(20519)

Roll No. ....

Total Questions : 13] [Printed Pages : 3

18016

B.C.A. IVth Semester Examination, May-2019

COMPUTER GRAPHICS AND MULTIMEDIA APPLICATION

[BCA-401(New)]

Time : 3 Hrs.] *[M.M. : 75*

Note :– Attempt questions from all Sections as per instructions.

Section–A

(Very Short Answer Type Questions)

Note :– Attempt all the *five* questions. Each question carries 3 marks. Very short answer is required not exceeding **75** words.

1. What is Computer Graphics ?

2. What is Video Controller ? Explain.

3. What is Pixel and Frame Buffer ?

4. What is Flicking ?

5. What is Multimedia ?

Section–B

(Short Answer Type Questions)

Note :– Attempt any *two* questions out of the following three questions. Each question carries 7½ marks. Short answer is required not exceeding **200** words.

6. Explain Raster and Random scan display system.

7. Explain the basic rules of animation with example.

8. Explain the uses of computer graphics.

Section–C

(Long Answer Type Questions)

Note :– Attempt any *three* questions out of the following five questions. Each question carries 15 marks. (Not exceeding **400** words).

9. Write down and explain the mid-point circle drawing algorithm. Assume 10 cm as the radius and co-ordinate origin as the centre of the circle.

NA–569 (1) **Turn Over**

NA–569 (2)

10. What is the basic concept of line drawing ? Explain Bresenham's line Algorithm to draw a line between any *two* end-points.

11. Find 3 × 3 homogeneous transformation matrix to transform square ABCD into another square A'B'C'D'. Side of the original square = 2, coordinate of point A(20, 10). Draw a final transformation graph paper.

12. Define and compare the Bezier curve and B-spline curve.

13. Write short notes on any *three* of the following :

    (a) CRT

    (b) Cohen-Sutherland line clipping algorithm

    (c) Window and view port

    (d) Polygon

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Total Questions : 13] [Printed Pages : 4

18017

B.C.A. IVth Semester Examination, May-2019

OPERATING SYSTEM

(BCA–402)

Time : 3 Hrs.] [M.M. : 75

Note :– Attempt questions from all Sections as per instructions.

Section–A

(Very Short Answer Type Questions)

Note :– Attempt all the *five* questions. Each question carries 3 marks.

1. Discuss virtual memory and their benefits.

2. Explain directory structure.

3. What is **Process Control Block** ? Design basic framework of process control block.

NA–570 (1) **Turn Over**

4. Differentiate multiprogramming and time sharing operating system.

5. Name the different file access methods and describe in brief.

Section–B

(Short Answer Type Questions)

Note :– Attempt any *two* questions out of the following three questions. Each question carries 7½ marks.

6. What is Fragmentation Problem ? Describe the external and internal fragmentation.

7. Write the name disk schedule algorithm. Write the method and explain the working of any *two* algorithm.

8. Consider the following reference string :

1, 2, 3, 4, 2, 1, 6, 5, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

How many page faults will occur for :

(i) LRU replacement

(ii) FIFO replacement ?

Note :– Initial all frames are empty. Best to assume 5 frames.

NA–570 (2)

Section–C

(Long Answer Type Questions)

Note :– Attempt any *three* questions out of the following five questions. Each question carries 15 marks.

9. Write short notes on the following :

   (a) File allocation methods

   (b) Swapping

   (c) Disk structure

   (d) Contiguous memory allocation

   (e) Threads

10. What is Dead lock ? Explain four necessary conditions for dead lock to occur with suitable example. Describe the different methods for prevention and avoidance of dead lock.

11. (a) What the basic functions does an operating system perform as a resources manager ?

    (b) Show disk structure pictorially. Find the total capacity of the disk bared on the disk parameters.

12. (a) Under what circumstances does page fault occur ?

    (b) Describe the action taken by the operation system when page fault occur.

13. What are the different types of files ? What are the tasks of the file management system ? List some file system related commands in UNIX. How does OS ensure security in file system ?

