BCA

1st SemP-CBCS

QUESTION PAPERS

(2014-15 ONWARDS)

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SN – 450

I Semester B.C.A. Degree Examination, November/December 2014
(CBCS) (Y2K14 Scheme) (Fresh) (2014-15 and Onwards)
COMPUTER SCIENCE
BCA 105T : Discrete Mathematics

Time : 3 Hours | Max. Marks : 100

***Instruction** : Answer **all** Sections.*

SECTION – A

I. Answer **any ten** of the following : **(10×2=20)**

1) Define a power set. Illustrate with an example.
2) If P = {1, 2} form the P × P × P.
3) Define equivalence relation.
4) Define Scalar Matrix with example.
5) If $A = \begin{pmatrix} 2 & 1 \\ 4 & -2 \end{pmatrix}$, $B = \begin{pmatrix} 4 & 3 \\ 2 & -1 \end{pmatrix}$ find AB.
6) Prove that 3 log 2 + log 5 = log 40.
7) Define permutation.
8) Define Coplanar vectors.
9) Define slope of a line.
10) Find the equation of the straight line passing through (2, 5) and having slope 4.
11) Find the coordinates of the mid point which divides the join of (4, 3) and (–2, 7).
12) Define order of a group.

SECTION – B

II. Answer **any six** of the following : **(6×5=30)**

13) Verify whether $(p \rightarrow q) \leftrightarrow (\sim q \rightarrow \sim p)$ is a tautology.
14) Prove that $\sim(p \leftrightarrow q) \equiv \sim[(p \rightarrow q) \wedge (q \rightarrow p)]$.
15) Consider f : R → R given by f(x) = 4x + 3. Show that f is invertible.

P.T.O.

16) Verify Cayley Hamilton theorem for the matrix $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$.

17) Solve using Cramer's rule
$3x + y + z = 3$
$2x + 2y + 5z = -1$
$x - 3y - 4z = 2$

18) Solve the equations $2x + 5y = 1$, $3x + 2y = 7$ using matrix method.

19) Find the eigen values and eigen vectors of $A = \begin{pmatrix} 1 & 4 \\ 3 & 2 \end{pmatrix}$.

20) Let $A = Z^+$, the set of positive integers. $R = \{(a, b) \mid a \leq b\}$. Is R an equivalence relation.

SECTION – C

III. Answer **any six** of the following : **(6×5=30)**

21) If $\log x - 2\log\frac{6}{7} = \frac{1}{2}\log\frac{81}{16} - \log\frac{27}{196}$ find x.

22) a) Find the number of different signals that can be generated by arranging atleast 3 flags in order (one below the other) on a vertical staff, if 6 different flags are available.

b) If $\frac{1}{9!} + \frac{1}{10!} = \frac{x}{11!}$ find x.

23) a) Find r if ${}^{10}P_r = 2^9 p_r$.

b) In how many ways can the letters of the word ASSASSINATION be arranged so that all the S's are together.

24) A committee of 7 has to be formed from 9 boys and 4 girls. In how many ways can this be done when the committee consist of (i) exactly 3 girls (ii) atleast 3 girls (iii) atmost 3 girls.

25) Prove that $G = \{1, 5, 7, 11\}$ is a group under multiplication modulo 12.

26) If $\vec{a} = \hat{i} - 2\hat{j} + 3\hat{k}$ and $\vec{b} = 2\hat{i} + 3\hat{j} - 5\hat{k}$ find $\vec{a} \times \vec{b}$. Verify that $\vec{a}$ and $(\vec{a} \times \vec{b})$ are perpendicular to each other.

27) Prove that $\vec{a} \times (\vec{b} \times \vec{c}) + \vec{b} \times (\vec{c} \times \vec{a}) + \vec{c} \times (\vec{a} \times \vec{b}) = 0$.

28) Using vector method show that the points A (2, –1, 3), B (4, 3, 1) and C (3, 1, 2) are collinear.

SECTION – D

IV. Answer **any four** of the following : **(4×5=20)**

29) Prove that the points (4, –4), (8, 2), (14, –2) and (10, –8) are the vertices of a square.

