E - 3011

B. Com./ B.A./ B. Sc./ B. H. Sc./ B. C. A. (Part-I/ II /III)

EXAMINATION, 2021

(New/Old Course)

ENVIRONMENTAL SCIENCE

Time : Three Hours] [Maximum Marks : 75

नोट :–प्रश्न क्रमांक 1 अनिवार्य है और 25 अंक का है । प्रत्येक इकाई से एक प्रश्न का उत्तर दीजिए । प्रत्येक प्रश्न 10 अंक का है ।

Note :-Questions no. 1 is compulsory and carries 25 marks. Attempt one question from each unit. Each question carries 10 marks.

1. निम्नलिखित में से किन्हीं पॉच प्रश्नों के उत्तर संक्षेप में दीजिए :
   1. जल विवाद
   2. उर्वरक एवं कीटनाशकों की समस्या
   3. चक्रवात
   4. जैव विविधता के संवेदनशील क्षेत्र या तप्त स्थल
   5. खाद्य श्रृंखला
   6. आजोन परत अपक्षय
   7. भूकंप
   8. मानव अधिकार के प्रकार
   9. राज्य मानव अधिकार आयोग

   Write brief answer of the any five of the following :
   1. Water conflicts
   2. Fertilize and Pesticide Problem.
   3. Cyclone
   4. Hot spot of diversity
   5. Food chain
   6. Ozone layer depletion
   7. Earth-quake
   8. Kind of Human Right
   9. State Human Right Commission

इकाई –1 / UNIT -1

2. जल संसाधन क्या है ? जल संसाधन की उपयोगिता एवं संरक्षण को समझाइये ।

   What are the water resource. Describe the utility and conservation of water resource.

अथवा / OR

निम्नलिखित में से किन्हीं दो पर संक्षिप्त टिप्पणियॉ लिखिए ?

अ. वनोन्मूलन एवं उसके प्रभाव

ब. अनवनीकरण ऊर्जा संसाधन

स. मरूस्थलीकरण

Write short notes on any two of the following ;

a. Deforestation and their effect
b. Non-renewable energy sources
c. Desertification

इकाई –2 / UNIT -2

3. स्पष्ट कीजिए "भारत एक वृहद जैव–विविधता वाला राष्ट्र है" ?

   Clarity that the India is a mega Bio-diversity nation.

अथवा / OR

निम्नलिखित में से किन्हीं दो पर संक्षिप्त टिप्पणियॉ लिखिए ?

अ. जलीय परिस्थितिक तंत्र

ब. पारिस्थितिक पिरामिड

स. जैव विविधता का संरक्षण

Write short notes on any two of the following ;

a. Aquatic ecosystem
b. Ecological Pyramid
c. Conservation of Biodiversity

इकाई –3 / UNIT -3

4. मानव का पुनर्स्थापन एवं पुनर्वास एक समस्या है ? वर्णन कीजिए ।

   Describe the "resettlement and rehabilitation of people: A problem".

अथवा / OR

निम्नलिखित में से किन्हीं दो पर संक्षिप्त टिप्पणियॉ लिखिए ?

अ. आपदा प्रबंधन

ब. शहरी ऊर्जा समस्या

स. पर्यावरणीय नैतिकता

Write short notes on any two of the following ;

a. Disaster Management

b. Urban Energy Problem

c. Environmental Ethics

इकाई –4 / UNIT -4

5. महिलाओं के प्रति भेदभाव मिटाने के उपाय लिखिए ?

Write the measures for elimination of discrimination against women.

अथवा / OR

निम्नलिखित में से किन्हीं दो पर संक्षिप्त टिप्पणियॉ लिखिए ?

अ. बाल अधिकार समझौता 1989

ब. यू. एन. ओ., चार्टर के अंतर्गत मानव अधिकार संरक्षण

स. मानव अधिकारों का वर्गीकरण

Write short notes on any two of the following ;

a. Convention of the Right of the Child 1989

b. Protection of Human Rights under the UNO charter

c. Classification of Human Right

इकाई –5 / UNIT -5

6. मानव अधिकार संरक्षण अधिनियम–1993 के प्रमुख प्रावधानों का वर्णन कीजिए ?

