B.L.D.E Association"s

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COLLEGE OF ENGINEERING AND TECHNOLOGY ,VIJAYPUR
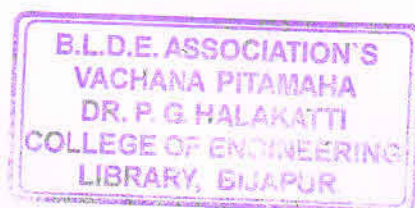
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QUESTION PAPERS

$3^{rd}, 4^{th}\ 5^{th}, 6^{th}\ 7^{th}\ \&8^{th}$ SEMESTER

INFORMATION SCIENCE

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INDEX

CBCS SCHEME

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17CS32

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Analog and Digital Electronics

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1   a. Explain construction and working principle of operations of n-channel D-MOSFET along with its drain and trans-conductance characteristics. **(10 Marks)**
    b. Write the difference between JEFT's and MOSFET's. **(05 Marks)**
    c. For a given self-bias configuration in Fig.Q.1(c), determine: i) I_{d_q} and $V_{g'eq}$ ii) V_{ds} and V_D. **(05 Marks)**

$$I_{dss} = 8 mA$$
$$V_P = -2 v$$
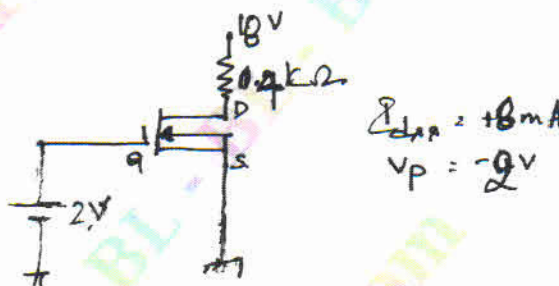
Fig.Q.1(c)

OR

2   a. List of differences between ideal and practical op-amp amplifier. **(06 Marks)**
    b. With a neat diagram and waveform explain astable multivibrator using 555 timers. **(07 Marks)**
    c. With neat diagram and waveform explain the working of relaxation oscillation oscillator. **(07 Marks)**

Module-2

3   a. Explain positive and negative logic. List the equivalence between them. **(08 Marks)**
    b. Find the minimal SOP form for the given min-terns using K-map.
       $F(A, B, C, D) = \Sigma m (4, 5, 6) + d (10, 12, 13, 14, 15)$. **(06 Marks)**
    c. Find the minimal POS form for the given MAX-TERM using K-map.
       $f(a, b, c, d) = \pi M (5, 7, 8, 9, 12) + d(0, 6, 10, 15)$. **(06 Marks)**

OR

4   a. Using Quine-Mc-Clusky method simplify the following Boolean equation.
       $f(a, b, c, d) = \Sigma m (0, 1, 10, 11, 13, 15) + d(2, 3, 12, 14)$. **(10 Marks)**
    b. Define Hazard. Explain different types of Hazards. **(06 Marks)**
    c. Write the VHDL code for the circuit shown in Fig.Q.4(c): **(04 Marks)**
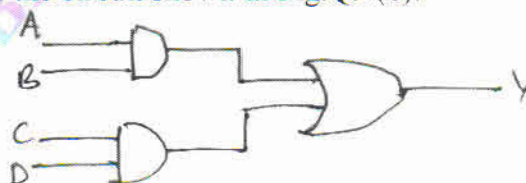
Fig.Q.4(c)

Module-3

5 a. What is multiplexers? Design 8:1 multiplexer using 2:1 multiplexers. **(08 Marks)**

   b. Explain the purpose of using parity generators and checkers using suitable illustrations. **(06 Marks)**

   c. What is magnitude comparator? Explain 1 bit magnitude comparator. **(06 Marks)**

OR

6 a. Design 7-segment decoder using PLA. **(06 Marks)**

   b. With neat logic diagram and truth table, explain negative edge triggered J-K flip-flop. **(06 Marks)**

   c. What is an Adder? Explain with truth table the half Adder, full Adder, half subtractor and full subtractor. **(08 Marks)**

Module-4

7 a. With a neat logic diagram and truth table explain the working of J-K master slave flip-flop using NAND gates. **(08 Marks)**

   b. Give characteristic table, characteristic equation and excitation table for S-R, D and J-K flip-flop. **(08 Marks)**

   c. Write a VHDL code for D-flip-flop. **(04 Marks)**

OR

8 a. What is a register? With neat diagram explain 4-bit parallel-in-serial out shift register. **(08 Marks)**

   b. Explain with a neat diagram how a shift register can be applied for serial-addition. **(06 Marks)**

   c. Differentiate between synchronous and asynchronous counters. **(06 Marks)**

Module-5

9 a. Define counter. Design a synchronous counter for the sequence, $0 \rightarrow 3 \rightarrow 1 \rightarrow 2 \rightarrow 6 \rightarrow 7 \rightarrow 0 \rightarrow 3$ using J-K flip flop. **(12 Marks)**

   b. Explain with neat diagram the working principle of Digital Clock. **(08 Marks)**

OR

10 a. Explain the binary ladder with digital input of 1000. **(06 Marks)**

    b. Explain 2-bit simultaneous A/D converter. **(08 Marks)**

    c. Explain the terms accuracy and resolution for D/A converters. **(06 Marks)**

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17CS33

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Data Structure and Applications

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1 a. Define data structure. List and explain data structure operations.   (05 Marks)
   b. Write the bubble sort algorithm.   (05 Marks)
   c. List and explain in detail, three types of structures used to store the strings.   (10 Marks)

OR

2 a. Explain dynamic memory allocation.   (05 Marks)
   b. Explain about the representation of two dimensional arrays in memory.   (05 Marks)
   c. What do you mean by pattern matching? Let P and T be strings with lengths R and S respectively and are stored as arrays with one character per element. Write a pattern matching algorithm that finds index P in T. Also discuss about this algorithm.   (10 Marks)

Module-2

3 a. Define stack. Write the procedure for two basic operations associated with stack.   (05 Marks)
   b. Write a short note on priority queues.   (05 Marks)
   c. Define recursion. What are the properties of recursive procedure? Write recursive procedure for : i) Tower of Hanoi ii) Factorial of a number.   (10 Marks)

OR

4 a. Define queues. Write QINSERT and QDELETE procedures for queues using arrays.
                                                                                (10 Marks)
   b. Write the postfix form of the following expression.
      $A + (B *C - D/E \uparrow F) *G) * H$.   (05 Marks)
   c. Write a note on Ackermann function.   (05 Marks)

Module-3

5 a. Write the following algorithm for singly linked list.
      i) Inserting ITEM as the first node in the list
      ii) Deleting the node with the given ITEM of information.   (10 Marks)
   b. Write the node structure for linked representation of polynomial. Write the function to add two polynomials represented using linked list.   (10 Marks)

OR

6 a. Write the functions to perform the following :
    i) Inverting a singly linked list
    ii) Concatenating the singly linked list
    iii) Finding the length of a circular list.   (10 Marks)
   b. Write a note on header linked list.   (05 Marks)
   c. For the given sparse matrix, write the diagrammatic linked list representation.