NA–570   (3)   Turn Over

NA–570   (4)

(20519) Roll No. ....

Total Questions : 13] [Printed Pages : 7

18019

B.C.A. IVth Semester Examination, May-2019

OPTIMIZATION TECHNIQUES

(BCA-404)

Time : 3 Hrs.] [*M.M. : 75*

Note :– Attempt all the Sections as per instructions.

Section–A

(Very Short Answer Type Questions) 3×5=15

Note :– Attempt all the *five* questions. Each question carries 3 marks.

1. Write a linear programming problem in matrix form.

2. Describe classification of inventory models.

3. Describe present value and discount rate.

NA–572 (1) **Turn Over**

4. Explain sequencing problem.

5. Explain queue length, waiting time and traffic intensity.

Section–B

(Short Answer Type Questions) 7½×2=15

Note :– Attempt any *two* questions from this section. Each question carries 7½ marks.

6. Solve the following assignment problem :

		Person		
		A	B	C
	1	120	100	80
Job	2	70	90	110
	3	110	140	120

NA–572 (2)

7. The cost of a machine is Rs. 6,100 and its resale value is only Rs. 100. The maintenance costs are found from experience to be as under :

Year	1	2	3	4	5	6	7	8
Maintenance Cost in Rs.	100	250	400	600	900	1250	1600	2000

When should machine be replaced.

8. We have fine jobs each of which must to through two machines A and B in the order AB. Processing times in hours are given below :

Job	1	2	3	4	5
Machine A (A_i)	5	1	9	3	10
Machine B (B_i)	2	6	7	8	4

Determine sequence for the fine jobs that will minimize the elapsed time T.

Section–C

(Long Answer Type Questions) $3 \times 15 = 45$

Note :– Attempt any *three* questions out of the following *five* questions. Each question carries 15 marks.

9. Solve the following LPP.

$$\text{max. } Z = 2x_1 + 4x_2$$

$$\text{s.t.} \quad 2x_1 + 3x_2 \leq 48$$

$$x_1 + 3x_2 \leq 42$$

$$x_1 + x_2 \leq 21$$

$$x_1, x_2 \geq 0$$

10. Solve the following transporation problem :

To

		1	2	3	4	Supply
	1	3	6	8	5	20
From	2	6	1	2	5	28
	3	7	8	3	9	17
Demand		15	19	13	18	

11. Let the value of money be assumed to be 10% per year and suppose that machine A is replaced after every 3 years whereas machine B is replaced after every six years. The yearly costs of the machines are given as under :

Year	1	2	3	4	5	6
Machine A	1000	200	400	1000	200	400
Machine B	1700	100	200	300	400	500

Determine which machine should be purchased.

12. We have five jobs each of which must go through the machines A, B and C in order ABC. Processing times are :

Job	A	B	C
1	4	5	8
2	9	6	10
3	8	2	6
4	6	3	7
5	5	4	11

Determine a sequence for the fine jobs that will minimize the elapsed time.

13. ATV repairman finds that the time spent on his jobs has an exponential distribution with mean 30 minutes. If he repairs sets in the order in which

they came in and if the arrival of sets is approximately Poisson with an average rate of 10 per 8 hour day. What is repairman's expected idle time each day ? How many jobs are ahead of the average set just brought ?

(20519)

Roll No. ....

Total Questions : 13]

[Printed Pages : 3

18018

B.C.A. IVth Semester Examination, May-2019

SOFTWARE ENGINEERING

(BCA-403)

Time : 3 Hrs.]

[*M.M.* : 75

Note :– Attempt all the Sections as per instructions.

Section–A

(Very Short Answer Type Questions) 3×5=15

Note :– Attempt all the *five* questions. Each question carries 3 marks. Very short answer is required no exceeding 75 words.

