Roll No. : 320931

June, 2010

Bachelor of Computer Application Examination

[BCA]

Second Semester

BCA-201: Mathematics - II

Time: 3 Hours Max Marks: 60

Note: All questions are compulsory and carry equal marks. Solve any two parts from each question.

Q1. (a) Trace the curve $a^2y^2 = x^2(a^2 - x^2)$

(b) Trace the curve $r = a(1 + \cos\theta)$

(c) Show that the intrinsic equation of the semi cubical parabola $3ay^2 = 2x^3$ is

$9s = 4a(\sec^2\psi - 1)$

Q2. (a) Evaluate $\iint_R xy \; dxdy$ over the region in the positive quadrant for which $x + y \le 1$

(b) Evaluate $\int_1^e \int_0^{\log y} \int_1^{e^x} \log z \; dy \; dx \; dz$

(c) Test the convergence of the integral

$$\int_2^\infty \frac{dx}{\sqrt{x^2 - 1}}$$

Q3. (a) Prove that: $B(m, n) = \frac{\lceil m \lceil n}{\lceil m+n}$ $(m, n > 0)$

(b) Verify Stoke's theorem for the function

$\vec{F} = x^2\hat{i} + xy\hat{j}$ integrated round the square in x y-plane whose sides are along the lines $x = 0, y = 0, x = a, y = a$

(c) Show that the necessary and sufficient condition that the vector $\vec{a}(t)$ be of constant magnitude is $\vec{a} \cdot \frac{d\vec{a}}{dt} = 0$

Q4. (a) Discuss the maximum of minimum value of

$$U = xy + \frac{a^3}{x} + \frac{a^3}{y}$$

(b) Investigate the continuity of the function

$$\begin{cases} F(x, y)= \dfrac{xy^2}{x^2+y^4} & , (x, y) \neq (0, 0) \\ 0 & (x, y) = (0, 0) \end{cases}$$

(c) State and prove mean value theorem for a function of two variables.

Q5. (a) Write short notes on
(i) Comparison Test
(ii) Cauchy's general principle of convergence
(iii) Ratio Test

(b) Show that the series

$$1 + \frac{\alpha+1}{\beta+1} + \frac{(\alpha+1)(2\alpha+1)}{(\beta+1)(2\beta+1)} + \frac{(\alpha+1)(2\alpha+1)(3\alpha+1)}{(\beta+1)(2\beta+1)(3\beta+1)} + \ldots\ldots\ldots\ldots$$

is convergent if $\beta > \alpha > 0$ and divergent if $\alpha \geq \beta > 0$

(c) Test the convergence or divergence of the series

$$\frac{x}{1.2} + \frac{x^2}{3.4} + \frac{x^3}{5.6} + \frac{x^4}{7.8} + \ldots\ldots\ldots\ldots$$

Where x is positive.

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Roll No. : 320932

June, 2010

Bachelor of Computer Application Examination

[BCA]

Second Semester

BCA-202: Statistical Method - II

Automata.

Time: 3 Hours Max Marks: 60

Note: Attempt all five questions. Each question carries equal marks.

Q1. What is a good estimator? Mention Fisher's criteria of a good estimator. Explain them in detail.

OR

Describe briefly the various Methods of sampling and explain its merits and demerits.

Q2. Define the following terms with appropriate examples - :

(i) Simple & composite Hypothesis

(ii) Kind (or Type) I & II Errors

(iii) One tail & Two tail tests

OR

What is the procedure for testing of statistical hypothesis? Explain with an illustrative example.

Q3. (a) In a colony containing 20,000 families, a sample of 1000 families was selected at random out of these 1000 families 400 families were found to be consumer of Wheat. Does the sample support the assumption that half of the colony is wheat consumer? Use 5% level of significance

OR

1600 families were selected at random in a city to test the belief that high income families usually send their children to public schools and low income families often send their children to government schools. The following results were obtained in the study conducted:

Income	Public School	Government School	Total
Low	494	506	1000(B_1)
High	162	438	600(B_2)
Total	656 (A_1)	944 (A_2)	1600

Examine by χ^2 test to ascertain if the income of the families and type of schools are independent.

Q4. What do you understand by non parametric tests? Discuss the advantages and disadvantages of non parametric tests over parametric tests.