$$\begin{bmatrix} 2 & 0 & 0 & 0 \\ 4 & 0 & 0 & 3 \\ 0 & 0 & 0 & 0 \\ 8 & 0 & 0 & 1 \\ 0 & 0 & 6 & 0 \end{bmatrix}.$$

                                                                    (05 Marks)

Module-4

7 a. What is a tree? write the routines to traverse the given string using
    i) Pre-order traversal
    ii) In-order traversal
    iii) Post-order traversal.   (10 Marks)
   b. Define binary search tree. Write the recursive search and iterative search algorithm for a binary search free.   (10 Marks)

OR

8 a. Write the routines for :
    i) Copying binary trees
    ii) Testing for equality of binary trees.   (10 Marks)
   b. List the rules to construct the threads. Write the routines for inorder traversal of a threaded binary tree.   (10 Marks)

Module-5

9 a. Write an algorithm for an insertion sort. Also discuss about the complexity of insertion sort.
                                                                    (10 Marks)
   b. Write an algorithm for : i) Breadth first search ii) depth first search.   (10 Marks)

OR

10 a. Define graph. Explain in detail about directed graphs.   (10 Marks)
    b. Explain in detail about static and dynamic hashing.   (10 Marks)

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USN | | | | | | | | | | **17CS34**

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Computer Organization

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. Explain with a neat diagram the connection between the processor and the computer memory. **(05 Marks)**
    b. Explain the Basic Instruction types with example. **(05 Marks)**
    c. Define Addressing mode, explain the various addressing modes with example. **(10 Marks)**

OR

2   a. Write an assembly program that reads a line of characters and display it. **(05 Marks)**
    b. What are assembler directives? Point out and explain the various directives with example. **(05 Marks)**
    c. Point out various shifts and rotate instruction and example with a neat diagram and example. **(10 Marks)**

Module-2

3   a. Define interrupt. Point out and explain the various ways of enabling and disabling interrupts. **(07 Marks)**
    b. What are Exceptions? Point out and explain the different kinds of exceptions. **(05 Marks)**
    c. What is interrupt nesting, explain with a neat diagram the implementation of interrupt priority, using individual interrupt request and acknowledge lines. **(08 Marks)**

OR

4   a. What is Bus Arbitration? Explain centralized and distributed arbitration. With a neat diagram. **(10 Marks)**
    b. Explain Universal serial Bus tree structure and split bus operation with a neat diagram. **(10 Marks)**

Module-3

5   a. Explain synchronous DRAMS with a block diagram. **(05 Marks)**
    b. Define ROM ; point out and explain various types of ROMS. **(05 Marks)**
    c. Define cache memory, explain various types of it with a neat block diagram. **(10 Marks)**

OR

6   a. What is Virtual memory? Explain virtual memory organization. **(07 Marks)**
    b. Explain the optical disk organization with a neat diagram. **(10 Marks)**
    c. Define Hit rate and miss penalty. **(03 Marks)**

Module-4

7   a. Draw 4-bit carry-look ahead adder and explain. **(10 Marks)**
    b. Perform multification for −13 and + 9 using Booth's Algorithm and explain Booth's Algorithm process. **(10 Marks)**

OR

8 a. Explain with a neat figure the circuit arrangement for binary division.   (10 Marks)
   b. Explain IEEE standard for floating point number.   (10 Marks)

Module-5

9 a. Explain three – bus organization of the datapath with a neat block diagrams.   (06 Marks)
   b. Explain Hard Wired Control Unit Organization in a processing unit.   (06 Marks)
   c. Write the control sequence for execution of the Instruction. Add (R_3), R_1 in the execution of a complete instruction.   (08 Marks)

OR

10 a. Explain briefly the block diagram of a digital camera.   (10 Marks)
   b. With a neat block diagram, explain the working of microwave oven in an embedded system.   (10 Marks)

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USN | | | | | | | | | | **17CS35**

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Unix and Shell Programming

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. By writing a neat diagram, explain the architecture of UNIX.   (10 Marks)
    b. Discuss the following commands
       i) ls   ii) who   iii) cat   iv) echo   (10 Marks)

OR

2   a. Explain the features of UNIX.   (10 Marks)
    b. Explain the commands used to add, modify and delete users.   (10 Marks)

Module-2

3   a. What is a file? Explain different categories of files.   (10 Marks)
    b. By giving example, explain the following commands.
       i) pwd   ii) cd   iii) mkdir   iv) rmdir.   (10 Marks)

OR

4   a. Discuss ls commands with options.   (10 Marks)
    b. Explain absolute method of changing permissions by giving example.   (10 Marks)

Module-3

5   a. Explain different modes of Vi editor   (10 Marks)
    b. Discuss ex-mode commands of Vi editor.   (10 Marks)

OR

6   a. Explain shell interpretive cycle.   (04 Marks)
    b. Which are standard files used in UNIX? Explain.   (08 Marks)
    c. By giving examples, explain extended regular expression.   (08 Marks)

Module-4

7   a. With example, explain logical operators in shell programming.   (05 Marks)
    b. Discuss for statement in shell script with example.   (05 Marks)
    c. Write a shell program to do the following :
       i) List of files   ii) Processes of user   iii) Today's date   vi) Users of the system.
       Using case conditional.   (10 Marks)

OR

8   a. Discuss head and tail commands along with its options.   (10 Marks)
    b. By specifying examples, explain hard and soft links.   (10 Marks)

Module-5

9   a. Along with the options and examples, explain ps command.   (10 Marks)
    b. By giving example, explain nice and nohup commands.   (10 Marks)

OR

10 a. Explain string handling function of perl.   (06 Marks)
    b. With example, explain split and join function of perl.   (06 Marks)
    c. What is subroutine? Explain by giving example.   (08 Marks)

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Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Discrete Mathematical Structures

Time: 3 hrs.
Max. Marks: 100

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1   a.   Define proposition, tautology, contradiction. Determine whether the following compound statement is a tautology or not.
$\{(p \vee q) \to r\} \leftrightarrow \{\neg r \to \neg(p \vee q)\}$ (06 Marks)

b.   Using the laws of logic, show that $(p \to q) \wedge [\neg q \wedge (r \vee \neg q)] \Leftrightarrow \neg(q \vee p)$ (07 Marks)

c.   Establish the validity of the following argument
$$\forall x, \ p(x) \vee q(x)$$
$$\exists x, \ \neg p(x)$$
$$\forall x, \ \neg q(x) \vee r(x)$$
$$\underline{\forall x, \ s(x) \to \neg r(x)}$$
$$\therefore \exists x, \ \neg s(x)$$

(07 Marks)