30) Find the equation of the locus of the point which moves such that its distance from (0, 3) is twice its distance from (0, –3).

31) Show that the line joining the points (2, –3) and (–5, 1) is

a) Parallel to the line joining (7, –1) and (0, 3)

b) Perpendicular to the line joining (4, 5) and (0, –2).

32) Find the equation of the straight line which passes through the point of intersection of the lines $3x + y - 10 = 0$ and $x + 7y - 10 = 0$ and parallel to the line $4x - 3y + 1 = 0$.

33) Find the equations of the straight lines passing through the point (4, –2) and making an angle of $\frac{\pi}{4}$ with the line $8x + 7y - 1 = 0$.

34) Prove that points (2, 2) and (–3, 3) are equidistant from the line $x + 3y - 7 = 0$ and are on either side of the line.

SN – 449

I Semester B.C.A. Degree Examination, November/December 2014
(Y2K14 – CBCS Scheme)
Computer Science
BCA 104 T : DIGITAL ELECTRONICS

Time : 3 Hours Max. Marks : 70

Instruction : *Answer* ***all*** *Sections.*

SECTION – A

Answer **any ten** questions. **(2×10=20)**

1. Define the terms short circuit and open circuit.
2. What are the different types of network ports ?
3. What is a semiconductor ? Give example.
4. How are solids classified ?
5. Convert B64.53 to binary.
6. Define minterm and maxterm.
7. Simplify the following Boolean expressions $\overline{(A+\bar{B})+CD}$
8. What is an X-OR gate ? Give the truth table and logic symbol of X-OR gate.
9. What is a combinational circuit ? Give example.
10. What is an adder ? Give the logic diagram of half adder circuit.
11. Mention the two applications of D Flip-flop.
12. Define the terms propagation delay and hold time.

SECTION – B

Answer **any 5** questions. **(10×5=50)**

1. a) State and explain Superposition theorem. **5**

   b) What is series parallel circuit ? Explain. **5**

2. a) Explain P-N junction with a neat diagram. 5

b) Write a note on extrinsic semiconductors. 5

3. a) Explain the characteristics features of IC family gates. 5

b) State and prove De-Morgan's theorems. 5

4. a) Convert the following : 6

i) $(453.26)_{10} = (\quad)_2, (\quad)_8$.

ii) $(1101.110)_2 = (\quad)_8, (\quad)_{16}$

b) Simplify the following into POS using K-Map

$F(A\ B\ C\ D) = \sum(0, 2, 3, 5, 11, 13) + \sum D(1, 7, 10)$. 4

5. a) Prove NAND and NOR gates as universal gates. 6

b) With a logic diagram explain decimal to BCD encoder. 4

6. a) Write a note on parity checker and parity generator. 5

b) With a neat diagram explain 4-bit parallel binary adder. 5

7. a) Explain the working of J-K flip-flop with a neat diagram. 5

b) Differentiate between a latch and a flip-flop. 5

8. a) Explain SISO shift register with a diagram. 5

b) Write a note on applications of shift registers. 5

SN – 448

First Semester B.C.A. Degree Examination, November/December 2014
(Y2K14 Scheme) (CBCS)
COMPUTER SCIENCE
BCA 103 T : Problem Solving Techniques using C

Time : 3 Hours Max. Marks : 70

Instruction : *Answer* ***all*** *Sections.*

SECTION – A

I. Answer **any ten** questions : **(10×2 = 20)**

1) What is structured programming ?

2) What are enumeration variables ? How are they declared ?

3) What are the different data types in C ?

4) Write the syntax of conditional operator and give example.

5) What happens when an array with a specified size is assigned ?
   a) with values fewer than the specified size.
   b) with values more than the specified size.

6) What are preprocessor directives ?

7) What is function prototype ? Why is it necessary ?

8) How does structure differ from an union ?

9) What are the advantages of using recursive functions ?

10) What is pointer ? How is a pointer initialized ?

11) How does an append mode differ from a write mode in files ?

12) How does a EOF differ from feof ?