OR

The following data represent the number of hours of car driving training by 20 people from certain instructor prior to their first solo car driving

10	14	18	15	12	16	10	11	17	11
14	13	15	13	12	09	11	16	20	08

Use wilcoxon's signed rank test with $\alpha = 0.05$ to test the instructor's claim that, on the average, his students become solo car drivers after 14 hours of car driving training.

Q5. An experiment was conducted to determine the effects of different manures on different fields. The following data show the fields of maize (in Kg) for 3 different fields and 4 manures:

Field	Manure I	Manure II	Manure III	Manure IV
I	10	13	12	14
II	18	18	19	21
III	22	24	22	23

Carry out the analysis of the above data and discuss whether there is any significant difference between fields or between manures.

OR

What is ANOVA? Discuss the methods of analysis of variance for one way classified data.

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Roll No. : 320933

June, 2010

Bachelor of Computer Application Examination

[BCA]

Second Semester

BCA-203: Physics - II

Autonomous

Time: 3 Hours Max Marks: 60

Note: Attempt all five questions. Solve any two parts from each question. Each question carries equal marks.

Q1. (a) What is a Zener diode? Explain its working with the help of characteristic curve and discuss its use as a voltage regulator.

(b) What is tunnel diode? Draw its potential current characteristic curve and explain it with the help of energy band diagram

(c) Write short notes on :-
(i) P-N Junction diode (ii) LED (iii) Solar cell

Q2. (a) Explain the meaning of α, β and γ parameters of a transistor and establish the relationships between them.

(b) Define hybrid parameters. Write "h" Parameters in different configurations and state the importance of "h" parameters.

(c) (i) The current gain of a transistor in the common base mode is 0.98. What will be the change in collector current if the change in emitter current is 0.5 mA? What will be the change in base current?
(ii) While using a transistor as an amplifier, only the common emitter mode is considered to be superior, why?

Q3. (a) What is JFET? With the help of a circuit diagram, explain how will you study the characteristics of a N Channel JFET. Draw the characteristic curve and explain them.

(b) Explain the working of depletion and enhancement type MOSFET with proper diagrams.

(c) (i) Draw circuits for the N channel digital MOSFET two inputs NOR and NAND gates. Give their truth tables.
(ii) In a JFET, when a reserve gate voltage of 15V is applied, the gate current is 0.001μA. Find the resistance between the gate & source.

Q4. (a) What is an amplifier? What are the basis of classification of amplifiers and how are they classified? Explain.

(b) Draw circuit diagram of an emitter follower and explain its working. Using the hybrid Equivalent circuit, obtain expressions for its voltage gain and input resistance

(c) What do you mean by distortion in amplifiers? Discuss the different kinds of distortion.

Q5. (a) What is an oscillator? Explain when does a feed back amplifier behave as an oscillator. Obtain Bark Hausen condition in this reference. What are the basic requirements for an oscillator?

(b) Draw the circuit diagram of Hartley oscillator and explain its working. Find the condition of sustained oscillations

(c) What is modulation? Why are the high frequency carrier waves required for transmission? What are the different ways of modulations?

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Roll No. 320934

June, 2010

Bachelor of Computer Application Examination

[BCA]

Second Semester

BCA-204: Programming & Problem Solving with C Language -II

Time: 3 Hours Max Marks: 60

Note: Attempt all five questions. Each question carries equal marks.

Q1. (a) Explain "Call by Value" & "Call by Reference". Also give their differences with example.

(b) What is Recursion? Write a program to print fibonnaci series of n terms using recursion.

OR

(a) Explain the term Macro. Also give difference between Macro & Function.

(b) Explain scope rule of functions with example.

Q2. (a) What is Pointer? Explain Pointer Arithmetic & Pointer Assignment with example.

(b) Explain Pointer to Structure. Write a program to read & print values in a structure type variable using pointer to structure.

OR

(a) How will you pass an entire array to a function? Write a program to add array elements by passing array to the function.

(b) Give the difference between pointer to Array & Array of Pointers, with example.

Q3. (a) Give the difference between Formatted and Unformatted console Input/Output functions with examples.

(c) Write a program to copy the content of one file to another file, take both filenames as Command Line Argument.

OR

(a) Give difference between text file & Binary file.

(b) Write a program to create a file to store records of students.

Q4. (a) What do you mean by Video Display Modes? Explain all video display modes.