OR

2   a.   Define converge, inverse and contra positive of a conditional. Find converse, inverse and contra positive of $\forall x, (x > 3) \to (x^2 > 9)$, where universal set is R. (06 Marks)

b.   Test the validity of the following arguments:
i) If there is a strike by students, the exam will
be postponed but the exam was not postponed.
∴ there was no strike by students.
ii) If Ravi studies, then he will pass in DMS.
If Ravi doesn't play cricket, then he will study.
Ravi failed in DMS.
∴ Ravi played cricket

(06 Marks)

c.   Define dual of logical statement. Write the dual of the statement $(p \vee T_0) \wedge (q \vee F_0) \vee (r \wedge s \wedge T_0)$. (02 Marks)

d.   Let $p(x) : x \geq 0$
$q(x) : x^2 \geq 0$ and $r(x) : x^2 - 3x - 4 = 0$
Then, for the universe completing of all real numbers, find the truth values of :
i) $\exists x \{p(x) \wedge q(x)\}$ ii) $\forall x \{p(x) \to q(x)\}$ iii) $\exists x \{p(x) \wedge r(x)\}$ (06 Marks)

Module-2

3   a.   Prove that for any positive integer n, $\sum_{i=1}^{n} \dfrac{F_{i-1}}{2^i} = 1 - \dfrac{F_{n+2}}{2^n}$, F_n denote the Fibonacci number.

(06 Marks)

b.   How many positive integers n can we form using the digits 3, 4, 4, 5, 5, 6, 7 if we want n to exceed 5,000,000? (07 Marks)

c.   Determine the coefficient of $a^2 b^3 c^2 d^5$ in the expansion of $(a + 2b - 3c + 2d + 5)^{16}$. (07 Marks)

OR

4 a. Prove by using principle of mathematical induction

$$\sum_{i=1}^{n} i \cdot 2^i = 2 + (n-1) \cdot 2^{n+1}$$

(06 Marks)

   b. A committee of 12 is to be selected from 10 men and 10 women. In how many ways can the selection be carries out if
   i) There are no restrictions
   ii) There must be six men and six women
   iii) There must be an even number of women. (07 Marks)

   c. Determine the number of integer solutions of $x_1 + x_2 + x_3 + x_4 = 32$ where $x_i \geq 0$, $1 \leq i \leq 4$.

(07 Marks)

Module-3

5 a. If $A = \{1, 2, 3, 4, 5\}$ and there are 6720 injective functions $f : A \to B$, what is $|B|$? (03 Marks)

   b. Let m, n be positive integers with $1 < n \leq m$ then prove that,
      $$s(m+1, n) = s(m, n-1) + ns(m, n)$$
(05 Marks)

   c. If $f : R \to R$ defined by $f(x) = x^2$, determine whether the function is one-to-one and whether it is onto. If it is not onto, find the range. (06 Marks)

   d. Let $A = \{1, 2, 3, 4, 5\} \times \{1, 2, 3, 4, 5\}$ and define R on A by (x_1, y_1) R (x_2, y_2) if $x_1 + y_1 = x_2 + y_2$, verify that R is an equivalence relation on A. (06 Marks)

OR

6 a. If $f : R \to R$ defined by $f(x) = x^3$, determine whether f is invertible and if determine f^{-1}.

(05 Marks)

   b. Define the relation R for two lines ℓ_1 and ℓ_2 by ℓ_1 R ℓ_2 if ℓ_1 is perpendicular to ℓ_2. Determine whether the relation is reflexive, symmetric, antisymmetric or transitive. (05 Marks)

   c. Let $A = \{1, 2, 3, 6, 9, 18\}$ and R on A by xRy if x|y. Draw the Hasse diagram for the poset(A, R). (05 Marks)

   d. For $A = \{1, 2, 3, 4\}$, let $R\{(1, 1) (1, 2) (2, 3) (3, 3) (3, 4)\}$ be a relation on A. Draw the directed graph G on A that is associated with R. Do likewise for R^2, R^3. (05 Marks)

Module-4

7 a. Determine the number of positive integers n where $1 \leq n \leq 100$ and n is not divisible by 2, 3 or 5. (06 Marks)

   b. How many derangements are there for 1, 2, 3, 4 and 5? (07 Marks)

   c. Solve the recurrence relation $2a_{n+3} = a_{n+2} + 2a_{n+1} - a_n$, $n \geq 0$, $a_0 = 0$, $a_1 = 1$, $a_2 = 2$.

(07 Marks)

OR

8 a. In how many ways can the 26 letters of the alphabet be permuted so that none of the patterns car, dog, pun or byte occurs? (06 Marks)

   b. Find the root polynomial for 3×3 board using the expansion formula. (07 Marks)

   c. The number of bacteria in a culture is 1000 (approximately) and this number increases 250% every two hours. Use a recurrence relation to determine the number of bacteria present after one day. (07 Marks)

Module-5

9 a. Show that the graphs Fig.Q9(a)(i) and (ii) are isomorphic.
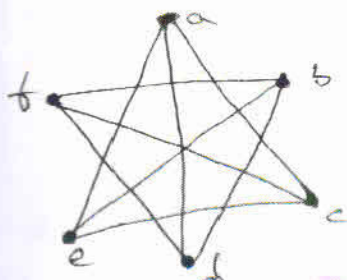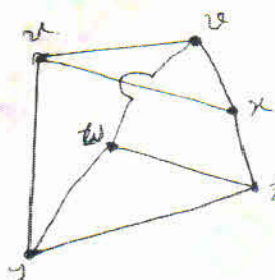
Fig.Q9(a)(i)   Fig.Q9(a)(ii)   **(06 Marks)**

b. Let G = (V, E) be an undirected graph or multigraph with no isolated vertices. Then prove that G has an Euler circuit if and only if G is connected and every vertex in G has even degree.   **(07 Marks)**

c. Construct an optimal prefix code for the symbols a, b, c, d, e, f, g, h, i, j that occur with respective frequencies 78, 16, 30, 35, 125, 31, 20, 50, 80, 3.   **(07 Marks)**

OR

10 a. Let G = (V, E) be a connected undirected graph. What is the largest possible value for |V| if |E| = 19 and deg(v) ≥ 4 for all v ∈ V?   **(06 Marks)**

b. For every tree T = (V, E) if |V| ≥ 2, then prove that T has atleast two pendant vertices.
                (07 Marks)

c. For the tree shown in Fig.Q10(c), list the vertices according to a preorder and a postorder traversal.

Fig.Q10(c)   **(07 Marks)**

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17MAT31

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Engineering Mathematics – III

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing
ONE full question from each module.