Describe the main provisions of the Human Rights Protection Act - 1993.

अथवा / OR

निम्नलिखित में से किन्हीं दो पर संक्षिप्त टिप्पणियॉ लिखिए ?

अ. मानव अधिकार न्यायालय

ब. भारतीय संविधान के अंतर्गत मौलिक अधिकार

स. भारत के संविधान के तहत राज्य के नीति निर्देशक सिद्धान्त

Write short notes on any two of the following ;

a. Human Rights Court.

b. Human Right under the Constitution of India.

c. Directive principle of State Policy under the Constitution of India.

***

Roll No. .....

E–3896

B. C. A. (Part I, II, III) EXAMINATION, 2021

(New + Old Course)

(Only for Non-Mathematical Students)

BRIDGE COURSE

Time : Three Hours] [*Maximum Marks : 50*

[*Minimum Pass Marks : 20*

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

Unit—I

1. (a) Is 184 a term of the sequence 3, 7, 11 ..... ?

   (b) Which term of the G. P. (geometric progression) 5, 10, 20, 40, ... is 5120 ?

   (c) If ω is one of the imaginary cube roots of unity, find the value of :

$$\Delta = \begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix}$$

   where $1 + \omega + \omega^2 = 0$.

Unit—II

2. (a) Expand $(x^2 + 2a)^5$ by binomial theorem.

   (b) How many permutations of the word 'RAIPUR' are there ?

   (c) If ${}^nC_8 = {}^nC_6$, find ${}^nC_2$.

Unit—III

3. (a) Find the value of tan 15°.

   (b) A tower stands vertically on the ground. From a point on the ground, which is 15 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60°. Find the height of the tower.

   (c) Find the principal value of $\sin^{-1}\left(\frac{1}{\sqrt{2}}\right)$.

Unit—IV

4. (a) If A (–2, 1); B (2, 3) and C (–2, – 4) are three points, find the angle between BA and BC.

   (b) Find the slope of the lines which make an angle of 45° with the line $3x - y + 5 = 0$.

   (c) Find the equation of the ellipse whose axes are along the coordinate axes, vertices are $(\pm 5, 0)$ and foci at $(\pm 4, 0)$.

Unit—V

5. (a) Compute the variance and standard deviation of the following observations of marks of 5 students of a tutorial group :

   Marks out of 25 : 8, 12, 13, 15, 22

(b) What do you understand by Central Tendency ? Find the mean from the following data :

x_i	f_i
3	8
9	10
17	12
23	9
27	5

(c) Calculate the mean deviation from the median for the following distribution :

x_i	f_i
10	7
15	3
20	8
25	5
30	6
35	8
40	4
45	9

Roll No. .....

E–3898

B. C. A. (Part II) EXAMINATION, 2021

(New Course)

Paper First

CALCULUS AND DIFFERENTIAL EQUATIONS

(BCA–201)

Time : Three Hours] [*Maximum Marks : 80*

Note : Attempt any *two* parts from each Unit. All questions carry equal marks. Only simple calculator is allowed.

Unit—I

1. (a) Show that the following function $f(x)$ is continuous at $x = 0$ but $f'(0)$ does not exist :

$$f(x) = \begin{cases} \dfrac{xe^{1/x}}{1+e^{1/x}}, & \text{when } x \neq 0 \\ 0 \quad , & \text{when } x = 0 \end{cases}.$$

(b) State and prove Mostest theorem.

(c) Test the continuity of the following function at $x = 0$:

$$f(x) = \begin{cases} \dfrac{\sin 2x}{x}, & \text{when } x \neq 0 \\ 1 \quad , & \text{when } x = 0 \end{cases}.$$

P. T. O.

Unit—II

2. (a) Find the maximum and the minimum values if any of the function :

$$f(x) = \sin 3x + 4;$$

$$x \in \left(-\frac{\pi}{2}, \frac{\pi}{2} \right)$$

(b) If :

$$y = \sin(m \sin^{-1} x),$$

then prove that :

$$(1 - x^2)\frac{d^2y}{dx^2} - x\frac{dy}{dx} + m^2 y = 0.$$

(c) Find $\frac{dy}{dx}$, where $y = x^{x^x}$.

