained through

   (a) Census operations (b) Registration system (c) Survey method (d) all the above

7. The derivative of the function $y=(2x+1)^2$ is

   (a) $2(2x+1)$ (b) $(2x+1)$ (c) $4(2x+1)$ (d) None of the above

8. A function that increases or decreases over its entire domain is called

   (a)Monotonic function (b) Increasing function (c) Decreasing function (d) constant function

Fill in the blanks

9. For the Revenue function, $R(x)=2x^2+3x-2$, the marginal revenue is.....

10. If A and B are two independent events then $P(A\cap B)=$ .....

11. The set of all possible outcomes of a random experiment is called---------

12. In the point of inflection the second derivative of the function is.....

(12x ½ =6 Marks)

Section-B

[Answer *any 10* Questions. Each question carries 2 marks]

13. What are the properties of a continuous function

14. Find the elasticity of demand for the demand function $x = \frac{27}{p^3}$

15. Find the value of $\underset{x \to 1}{Lt} \left(\frac{1}{x-1} - \frac{1}{x^2-1}\right)$.

16. Define specific death rate

17. What are the uses of index numbers

18. Define Gross Reproduction rate

19. Distinguish between simple event and composite event

20. When a curve is said to be convex

21. Define classical definition of probability

22. What is meant by Time series analysis

23. Define splicing

24. Explain the curvature of a curve

(10x2=20 Marks)

Section-C

[Answer *any six* Questions. Each question carries 5 marks]

25. Revenue function of a firm is given by $R = x^2 - 3x + 2$ and the cost functions as $C = x^3 - 3x$. Find marginal cost and marginal revenue.

26. Find the maxima and minima values (if any) of $f(x) = x^3 - 3x^2 - 9$

27. Briefly explain Baye's theorem

28. Distinguish between infant mortality rate and maternal mortality rate.

29. What is meant by conditional probability? If $P(A) = 0.4$, $P(B) = 0.5$, $P(A/B) = 0.3$. Find $P(A \cap B)$

30. Why index numbers are called economic barometers. What are the uses of index numbers.

31. (a) Find $\frac{dy}{dx}$ when $y = e^x \log x$

    (b) Find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$ if $z = 3x^2 + 5xy + 4y^2$.

32. Define empirical definition of probability. Two unbiased dice are thrown; find the probability of getting the sum of two numbers is at least 8.

(6x5=30 Marks)

Section-D

[Answer *any two* Questions. Each question carries 12 marks]

33. (a) Explain the following terms

(i) Mutually exhaustive events

(ii) Equally likely events

(a) An urn contains 6 red and 8 green balls. Two balls are taken at random. What is the probability that (i) both are red (ii) one red and one green.

34. (a) Discuss the importance and uses of Vital Statistics

(b) Crude death rate is not a good indicator for mortality comparison. Why?

34. Construct Marshall – Edgeworth index number for the following data. Verify whether it satisfy time reversal test

Items	Base year		Current year	
	Price	Quantity	Price	Quantity
A	12	45	15	42
B	9	42	17	32
C	13	32	20	45
D	10	23	12	32
E	11	17	9	22

35. (a) When is a function said to be discontinuous?

(b) Examine the continuity of the function at $x = 2$ given

$$f(x) = \begin{cases} 1+x, & for\ x \le 2 \\ 5-x, & for\ x > 2 \end{cases}$$

(2x12=24 marks)

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester BA Degree Examination, March 2018

ECO4B06 – Computer Application for Economic Analysis

(2016 Admission onwards)

Max. Time: 3 hours Max. Marks: 80

Multiple choices: *answer all questions*

Each question carries ½ marks

1. Google is an important.....
   A. Portal B. Search engine C. Hardware D. None of these

2. Which of the function key is used for starting slide show in MS Power point?
   A. F1 B. F2 C. F5 D. F4

3. ..... is the first computer game in the world.
   A. space war B. War C. Trojan horse D. None of these

4. Which of the following is an electronic spread sheet?
   A. word B. Nod pad C. Access D. Excel

5. Who is known as the father of free software movement?
   A. Richard Stallman B.Jimmy Wales C. Vinston Cerf D. Tomlinson

6. C is a language is created by
   A. Dennis M Ritchie B. Douglas C.Niklaus D. Tim Lee

7. Information super high way also known as
   A. Nettiket B. WWW C. Wikipedia D. Internet

8. Which of the following is not an operating system?
   A.DOS B. WINDOWS C. C D. MVS

9. Which is the standard language used in internet
   A. JAVA B. C. C++ VB D. Oracle

10. Which of the following is not software?
    A. Mother Board B. WordPad C. HTML D.DOS

11. Mouse was invented by
    A. Martin Cooper B.Jimmy Wales C. Vinston Cerf
    D. Douglas Carl Engelbart

12. Which of the following is a word processor?
    A. MS Word B. Word Star C. Word perfect D. All the above

(12x1/2 = 6 Marks)

Part B

Very short answer- Answer any ten questions

13. Computer
14. Modem
15. RAM and ROM
16. High level language
17. Malware
18. WWW
19. Internet
20. Social networking
21. E-commerce
22. Application software
23. Operating system
24. Word processor

(10x2 = 20 Marks)

Part C

Short essay -Answer any five questions

25. What are the features and limitations of computer?
26. Explain the main hardware components of a computer?
27. What is a mail merge? Explain the mail merger operations in MS word
28. Explain Data Base Management Systems?
29. Explain how animation is added in slides
30. What is a Power Point? What are its uses?
31. Explain the key features of spread sheet?
32. Explain the electronic payment system?

(6x5 = 30 Marks)

Part D

Essay- Answer any two questions

33. Discuss the various facilities available in the Micro Soft Power Point to create an attractive presentation?
34. Briefly explain the internal and external components of the computer?
35. What do you mean by E-commerce? Explain the features, importance, benefits and limitations of E-commerce?
36. How MS Excel is used for estimating regression and correlation co efficient in economic analysis?

(2x12 = 24 Marks)