Module-1

1   a. Find the Fourier series expansion for the periodic function f(x), if in one second
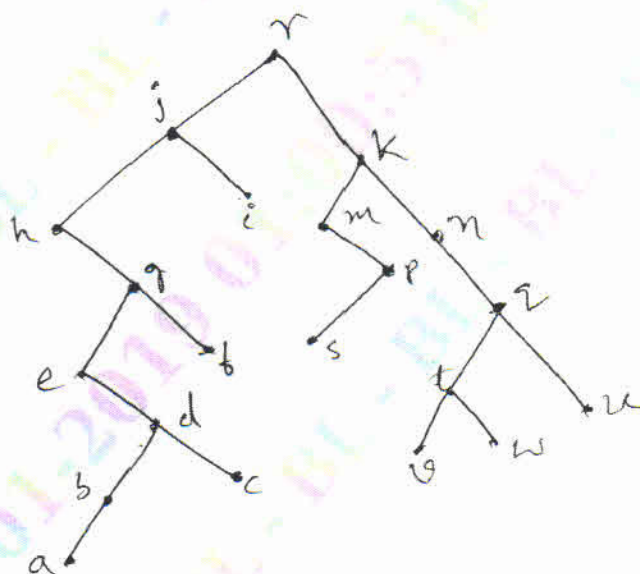$$f(x) = \begin{cases} 0; & -\pi < x < 0 \\ x; & 0 < x < \pi \end{cases}.$$
(08 Marks)

   b. Expand the function $f(x) = x(\pi - x)$ over the interval $(0, \pi)$ in half range Fourier cosine series.
(06 Marks)

   c. The following value of function y gives the displacement in inches of a certain machine part for rotations x of a flywheel. Expand y-in terms of Fourier series upto the second harmonic.

Rotations	x	0	$\pi/6$	$2\pi/6$	$3\pi/6$	$4\pi/6$	$5\pi/6$	π
Displacement	y	0	9.2	14.4	17.8	17.3	11.7	0

(06 Marks)

OR

2   a. Find the Fourier series expansion for the function :
$$f(x) = \begin{cases} \pi x; & 0 \le x \le 1 \\ \pi(2-x); & 1 \le x \le 2 \end{cases}$$
and deduce $\dfrac{\pi^2}{8} = \displaystyle\sum_{n=1}^{\infty} \dfrac{1}{(2n-1)^2}$.
(08 Marks)

   b. Expand in Fourier series $f(x) = (\pi - x)^2$ over the interval $0 \le x \le 2\pi$.
(06 Marks)

   c. The following table gives the variations of periodic current over a period T.

t (secs)	0	T/6	T/3	T/2	2T/3	5T/6	T
A (Amps)	1.98	1.30	1.05	1.30	−0.88	−0.25	1.98

Expand the function (periodic current) by Fourier series and show that there is a direct current part of 0.75 amp and also obtain amplitude of first harmonic.
(06 Marks)

Module-2

3   a. Find Fourier transform of $f(x) = \begin{cases} 1 - x^2; & |x| < 1 \\ 0; & |x| > 1 \end{cases}$

and hence evaluate $\displaystyle\int_0^\infty \dfrac{x \cos x - \sin x}{x^3} dx$.
(08 Marks)

   b. Find Fourier Cosine transform of the function :
$$f(x) = \begin{cases} 4x; & 0 < x < 1 \\ 4 - x; & 1 < x < 4 \\ 0; & x > 4 \end{cases}$$
(06 Marks)

   c. Find z-transforms of :   i) $a^n \sin n\theta$ ii) $a^{-n} \cos n\theta$.
(06 Marks)
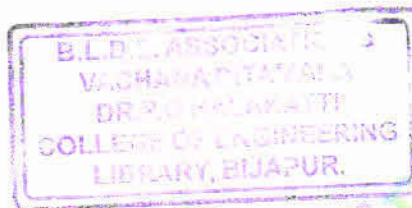
OR

4 a. Find Fourier sine transform of $f(x) = e^{-|x|}$ and hence evaluate : $\int_0^\infty \dfrac{x \sin mx}{1 + x^2} dx, m > 0$.

(08 Marks)

   b. Find z-transform of $u_n = \cos h\left(\dfrac{n\pi}{2} + \theta\right)$.

(06 Marks)

   c. Solve the difference equation using z-transforms $u_{n+2} + 6u_{n+1} + 9u_n = 2^n$ .Given $u_0 = u_1 = 0$.

(06 Marks)

Module-3

5 a. If θ - is the acute angle between the two regression lines relating the variables x and y, show that $Tan\theta = \left(\dfrac{1 - r^2}{r}\right)\left(\dfrac{\sigma_x \sigma_y}{\sigma_x^2 \sigma_y^2}\right)$.

(08 Marks)

   Indicate the significance of the cases $r = \pm 1$ and $r = 0$.

   b. Fit a straight line $y = ax + b$ for the data.

x	12	15	21	25
y	50	70	100	120

(06 Marks)

   c. Find a real root of the equation by using Newton-Raphson method near $x = 0.5$, $xe^x = 2$, perform three iterations.

(06 Marks)

OR

6 a. Compute the coefficient of correlation and equation of regression of lines for the data :

x	1	2	3	4	5	6	7
y	9	8	10	12	11	13	14

(08 Marks)

   b. The Growth of an organism after x – hours is given in the following table :

x (hours)	5	15	20	30	35	40
y (Growth)	10	14	25	40	50	62

   Find the best values of a and b in the formula $y = ae^{bx}$ to fit this data. (06 Marks)

   c. Find a real root of the equation $\cos x = 3x - 1$ correct to three decimals by using Regula – False position method, given that root lies in between 0.6 and 0.7. Perform three iterations.

(06 Marks)

Module-4

7 a. Find y(8) from $y(1) = 24$, $y(3) = 120$, $y(5) = 336$, $y(7) = 720$ by using Newton's backward difference interpolation formula.

(08 Marks)

   b. Define $f(x)$ – as a polynomial in x for the following data using Newton's divided difference formula.

(06 Marks)

x	−4	−1	0	2	5
f(x)	1245	33	5	9	1335

   c. Evaluate the integral $I = \int_0^6 \dfrac{dx}{4x + 5}$ using Simpson's $\frac{1}{3}$rd rule using 7 ordinates. (06 Marks)

17MAT31

OR

8 a. For the following data calculate the differences and obtain backward difference interpolation polynomial. Hence find f(0.35). **(08 Marks)**

x	0.1	0.2	0.3	0.4	0.5
f(x)	1.40	1.56	1.76	2.0	2.28

  b. Using Lagrange's interpolation find y when x = 10.

x	5	6	9	11
y	12	13	14	16

(06 Marks)

  c. Evaluate $\int_0^1 \frac{x}{1+x^2}\,dx$ by Weddle's rule considering seven ordinates. **(06 Marks)**

Module-5

9 a. Verify the Green's theorem in the plane for $\int_c (x^2 + y^2)dx + 3x^2 y\,dy$ where C – is the circle $x^2 + y^2 = 4$ traced in positive sense. **(08 Marks)**

  b. Evaluate $\int_c (\sin z.dx - \cos x\,dy + \sin y\,dx)$ by using Stokes theorem, where C – is the boundary of the rectangle $0 \le x \le \pi$, $0 \le y \le 1$ and $z = 3$. **(06 Marks)**

  c. Find the curve on which the functional : $\int_0^1 [y'^2 + 12xy]dx$ with $y(0) = 0$, $y(1) = 1$ can be extremised. **(06 Marks)**