SECTION – B

II. Answer **any five** of the following : **(5×10=50)**

13) a) What are various symbols used in designing a flowchart ? Explain by taking an example.

b) Describe in detail the syntax errors, logic errors and run time errors.

14) a) Explain the different unary operators available in C.

b) Write a algorithm to find the roots of the quadratic equation.

15) a) What is switch statement ? What are the advantages of switch statement compared to nested if statement ?

b) Compare in terms of their functions, the following pairs of statements

i) while and do... while.

ii) break and continue.

16) a) Differentiate between call by value and call by reference function.

b) Define the term scope of a variable. What are the different types of scopes used in C ? Explain in detail.

17) a) In what way does an array differ from an ordinary variable ? Explain the characteristics of array in C.

b) Write a program to find the largest element in the list of n elements.

18) a) How does structure differ from an array ? Explain.

b) Describe various string library functions used in C.

19) a) Explain the relationship between a pointer and the name of the array.

b) Explain the arithmetic operators that are permitted to pointers.

20) Write a short note on :

a) Bit fields.

b) Formal and actual arguments.

c) Dynamic memory allocation.

d) Command line arguments.

SN – 443

Version Code

C

I Semester B.A./B.Sc./B.C.A./B.Sc. (FAD) Examination,
November/December 2014
(Fresh) (CBCS) (2014 – 15 & Onwards)

ENVIRONMENT AND PUBLIC HEALTH

Question Booklet Sl. No. 105598

Time Allowed : 3 Hours ***Maximum Marks : 70***

INSTRUCTIONS TO CANDIDATES

1. Immediately after the commencement of the Examination, you should check that this Booklet does not have any unprinted or torn or missing pages or items, etc. If any of the above defects is found, get it replaced by a Complete Question Booklet of the available series.
2. Write clearly the Question Booklet Version Code **A**, **B**, **C, D** or **E**, in the appropriate space provided for the purpose, in the OMR Answer Sheet.
3. Enter the name of the Subject, Reg. No., Question Booklet version code and affix Signature on the OMR sheet. As the answer sheets are designed to suit the Optical Mark Reader (OMR) system, special care should be taken to fill those items accurately.
4. This Question Booklet contains **70** questions carrying equal marks. All questions must be attempted. Each question contains four answers, among them one correct answer should be selected and shade the corresponding option in the OMR sheet.
5. All the answers should be marked only on the OMR sheet provided and only with a **black** or **blue** ink ball point pen. If more than one circle is shaded / wrongly shaded / half shaded for a given question no marks will be awarded.
6. Questions are in both English and Kannada. If any confusion arises in the Kannada version, please refer to the English version of the questions.
7. Immediately after the final bell indicating the closure of the examination, stop making any further markings in the OMR Answer Sheet. Be seated till the OMR Answer Sheet is collected. After handing over the OMR Answer Sheet to the Invigilator you may leave the examination hall.

ಗಮನಿಸಿ : ಸೂಚನೆಗಳ ಕನ್ನಡ ಆವೃತ್ತಿಯು ಈ ಪುಟದ ಹಿಂಭಾಗದಲ್ಲಿ ಮುದ್ರಿಸಲ್ಪಟ್ಟಿದೆ.

1. In 1984 Bhopal Gas Tragedy happened due to
   a) Mechanical failure
   b) Administrative failure
   c) Leakage of poisonous gas
   d) None of the above

2. Name the disease caused by virus
   a) AIDS
   b) Cholera
   c) Diarrhoea
   d) Typhoid

3. The Child Labour (Prohibition and Regulation) Act of 1986 prohibits the employment of children below the age of
   a) 14 years
   b) 15 years
   c) 18 years
   d) 16 years

4. Coolant used in refrigerators
   a) CFC
   b) Liquid gases
   c) Nano liquids
   d) Molten metals

5. Which of these called as Umbrella Act ?
   a) Environment (Protection) Act
   b) Air Act
   c) Water Act
   d) Wildlife Protection Act

6. The life style which affects the human life
   a) Smoking and alcohol
   b) Poor nutritious diet
   c) Lack of physical exercise
   d) All of the above