Unit—III

3. (a) Evaluate :

$$\int \frac{dx}{3 - 2\sin x}$$

(b) Integrate :

$$\int x \tan^{-1} x \, dx$$

(c) Integrate the following function w.r.t. x :

$$\int \frac{1}{x^2 + x + 1} dx$$

Unit—IV

4. (a) Show that :

$$\int_0^1 \frac{\log(1 + x)}{1 + x^2} dx = \frac{\pi}{8} \log 2$$

(b) Find the values of :

$$\int_0^1 \frac{dx}{\sqrt{1+x}+\sqrt{x}}$$

(c) Find the value of :

$$\int_0^{\pi} \frac{x \sin x}{1+\cos^2 x} dx$$

Unit—V

5. (a) Discuss the general and particular solutions of a differential equation.

(b) Solve the differential equation $\frac{dy}{dx} = \frac{x}{y}$.

(c) Show that $v = \frac{A}{r} + B$ is a solution of differential equation $\frac{d^2v}{dr^2} + \frac{2}{r}\frac{dv}{dr} = 0$.

E – 3899

B.C.A. (Part-II) EXAMINATION, 2021

(New course)

Paper Second

DATABASE MANAGEMENT SYSTEM

(BCA-202)

Time: Three Hours] **[Maximum Marks : 80**

[Minimum Pass Marks: 27

Note: Attempt any **two parts** from each Unit. All questions carry equal marks.

Unit-I

Q. 1. (a) What is the role of database Administrator? How many type of database users. **[08]**

(b) What do you mean by data modeling? Explain the type of data model. **[08]**

(c) Write the short notes on following: - **[08]**

(i) Database Languages (ii) Data Independence

Unit-II

Q.2. (a) Construct an E-R diagram for a hospital with a set of patient and a set of medical doctors. Associate with each patient a log of the various tests and examination conducted. **[08]**

(b) What is difference between strong and weak entity set? Explain it. **[08]**

(c) Write the short notes on following: - **[08]**

(i) Extended ER Features (ii) Concept of Keys

Unit-III

Q.3. (a) What do you understand by Relational Algebra? How many type of the relation operation? Explain with example. **[08]**

(b) What is the difference between Tuple relational calculus and Domain relational calculus? Explain it. . **[08]**

(c) Write the short notes on following: - **[08]**

(i) Simple and Complex queries

(ii) Embedded Query languages

Unit -IV

Q.4 (a) What do you mean by pitfalls in database design? Explain the various types of anomalies. **[08]**

(b) What do you mean by decomposition? What is the difference between Good and Bad decomposition? Explain with example. **[08]**

(c) Write the short on the following:- **[08]**

(i) De-normalization (ii) Functional Dependencies

Unit-V

Q.5 (a) Create the following table and insert two rows. **[08]**

Branch (Branch-id, Branch_ name, street, city)

Customer (Customer_ name, account_ no, customer-city)

Solve the following query in SQL :

(i) Find customers name who same city as 'MohanLal'

(ii) Find all customers name who living city at Raipur.

(iii) Insert Phone-no in Branch table.

(iv) Find the name of the customer order by.

(b) What do you mean by Integrity constraints? Explain the deferent type of Integrity constraints. **[08]**

(c) Write the short notes on following: - **[08]**

(i) Query Processing (ii) Security and Recovery

E-3900

B. C. A. (Part-II) EXAMINATION, 2021

(New Course)

Paper Third

PROGAMMING IN 'C++'

(BCA -203)

Time: Three Hours] [Maximum Marks : 80

Note:- Attempt any two part from each unit. all questions carry equal marks.

UNIT-1

1. a. Write the features of object oriented programming. How it is differ from procedure oriented language.
   b. Explain control structure and give an example using a program.
   c. Describe the different data types support by OOPs.

UNIT-2

2. a. Write a program to demonstrate the use of sturucture.
   b. Explain the use of function with default argument.
   c. Write short notes on following :
      i. Enumeration data type
      ii. Inline function

UNIT-3

3. a. Explain static data member and statick member function using code.
   b. What is constuctor? Describe all types of constructor.
   c. Write short notes on memory allocation.