OR

10 a. Given $f = (3x^2 - y)i + xzj + (yz - x)k$ evaluate $\int_c f \cdot dr$ from (0, 0, 0) to (1, 1, 1) along the paths $x = t$, $y = t^2$ and $z = t^3$. **(08 Marks)**

  b. Derive Euler's equation in the form $\frac{\partial f}{\partial y} - \frac{d}{dx}\left(\frac{\partial f}{\partial y'}\right) = 0$. **(06 Marks)**

  c. Prove that the shortest distance between two points in a plane is a straight line. **(06 Marks)**

* * * * *

3 of 3

USN ☐☐☐☐☐☐☐☐☐☐   **17MATDIP31**

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Additional Mathematics – I

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Prove that $(1 + \cos\theta + i\sin\theta)^n + (1 + \cos\theta - i\sin\theta)^n = 2^{n+1} \cos^n\left(\dfrac{\theta}{2}\right) \cos\left(\dfrac{n\theta}{2}\right)$ **(08 Marks)**

   b. Express $\sqrt{3} + i$ in the polar form and hence find its modulus and amplitude.   **(06 Marks)**

   c. Find the sine of the angle between vectors $\vec{a} = \hat{i} + \hat{j} + \hat{k}$ and $\vec{b} = 2\hat{i} - 3\hat{j} + 2\hat{k}$ **(06 Marks)**

OR

2 a. Express $\dfrac{3 + 4i}{3 - 4i}$ in the form $x + iy$.   **(08 Marks)**

   b. If the vector $2\hat{i} + \lambda\hat{j} + \hat{k} = 0$ and $4\hat{i} - 2\hat{j} - 2\hat{k}$ are perpendicular to each other, find λ.   **(06 Marks)**

   c. Find λ, such that the vectors $2\hat{i} - \hat{j} + \hat{k}$, $\hat{i} + 2\hat{j} - 3\hat{k}$, $3\hat{i} + \lambda\hat{j} + 5\hat{k}$ are coplanar.   **(06 Marks)**

Module-2

3 a. If $y = e^{a\sin^{-1}x}$, prove that $(1 - x^2)y_{n+2} - (2n + 1)xy_{n+1} - (n^2 + a^2)y_n = 0$ **(08 Marks)**

   b. With usual notations, prove that $\tan\phi = r\dfrac{d\theta}{dr}$.   **(06 Marks)**

   c. If $u = \log_e \dfrac{x^3 + y^3}{x^2 + y^2}$, prove that $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} = 1$.   **(06 Marks)**

OR

4 a. Using Maclaurin's series, expand $\tan x$ upto the term containing x^5.   **(08 Marks)**

   b. Find the pedal equation of $r = a(1 - \cos\theta)$.   **(06 Marks)**

   c. If $u = x + 3y^2 - z^3$, $v = 4x^2yz$ and $w = 2z^2 - xy$, find $\dfrac{\partial(u, v, w)}{\partial(x, y, z)}$ at $(1, -1, 0)$.   **(06 Marks)**

Module-3

5 a. Obtain a reduction formula for $\displaystyle\int_0^{\pi/2} \cos^n x \, dx$, $(n > 0)$.   **(08 Marks)**

   b. Evaluate $\displaystyle\int_0^a \dfrac{x^7}{\sqrt{a^2 - x^2}} dx$ **(06 Marks)**

   c. Evaluate $\displaystyle\int_1^2 \int_1^3 xy^2 \, dx \, dy$ **(06 Marks)**

OR

6   a.   Obtain a reduction formula for $\int_0^{\pi/2} \sin^n x \, dx$, $(n > 0)$.   **(08 Marks)**

    b.   Evaluate $\int_0^{2a} x^2 \sqrt{2ax - x^2} \, dx$ **(06 Marks)**

    c.   Evaluate $\int_{-1}^{1} \int_0^z \int_{x-z}^{x+z} (x + y + z) \, dx \, dy \, dz$ **(06 Marks)**

Module-4

7   a.   A particle moves along the curve $x = 2t^2$, $y = t^2 - 4t$ and $z = 3t - 5$, where 't' is the time. Find its velocity and acceleration vectors and also magnitude of velocity and acceleration at $t = 1$.   **(08 Marks)**

    b.   In which direction of the directional derivative of x^2yz^3 is maximum at $(2, 1, -1)$ and find the magnitude of this maximum.   **(06 Marks)**

    c.   Show that $\vec{F} = (y + z)\hat{i} + (x + z)\hat{j} + (x + y)\hat{k}$ is irrotational.   **(06 Marks)**

OR

8   a.   If $\phi = xy^2z^3 - x^3y^2z$, find $\nabla\phi$ and $|\nabla\phi|$ at $(1, -1, 1)$.   **(08 Marks)**

    b.   If $\vec{F} = (x + y + 1)\hat{i} + \hat{j} - (x + y)\hat{k}$, show that $\vec{F} \cdot \text{Curl}\vec{F} = 0$.   **(06 Marks)**

    c.   If $x = t^2 + 1$, $y = 4t - 3$, $z = 2t^2 - 6t$ represents the parametric equation of a curve, find the angle between the tangents at $t = 1$ and $t = 2$.   **(06 Marks)**

Module-5

9   a.   Solve : $\left(x \tan\frac{y}{x} - \frac{y}{x}\sec^2\frac{y}{x}\right)dx = x\sec^2\frac{y}{x}dy$ **(08 Marks)**

    b.   Solve : $xy(1 + xy^2)\frac{dy}{dx} = 1$ **(06 Marks)**

    c.   Solve : $\frac{dy}{dx} + \frac{y\cos x + \sin y + y}{\sin x + x\cos y + x} = 0$ **(06 Marks)**

OR

10   a.   Solve : $(3y + 2x + 4)dx - (4x + 6y + 5)dy = 0$ **(08 Marks)**

     b.   Solve : $(1 + y^2)dx = (\tan^{-1}y - x)dy$ **(06 Marks)**

     c.   Solve : $(y \log y)dx + (x - \log y)dy = 0$.   **(06 Marks)**

* * * * *

17KKK39

USN ☐☐☐☐☐☐☐☐☐☐   Question Paper Version : A

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Kannada Kali

(COMMON TO ALL BRANCHES)

Time: 2 hrs.]   [Max. Marks: 30

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the thirty questions, each question carries **ONE** mark.

2. Use only **Black ball point pen** for writing / darkening the circles.

3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**

4. Darkening two circles for the same question makes the answer invalid.

5. **Damaging/overwriting, use of whiteners** on the **OMR** sheets are strictly prohibited.