1. Describe the three-phase of the generic view of Software Engineering.

2. What are the differences between waterfall and Prototype models ?

NA–571 (1) **Turn Over**

3. List various objectives of software Project Planning.

4. What is Soft Process ?

5. Briefly describe Forward Engineering.

Section–B

(Short Answer Type Questions) 7½×2=15

Note :– Attempt any *two* questions out of the following three questions. Each question carries 7½ marks. Short answer is required not exceeding 200 words.

6. Describe various Decomposition Techniques ? Explain COCOMO model with example.

7. What are the various factors associated with cost estimation of project ? Explain cost estimation technique in detail.

8. Differentiate between the top down and the bottom up approach in designing software.

Section–C

(Long Answer Type Questions) 3×15=45

Note :– Attempt any *three* questions out of the following *five* questions. Each question carries 15 marks. Answer is required in detail.

NA–571 (2)

9. What is Agile methodology ? Discuss the principle of Agile method.

10. Discuss cyclomatic complexity used to define the complexity of source code.

11. What is software design ? Explain it with the help of principles and concepts.

12. How is the cost of software estimated ? Discuss in detail.

13. What is the role of modularity ? Explain the role of coupling and cohesion in software design.

(20519)   Roll No. ....

Total Questions : 13]   [Printed Pages : 4

18020

B.C.A. IVth Semester Examination, May-2019

MATHEMATICS-III

(BCA-406)

Time : 3 Hrs.]   [*M.M. : 75*

Note :– Attempt all the Sections as per instructions.

Section–A

(Very Short Answer Type Questions)

Note :– Attempt all the *five* questions. Each question carries 3 marks.

1. Find the order and degree of the differential equation :

$$\frac{d^2 y}{dx^2} - \left(\frac{dy}{dx}\right)^4 + y = 0$$

NA–573   (1)   **Turn Over**

2. State Leibnitz test.

Or

Cauchy's root test.

3. Express $1 - i$ in the modulus amplitude form.

4. If $r = \sin t\,\hat{i} + \cos t\,\hat{j} + \hat{k}$, find :

   (i) $\dfrac{dr}{dt}$

   (ii) $\left|\dfrac{dr}{dt}\right|$

5. Solve :

$$\frac{d^2 y}{dx^2} - 7\frac{dy}{dx} + 12y = 0$$

Section–B

(Short Answer Type Questions)

Note :– Attempt any *two* questions out of the following three questions. Each question carries 7½ marks.

6. If z_1 and z_2 are any complex numbers, then prove that :

$$|z_1 + z_2|^2 + |z_1 - z_2|^2 = 2\{|z_1|^2 + |z_2|^2\}$$

NA–573   (2)

7. Solve :

$$(1 + x^2)dy = (1 + y^2)dx$$

8. Prove that :

$$\lim \frac{1}{n}\left(1 + 2^{1/2} + 3^{1/3} + ... + n^{1/n}\right) = 1$$

Section–C

(Long Answer Type Questions)

Note :– Attempt any *three* questions out of the following five questions. Each question carries 15 marks.

9. (a) If $\tan^{-1} x + \tan^{-1} y + \tan^{-1} z = \pi$, then prove that :

$$x + y + z = xyz$$

   (b) Test the convergence of the series whose nth term is :

$$\sqrt{n+1} - \sqrt{n}$$

10. Find the directional derivative of $f(x, y, z) = x^2yz + 4xz^2$ at the point $(1, -2, -1)$ in the direction of the vector $2\hat{i} - \hat{j} - 2\hat{k}$.

11. Find the Fourier series for the function $f(x) = |x|$, $-\pi < x < \pi$. Hence deduce that :

$$\frac{\pi^2}{8} = \frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + ...$$

NA–573 (3) Turn Over

12. (a) Solve :

$$\frac{d^2y}{dx^2} + 9y = \cos 2x + \sin 2x$$

   (b) Solve :

$$\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 3y = e^{-3x}$$

13. (a) Solve :

$$(e^y + 1) \cos x \, dx + e^y \sin x \, dy = 0$$

   (b) Solve :

$$(x + 2y^3)\frac{dy}{dx} = y$$

NA–573 (4)