UNIT-4

4. a. What is inheritence? Explain their types and give any one example of program.
   b. Explain function overriding by example.
   c. How many queen specfier present in OOPs.

UNIT-5

5. a. Differentiate dynamic and static polymorphism.
   b. Explain virtual and pure virtual function in brief.
   c. Describe friend function using program.

***

Roll No. .....

E–3902

B. C. A. (Part II) EXAMINATION, 2021

(New Course)

Paper Fifth

OPERATING SYSTEMS WITH LINUX

(BCA–205)

Time : Three Hours] [*Maximum Marks : 80*

Note : Attempt any *two* parts from each Unit. All questions carry equal marks.

Unit—I

1. (a) Explain the difference between multiprogramming and multiprocessor operating system.

   (b) Write various functions and goals of operating system.

   (c) Briefly describe the types of operating system.

Unit—II

2. (a) Explain the concept of process control block.

   (b) Describe the types of CPU scheduling.

P. T. O.

(c) Write short notes on the following :

(i) Context switch and dispatcher

(ii) Process state

Unit—III

3. (a) Explain contiguous memory allocation in detail.

(b) Write short notes on the following :

(i) Fragmentation

(ii) Compaction

(iii) Paging

(iv) Segmentation

(c) Describe about various page replacement policies.

Unit—IV

4. (a) Describe features and benefits of Unix operating system.

(b) Describe the following :

(i) Kernel and its function

(ii) System call and shell

(c) Write short notes on the following Unix commands :

(i) who

(ii) pwd

(iii) cd

(iv) ls

(v) chmod

Unit—V

5. (a) Describe the following :

   (i) wild card characters

   (ii) shell variables

   (b) Write short notes on the following :

   (i) i/out redirection

   (ii) pipes/tee in shell programming

   (c) Write shell program to demonstrate if.....fi.

E – 3903 (A)

B. C. A. (Part –II) EXAMINATION : 2021

(New Course)

Foundation Course

(BCA-206)

Time : Three Hours] [Maximum Marks : 80

Note :- Attempt all questions.

Unit- 1

1. Write short notes on any 4 of the following: (4 each)
   i. Indian Architecture
   ii. The Hindu Trinity
   iii. Importance of painting in Ancient India.
   iv. Art in daily life
   v. Music- An Integral Part of Religion in India.

Unit- 2

2. Answer any 4 of the following : (4 each)
   i. Can Indian Vedic literature we called as the most Ancient literatures of the world. Comment.
   ii. Explain the meaning of the term "Upanishad".
   iii. With references to Ancient Indian literature, what is meant by "Aranyakas".
   iv. What are Brahmana granths.
   v. It is said that " The Ramanyana inspires the man of Thought and the Mahabharats, the man of action". Elucidate.

Unit- 3

3. Answer the following question (any 4)– (4 each)
   i. What were the reasons of the outbreak of the freedom struggle of 1857.
   ii. Why Non-Co-Operation movement was withdrawn.
   iii. Discuss the consequences of quit India movement.
   iv. Write a note of civil disobedience movement.
   v. Discuss the role of extremists in the Indian struggle of Independence.

Unit- 4

4. Answer the following question (any 4)– (4 each)
   i. What are the salient features of the Indian constitution. Give any 4 prominent features.
   ii. Explain the parliamentary form of government.
   iii. Differentiate between the powers of the Rajya Sabha and to Lok Sabha.
   iv. What fundamental rights have been given to a citizen of India.
   v. "Rights and duties are supplement to each other". Discuss.

Unit- 5

5. Attempt any 4 of the following questions (4 each)
   i. Discuss the process of communication.
   ii. What is meant by Non verbal communication. Why is it significant part of effective communication.
   iii. Explain the importance of effective listening strategies.
   iv. Assuming that you have earned your B. Tech. degree, write your resume with a cover letter to H.R., Accenture, applying for the post of Technical Assistant.
   v. Write a note on the barriers of communication.

***