Note : Fill in the blank by translating the given English word to Kannada.
[From Question No : 1 to 5]

1. He : --------
   a) NAnu   b) Neenu
   c) Avanu   d) AvaLu

2. When : ------------
   a) Yaaru   b) Yaavaga
   c) Yelli   d) Yaake

3. Teacher : ----------
   a) HuDuga   b) Manushya
   c) Shikshaka/ki   d) Shishya

4. Vegetable : ----------
   a) tarakari   b) takararu
   c) tavaruru   d) tamota

5. Garden : ---------
   a) Mane   b) Shaale
   c) TooTa   d) Baagilu

Note : Substitute the words from the following each sentence in appropriate place
[From Q No. 6 to 8]

6. naanu uuTa <u>maaDu</u>
   a) maaDuttene   b) maaDideya
   c) maaDisu   d) maaDi
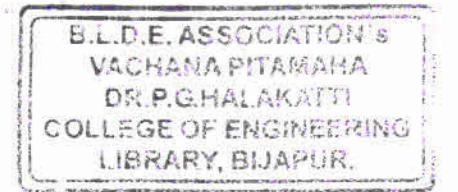
7.   Namma manege baa ?
    a) Baruttiya   b) Bandi
    c) BeDa   d) Baru

8.   Nanna hattira Kutka.
    a) KuLituko   b) KooDu
    c) Kundru   d) None.

Note : Write the English word for given Kannada word   [From Q No. 9 to 12]

9.   HaLe
    a) New   b) Now
    c) Not   d) Old

10. Kurci
    a) Table   b) Book
    c) Chair   d) Pen

11. GaNita
    a) Physics   b) Biology
    c) Mathematics   d) English

12. Shaale
    a) Home   b) School
    c) Office   d) Room.

Note : Fill in the blank choosing the right word from the group below :

13.   nanage ninna sahavaasa khanDitaa -----------.
    a) BeDa   b) Beka
    c) Ide   d) Illa.

Note : Translate the following Kannada question into English.
[from question No. 14 to 15]

14. Niivu yaaru ?
    a) who is this?   b) what is this?
    c) who are you?   d) what is there?

15. Idu Enu?
    a) who is this?   b) what is this?
    c) who are you?   d) what is there?

Note : Translate the following English words to Kannada
[from Q No. 16 to 20]

16. Near
    a) Swalpa   b) hattira
    c) heege   d) hosa

17. Shop
    a) AngaDi   b) dukan
    c) kante   d) Mane.

18. See
    a) NooDu
    b) MaaDu
    c) BiDu
    d) IDu

19. Moon
    a) candra
    b) Suurya
    c) Naksatra
    d) Boomi

20. Child
    a) Maanava
    b) Magu
    c) MahiLe
    d) HeNNu

Note : Translate the Kannada word into English.
[From Q No. 21 to 30]

21. Meenu
    a) Animal
    b) Fish
    c) Crow
    d) Owl

22. Nayee
    a) Pig
    b) Cow
    c) Dog
    d) Cat

23. Aat
    a) See
    b) Come
    c) Go
    d) Play

24. Mana
    a) Home
    b) School
    c) Pen
    d) Mind

25. Nanu
    a) I
    b) You
    c) We
    d) He

26. Maga
    a) Father
    b) Sister
    c) Daugher
    d) Son.

27. Baa
    a) Go
    b) Sit
    c) Visit
    d) Come

28. Kaagad
    a) Chair
    b) Computer
    c) Mouce
    d) Paper

29. Avanu
    a) He
    b) She
    c) It
    d) They

30. Aangla
    a) Kannada
    b) English
    c) Marathi
    d) Urdu.

* * * * *

CBCS SCHEME

USN

17KKM39

Question Paper Version : D

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
ಕನ್ನಡ ಮನಸು

(COMMON TO ALL BRANCHES)

Time: 2 hrs.]

[Max. Marks: 30

ಸೂಚನೆಗಳು

1. ಎಲ್ಲ ಇಂ ಪ್ರಶ್ನೆಗಳಿಗೂ ಉತ್ತರಿಸಿರಿ. ಪ್ರತಿ ಪ್ರಶ್ನೆಗೆ ಒಂದು ಅಂಕ.

2. ಓ.ಎಂ.ಆರ್ ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಯು.ಎಸ್.ಎನ್ ಸಂಖ್ಯೆ ಹಾಗೂ ಪಶ್ನೆ ಪತ್ರಿಕೆಯ ಶ್ರೇಣಿಯನ್ನು ಅಂದರೆ A, B, C ಅಥವಾ D ಯನ್ನು ತಪ್ಪಿಲ್ಲದಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಗುರುತಿಸುವುದು ಅಭ್ಯರ್ಥಿಯ ಜವಾಬ್ದಾರಿಯಾಗಿರುತ್ತದೆ.

3. ಓ.ಎಂ.ಆರ್ ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ನಿಗದಿಪಡಿಸಿರುವ ಸ್ಥಳದಲ್ಲಿ ಭರ್ತಿಮಾಡದೆ ಹಾಗೆಯೇ ಬಿಟ್ಟಲ್ಲಿ ಅಥವಾ ಭರ್ತಿಮಾಡಿದ ಮಾಹಿತಿಯಲ್ಲಿ ಯಾವುದೇ ವ್ಯತ್ಯಾಸವಿದ್ದಲ್ಲಿ ಅಂತಹ ಉತ್ತರ ಪತ್ರಿಕೆಗಳನ್ನು ರದ್ದು ಪಡಿಸಲಾಗುವುದು.

4. ಕೇವಲ ಒಂದು ಉತ್ತರವನ್ನು ಮಾತ್ರ ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಗುರುತಿಸತಕ್ಕದ್ದು. ಒಂದೆ ಪ್ರಶ್ನೆಗೆ ಎರಡು ಉತ್ತರವನ್ನು ಗುರುತಿಸುವುದು ಅಮಾನ್ಯ.

5. ಎಲ್ಲಾ ಉತ್ತರಗಳನ್ನು ನಿಮಗೆ ಒದಗಿಸಲಾದ ಓ.ಎಂ.ಆರ್ ಉತ್ತರ ಪತ್ರಿಕೆಯ ಹಾಳೆಯ ಮೇಲೆ ಕಪ್ಪು ಅಥವಾ ನೀಲಿ ಶಾಹಿಯ ಬಾಲ್‌ಪಾಯಿಂಟ್ ಪೆನ್ನಿನಿಂದ ಗುರುತು ಮಾಡಬೇಕು.