7. Noise is measured in the unit of
   a) Decibel
   b) Frequency
   c) Joules
   d) Newton

8. Salumarada Thimmakka is known for (change)
   a) Organic farming
   b) Women empowerment
   c) Tree planting
   d) All of the above

9. Jaundice is related to the mal functioning of
   a) Pancreas
   b) Liver
   c) Kidney
   d) Heart

10. Yoga was founded by
   a) Patanjali
   b) Dhanvantari
   c) Bhagiratha
   d) Sushrutha

11. Photochemical smog is called
   a) Tokyo smog
   b) London smog
   c) Los Angeles smog
   d) None of the above

12. Which of the gas is released during photosynthesis ?
   a) Methane
   b) Nitrogen
   c) Oxygen
   d) Carbon dioxide

SPACE FOR ROUGH WORK

13. The antibody responsible for allergic reaction is
a) Ig b) IgD c) IgE d) IgM

14. Example of E-waste
a) Plastic b) Paper
c) Industrial effluent d) Mobile phone

15. Organic matter of solid waste can be used for production of
a) Biogas b) Compost c) Humus d) Both (a) and (b)

16. The blood group of universal donor is
a) AB group b) O group c) A group d) B group

17. The chief function of Vitamin-K is to regulates
a) Apatite b) Blood clotting c) Resist infection d) All of the above

18. The gas used in artificial ripening of fruits
a) Butane b) Acetylene c) CNG d) LPG

19. Fly ash from thermal power plants are used in making
a) Glass b) Bricks c) Ceramics d) All of the above

20. Genetic material for HIV is
a) RNA b) DNA c) RNA & DNA d) Chromosome

21. O_3 stands for
a) Oxygen b) Oxide c) Ozone d) Oxygen atom

22. The 3R principle of waste management is
a) Reduce, Regain, Reuse b) Reduce, Reuse, Recycle
c) Reduce, Reform, Reset d) Retain, Reuse, Regain

23. Atmosphere has been polluted due to the combustion of fossil fuel
a) Yes b) No
c) Occasionally d) None of the above

24. The first country to recognise air pollution due to industrialization is
a) India b) America
c) England d) None of the above

25. Knock-Knee syndrome is caused by
a) Fluoride pollution b) Lead pollution
c) Mercuric pollution d) Arsenic pollution

26. Solid waste management in Bangalore is not satisfactory because
    a) Increasing population
    b) Increase in per capita waste
    c) Both (a) and (b)
    d) None of the above

27. The Forest (Conservation) Act, 1980, is not applicable to the following state
    a) Jammu & Kashmir
    b) Karnataka
    c) Delhi
    d) Tamil Nadu

28. Transfer of medical information through technology between distant location is called
    a) Audio medicines
    b) Video medicines
    c) Radio medicines
    d) Tele medicines

29. The development which causes minimum damage to environment
    a) Rapid development
    b) Sustainable development
    c) Progressive development
    d) All of the above

30. Example of non-communicable disease
    a) Asthama b) Cancer c) Diabetes d) All of the above

31. Black lung is the occupational hazard to
    a) Miners
    b) Navigators
    c) Pesticide applicator
    d) Agriculturist

32. Permissible thickness of plastic cover used is
    a) 40 microns b) 20 microns c) 100 microns d) 10 microns

33. The cause of global warming is
    a) Rocks
    b) Hot air
    c) Greenhouse effect
    d) None of the above

34. Ozone layer is present in
    a) Troposphere b) Stratosphere c) Mesosphere d) Ionosphere

35. The rain water mixed with acids is called
    a) Acid rain
    b) Alkaline rain
    c) Cyclone rain
    d) None of the above

36. What is the effect caused by carbon monoxide released by automobiles ?
    a) Reduces hydrogen
    b) Reduces CO_2
    c) Reduces oxygen
    d) None of the above

37. Modern life style in cities has great impact on health
    a) True b) Sometimes true
    c) Depends on person d) None of the above

38. DDT is a chemical which is
    a) Biodegradable b) Non-biodegradable
    c) Semi Biodegradable d) Naturally Biodegradable pollutants