(b) What is video page? What is its importance?

OR

(a) Define Display Adapters. Explain all Display Adapters.

(b) Explain the term Resolution. How it affects the picture quality?

Q5. (a) Write Standard library functions for line & stylish lines. Explain giving example.

(b) Write process for justifying text in Graphics Mode. Explain Standard functions for the same.

OR

(a) Explain some standard functions for drawing and filling images, using examples.

(b) Write short note on "System Metrics for animation".

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Roll No. 320935

June, 2010

Bachelor of Computer Application Examination

[BCA]

Second Semester

BCA-205: Introduction to Internet

Time: 3 Hours Max Marks: 60

Note: All the questions are compulsory. Each question carries equal marks.

Q1. (a) What is MIS? What are the various subsystems associated with it?

(b) What are the components of a Decision Support System? Explain with diagram.

OR

(a) What are the most common types of computer based information system used in an organization? Give an example of each.

(b) What are the different applications of Decision Support System?

Q2 (a) Explain Input/Output devices with the help of examples.

(b) Differentiate the following
(i) RAM and ROM
(ii) Impact Printers and Non Impact Printers.
(iii) System Software and Application Software
(iv) OCR and OMR

OR

(a) Explain Software Issues and Trends.

(b) What are different types of Softwares? Explain with examples.

Q3. (a) What do you understand by databases? Draw a DBMS architecture diagram.

(b) Describe the functions of Database Administrator.

OR

(a) Explain Database Applications with Example.

(b) What is Data Modeling? Explain the need of Enterprise Data Modeling.

Q4. (a) Discuss the application areas of internet. Explain its advantages and disadvantages.

(b) Write short Notes on
(i) URL
(ii) IP Address
(iii) ISP

OR

(a) What are different types of viruses? Explain each of them briefly.

(b) Write short notes on:

(i) Client /Server System
(ii) Local Area Network
(iii) Domain Name

Q5 (a) What are different applications of E-Commerce Give suitable examples.

(b) Explain in brief.

(i) Electronic Fund Transfer
(ii) Electronic Data Interchange
(iii) E- Supply Chain.

OR

(a) What are different types of E-Commerce? What are the risks involved/ associated with E-Commerce?

(b) Explain following:
B2B, B2C, C2B, C2C

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Roll No. .....

320936

June, 2010

Bachelor of Computer Application Examination

[BCA]

Second Semester

BCA-206 : Hindi Language (हिन्दी भाषा)

Autonomous

Time : 3 Hours

Max. Marks : 60

नोट : किन्हीं पाँच प्रश्नों के उत्तर लिखिए । सभी प्रश्नों के अंक समान हैं ।

प्रश्न–1 भारत वंदना कविता का सारांश अपने शब्दों में लिखिए ।

अथवा

आनंदी की चारित्रिक विशेषताएँ बताइये ।

प्रश्न–2 मानक भाषा की विशेषताओं पर प्रकाश डालिए ।

अथवा

अशुद्धियाँ किसे कहते हैं, अशुद्धियों के प्रकार बताइये ।

प्रश्न–3 'एक गधे की वापसी' में लेखक ने किन–किन लोगों पर व्यंग्य किया है, स्पष्ट कीजिए ।

अथवा

टेलीफोन के प्रयोग से मनुष्य जाति का नैतिक स्तर उठ जाता है, कैसे ?

प्रश्न–4 उपसर्ग एवं प्रत्यय को उदाहरण देकर समझाइये ।

अथवा

वाक्यों के प्रकारों को समझाइये ।

प्रश्न–5 'बस्तर में बाघ कहानी का सारांश लिखिए ।

अथवा

नर्मदा नदी के सौन्दर्य का वर्णन कीजिए ।

प्रश्न–6 आवेदन पत्र का प्रारूप तैयार कीजिए ।

अथवा

पत्र लेखन एक कला है स्पष्ट कीजिए ।

प्रश्न–7 भारतीय समाज की अवधारणा को स्पष्ट कीजिए ।

अथवा

समाज एक गतिशील प्रतिमान हैं, स्पष्ट कीजिए ।

प्रश्न–8 भारतीय संस्कृति की विशेषताएँ बताइये ।

अथवा

मध्यप्रदेश के धार्मिक स्थलों का वर्णन कीजिए ।

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