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1. ಶ್ರೀ ಸಿದ್ಧಲಿಂಗಯ್ಯನವರ 'ಬೆಳ್ಳಿಯ ಹಾಡು' ಕವನದಲ್ಲಿ ಕಂಡುಬರುವ ಅಂಶ :
   ಅ) ಸಮಾಜದ ಸುಸ್ಥಿತೆ   ಬ) ಪ್ರೇಮದ ರಮ್ಯತೆ
   ಕ) ಭಕ್ತಿಯ ಪರವಶತೆ   ಡ) ದಲಿತರ ಕನಸು

2. 'ಓಲೆಹತ್ತಿ ಉರಿದಡೆ ನಿಲಬಹುದಲ್ಲದೇ, ಧರೆಹತ್ತಿ ಉರಿದರೆ ನಿಲಬಾರದು, ಏರಿ ನೀರುಂಬಡೆ ಬೇಲಿ ಹೊಲದ ಮೇವ್ಪೊಡೆ, ನಾರಿ ತನ್ನ ಮನೆಯಲ್ಲಿ ಕಳುವ್ಪೊಡೆ, ತಾಯಿಯ ಮೊಲೆಹಾಲು ನಂಜಾಗಿ ಕೊಲವುಡೆ ಇನ್ನಾರಿಗೆ ದೂರುವೆ ಕೂಡಲ ಸಂಗಮದೇವಾ' ಈ ವಚನದ ರಚನೆಕಾರರು:
   ಅ) ಸರ್ವಜ್ಞ   ಬ) ಚಾಮರಸ
   ಕ) ಅಲ್ಲಮಪ್ರಭು   ಡ) ಬಸವಣ್ಣ

3. ಮಲೆಮಾದೇಶ್ವರ ಬೆಟ್ಟವಿರುವ ಸ್ಥಳ:
   ಅ) ಅರಿಶಿನಕುಂಟೆ   ಬ) ಅಥಣಿ
   ಕ) ಅಫಜಲಪುರ   ಡ) ಕೊಳ್ಳೆಗಾಲ

4. 'ಶ್ರೀ ಸಂಗೊಳ್ಳಿ ರಾಯಣ್ಣ' ಯಾರು?

    ಅ) ಅದ್ಭುತ ಭಾಷಣಕಾರ   ಬ) ವಂದಿಮಾಗಧರಿಗೆ ಸೇರಿದವನು

    ಕ) ಬ್ಯಾಂಕಗಳಿಗೆ ಮೋಸ ಮಾಡಿದವನು ಡ) ಬ್ರಿಟಿಷರ ವಿರುದ್ಧ ಹೋರಾಡಿದ ಹೋರಾಟಗಾರ

5. ಮೊದಲು ಕನ್ನಡಕ್ಕೊಂದು ಅಪರೂಪ ನಿಘಂಟನ್ನು ರಚಿಸಿಕೊಟ್ಟವರು:

    ಅ) ಪಂಪ   ಬ) ಹರಿಹರ

    ಕ) ಮೆಕಾಲೆ   ಡ) ಕಿಟ್ಟೆಲ್

6. 'ಕನ್ನಡ ಸಂಸ್ಕೃತಿ' ಈ ರೀತಿಯಾಗಿದೆ :

    ಅ) ಬಹುರೂಪಿಯಾಗಿದೆ   ಬ) ವರ್ಣರಂಜಿತವಾಗಿದೆ

    ಕ) ಜೀವಂತವಾಗಿದೆ   ಡ) ಮೇಲಿನ ಎಲ್ಲವು

7. ಪತ್ರ ವ್ಯವಹಾರ – ಮನವಿಗಳಲ್ಲಿ ಇರಬೇಕಾದದ್ದು :

    ಅ) ಸ್ಪಷ್ಟ ಮಾಹಿತಿ   ಬ) ನೇರ ನಿರೂಪಣೆ

    ಕ) ಸೌಜನ್ಯ   ಡ) ಮೇಲಿನ ಎಲ್ಲವು

8. ಸಚಿವ + ಆಲಯ = ಸಚಿವಾಲಯ, ಇಲ್ಲಿರುವ ಸಂಧಿ :

    ಅ) ಸುವರ್ಣ ಸಂಧಿ   ಬ) ಸವರ್ಣ ಧೀರ್ಘ ಸಂಧಿ

    ಕ) ರಾಜಯೋಗ ಸಂಧಿ   ಡ) ವೃದ್ಧಿ ಸಂಧಿ

9. 'ವಿಶ್ವ ಮಾನವತೆ' ಎನನ್ನು ಪ್ರತಿಪಾದಿಸುತ್ತದೆ?

    ಅ) ಕಂದಾಚಾರ   ಬ) ಮೂಢನಂಬಿಕೆ

    ಕ) ಸಾಮರಸ್ಯ–ಸಹಿಷ್ಣುತೆ   ಡ) ಮತೀಯ ದ್ವೇಷ

10. 'ಪಡುವಣ' ಪದದ ವಿರುದ್ಧಾರ್ಥಕ ಪದ

    ಅ) ಕೊಂಕಣ   ಬ) ಬಡಗಣ

    ಕ) ತೆಂಕಣ   ಡ) ಮೂಡಣ

11. 'ನಾನು ನಿನ್ನೆ ಕೆ.ಜಿ.ಎಫಗೆ ಹೋಗಿದ್ದೆನು' ಈ ವಾಕ್ಯದಲ್ಲಿರುವ ಕಾಲ :

    ಅ) ಭೂತ ಕಾಲ   ಬ) ರಾಜಯೋಗ ಕಾಲ

    ಕ) ಯಮಗಂಡ ಕಾಲ   ಡ) ರಾಹು ಕಾಲ

12. 'ಫೋಟೋಗ್ರಾಫಿ' ಪದಕ್ಕೆ ಸಮನಾದ ಕನ್ನಡದ ಪದ:

    ಅ) ವರ್ಣ ಚಿತ್ರ   ಬ) ಛಾಯಾ ಚಿತ್ರ

    ಕ) ತೈಲ ಚಿತ್ರ   ಡ) ಚಲನ ಚಿತ್ರ

13. 'ಬೆಣ್ಣೆ ಹಚ್ಚು' ಪದದ ಸರಿಯಾದ ಅರ್ಥ:

    ಅ) ರೊಟ್ಟಿಗೆ ಬೆಣ್ಣೆ ಹಚ್ಚು   ಬ) ದೋಸೆಗೆ ಬೆಣ್ಣೆ ಹಚ್ಚು

    ಕ) ಹೊಗಳುವುದು   ಡ) ರಾಗಿಮುದ್ದೆಗೆ ಬೆಣ್ಣೆ

14. 'ಎಲ್ಲ ಹುಡಿಗಿಯರ ಕನಸು' ಕವನ ಯಾವುದರ ಕುರಿತಾಗಿದೆ?

ಅ) ಸಂಪ್ರದಾಯಗಳಿಗಿಂತಲು ಮಿಗಿಲಾಗಿರುವುದು ಮಹಿಳೆಯ ಘನತೆ.

ಬ) ಮಹಿಳಾ ಮೀಸಲಾತಿ

ಕ) ಸಮಾನತೆಗಾಗಿ ಚಳುವಳಿ

ಡ) ಕನಸಿನ ಮದುವೆ

15. ಶ್ರೀ 'ಬಂದೇ ನವಾಜ್' ಯಾರು?