39. Discharge of sewage into lakes results in
    a) Increase in BOD b) Decrease in BOD
    c) Decrease in COD d) None of the above

40. 5th June is celebrated as
    a) World Pollution Day b) World Population Day
    c) Darwin Birth Day d) World Environment Day

41. Domestic waste contains
    a) Biodegradable b) Non-biodegradable
    c) Pathogenic microbes d) All of the above

42. The disease caused by Vitamin – B deficiency
    a) Itai-Itai b) Scurvy
    c) Beri-beri d) None of the above

43. What diseases caused due to deficiency of insulin ?
    a) Diarrhoea b) Diabetes c) Cholera d) All of the above

44. The organ affected by spondylitis
    a) Neck b) Kidney c) Lungs d) Heart

45. Lack of red blood cells in human body causes
    a) Diphtheria b) Dysentery c) Anaemia d) Myopia

46. The term ecology is used by
    a) Robert Cook b) Ernst Hackle
    c) Mendal d) None of the above

47. Compare to rural, urban pollution levels are
    a) High b) Low
    c) Occasionally increasing d) None of the above

48. The culture of an area will affect the living environment (change)
    a) No
    b) Rarely affect
    c) Yes
    d) None of the above

49. Deforestation generally decreases
    a) Global warming
    b) Drought
    c) Soil erosion
    d) Rainfall

50. HIV is usually detected by
    a) ELISA test
    b) Hybridisation
    c) Gram staining
    d) None of the above

51. Amoebic dysentery is caused by
    a) Virus
    b) Bacteria
    c) Protozoa
    d) None of the above

52. Sound is measured in terms of
    a) Decibels
    b) Centimeter
    c) Ton
    d) None of the above

53. Typhoid is caused by
    a) Protozoa
    b) Bacteria
    c) Virus
    d) Fungus

54. The main energy source of Environment is
    a) Solar energy
    b) Chemical energy
    c) Bioelectrical energy
    d) Electrical energy

55. Smog refers to
    a) Smoke + Spores
    b) Smoke + Fog
    c) Smoke + Water vapour
    d) Smoke + Dew

56. Biogas is a mixture of
    a) Methane and carbon dioxide
    b) Oxygen and hydrogen
    c) Methane and oxygen
    d) H_2S and CO_2

57. Wildlife (Protection) Act was passed in
    a) 1972
    b) 1982
    c) 1952
    d) 1955

58. Thermal pollution causes
    a) Release of heavy metals
    b) Warming of aquatic system
    c) Cooling of aquatic ecosystem
    d) All of the above

59. Which of the following system comes under the alternative medicine system ?
a) Homeopathy b) Naturopathy c) Ayurveda d) All of the above

60. Dialysis treatment is related to mal functioning of
a) Thyroid glands b) Kidney c) Lungs d) Pancreas

61. Homeopathy treatment has minimum side-effects
a) True b) Sometimes true
c) False d) None of the above

62. Night blindness is due to the deficiency of
a) Vitamin – B b) Vitamin – C c) Vitamin – A d) Vitamin – D

63. Addition of non-food items to food is called
a) Additives b) Mixing c) Alteration d) Adulteration

64. Which of the following is the biodiversity hotspot in India ?
a) Western Ghats b) Nanda Devi
c) Nandi Ghats d) None of the above

65. Air pollution from automobiles can be controlled by
a) Cyclone separators b) Fabric filters
c) Electrostatic precipitators d) Catalytic converter

66. The inherent ability of organisms to reproduce and multiply is called
a) Repetition b) Biotic potential
c) Carrying capacity d) None of the above

67. Smoking in public places is an offence
a) Yes b) In restricted places
c) In offices only d) None of the above

68. Complex network of interconnected food chain is called
a) Tropic level b) Food web
c) Ecological pyramid d) Ecotone

69. Energy is measured by
a) Decibel b) Ton
c) Calories d) None of the above

70. Example of reusable solid waste
a) Glass b) Paper
c) (a) and (b) d) None of the above