ಅ) ಗುಲಬರ್ಗಾದ ಸೂಫಿ ಸಂತರು   ಬ) ಬ್ರಿಟಿಶರಿಂದ ಉಂಬಳಿ ಪಡೆದವರು

ಕ) ವಜ್ರ ವ್ಯಾಪಾರಿಗಳು   ಡ) ಗಣೆ ಘಣೆ

16. 'ರೆಹಮಾನರ ಹಾಡಿನ ಕಂಪೋಝ್ಹಿಶನ ಚೆನ್ನಾಗಿದೆ' ಎನ್ನುವ ವಾಕ್ಯದಲ್ಲಿ ಕಂಪೋಝ್ಹಿಶನ ಪದಕ್ಕೆ ಸರಿಯಾದ ಕನ್ನಡದ ಪದ:

ಅ) ಧ್ವನಿ ಸಂಪತ್ತು   ಬ) ಸಂಯೋಜನೆ

ಕ) ನಿರ್ದೇಶನ   ಡ) ಕಂಠದಾನ

17. 'ಆನೆಹಳ್ಳದಲ್ಲಿ ಹುಡುಗಿಯರು' ಲೇಖನದಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳ ಪ್ರವಾಸದ ಉದ್ದೇಶ :

ಅ) ಆನೆ ದಂತ ಸಂಗ್ರಹಣೆ   ಬ) ಖೆಡ್ಡಾಗಳ ಕುರಿತು ಅಧ್ಯಯನ

ಕ) ಸಸ್ಯ ವೀಕ್ಷಣೆ   ಡ) ಹುಲಿ ವೀಕ್ಷಣೆ

18. ಡಾ|| ಬೆಸಗರಹಳ್ಳಿ ರಾಮಣ್ಣನವರ 'ಗಾಂಧಿ' ಕಥೆ ಏನನ್ನು ಪ್ರತಿಪಾದಿಸುತ್ತದೆ?

ಅ) ವರ್ಣಾಶ್ರಮ ಪದ್ಧತಿ

ಬ) ಜಾತೀಯತೆ

ಕ) ಮುಢ ನಂಬಿಕೆ

ಡ) ಮಹಾತ್ಮ ಗಾಂಧೀಜಿಯವರ ಮೌಲ್ಯಗಳಿಗೆ ಒದಗಿರುವ ಅವಸ್ಥೆಯನ್ನು

19. ಶ್ರೀ ಶಿವರಾಮ ಕಾರಂತರ "ದೋಣಿ ಹರಿಗೋಲುಗಳಲ್ಲಿ" ಲೇಖನ ಯಾವ ರೀತಿ ಯಾಗಿದೆ?

ಅ) ವಿಡಂಬನೆ   ಬ) ನಾಟಕ

ಕ) ಪ್ರವಾಸ ಕಥನ   ಡ) ತಂತ್ರಜ್ಞಾನ ಲೇಖನ

20. ಶ್ರೀ ವಿಶ್ವೇಶ್ವರಯ್ಯನವರ ವ್ಯಕ್ತಿತ್ವಕ್ಕೆ ಹೊಂದಿಕೊಳ್ಳುವಂತದ್ದು :

ಅ) ಶಿಸ್ತು   ಬ) ಪಾಶ್ಚಾತ್ಯ ದಿರಿಸು

ಕ) ಹೊಣೆಗಾರಿಕೆ   ಡ) ಮೇಲಿನ ಎಲ್ಲವು

21. 'ಸುಖ' ಪದಕ್ಕೆ ವಿರುದ್ಧಾರ್ಥಕ ಪದ :

ಅ) ದುಃಖ   ಬ) ನಲಿವು

ಕ) ಸಂತೋಷ   ಡ) ಒಲವು

22. 'ನಮ್ಮ ಎಮ್ಮೆಗೆ ಮಾತು ತಿಳಿಯುವುದೇ?' ಲೇಖನ ಯಾವ ರೀತಿಯಲ್ಲಿದೆ?
ಅ) ತಂತ್ರಜ್ಞಾನ ಲೇಖನ   ಬ) ವಿನೋದ ಲೇಖನ
ಕ) ಪತ್ರಿಕಾ ಅಂಕಣ   ಡ) ನಾಟಕ

23. ಶ್ರೀ ಪಿ.ಲಂಕೇಶ 'ಗುಬ್ಬಚ್ಚಿಗೂಡು' ಲೇಖನದಲ್ಲಿ ಚಿಂತಿಸಿರುವುದು :
ಅ) ಭಟ್ಟಂಗಿಗಳ ಬದುಕು   ಬ) ದೀನತೆಯ ಬದುಕು
ಕ) ಸ್ವಂತಿಕೆಯ ಬದುಕು   ಡ) ಅಸಮಾನತೆಯ ಬದುಕು

24. 'ಜನ' ಯಾವ ಲಿಂಗ
ಅ) ಸ್ತ್ರೀ ಲಿಂಗ   ಬ) ಪುಲ್ಲಿಂಗ
ಕ) ಅಲಿಂಗ   ಡ) ನಪುಂಸಕಲಿಂಗ

25. 'ಅಂಬಿಕಾತನಯದತ್ತ' ಕಾವ್ಯನಾಮದ ಕವಿ :
ಅ) ದ.ರಾ. ಬೇಂದ್ರೆ   ಬ) ಕೆ.ವಿ.ಪುಟ್ಟಪ್ಪ
ಕ) ವಿ.ಕೃ.ಗೋಕಾಕ   ಡ) ಗೋಪಾಲಕೃಷ್ಣ ಅಡಿಗ

26. ಕನ್ನಡಕ್ಕೆ ಸಂದಿರುವ ಜ್ಞಾನಪೀಠ ಪ್ರಶಸ್ತಿಗಳು :
ಅ) ೧೦   ಬ) ೮
ಕ) ೭   ಡ) ೯

27. 'ಶ್ರಾವಣ' ಕವನದಲ್ಲಿ ಕವಿ ಯಾವುದರ ಸೌಂದರ್ಯವನ್ನು ವರ್ಣಿಸಿದ್ದಾರೆ?
ಅ) ಧಾರವಾಡದ   ಬ) ಬೆಂಗಳೂರಿನ
ಕ) ನಿಸರ್ಗದ   ಡ) ಬೆಳಗಾವಿಯ

28. ಶ್ರೀ ವಿಶ್ವೇಶ್ವರಯ್ಯನವರು ಮೊದಲಬಾರಿ ಜೋಗ ಜಲಪಾತದ ಎದುರು ನಿಂತಾಗ ಹೇಳಿದ್ದು:
ಅ) ಎಷ್ಟೊಂದು ಬೆಳೆ ಪೋಲಾಗುತ್ತಿದೆ
ಬ) ಎಷ್ಟೊಂದು ಸಮಯ ಪೋಲಾಗುತ್ತಿದೆ
ಕ) ಎಷ್ಟೊಂದು ಹಣ ಪೋಲಾಗುತ್ತಿದೆ
ಡ) ಎಷ್ಟೊಂದು ಶಕ್ತಿ ಪೋಲಾಗುತ್ತಿದೆ

29. ಶ್ರೀ ಕುವೆಂಪುರವರ ಲೇಖನ ಯಾವ ಭಾಗದ ಚಿತ್ರಣವನ್ನು ನೀಡುತ್ತದೆ?
ಅ) ಮಲೆನಾಡು   ಬ) ಕರಾವಳಿ
ಕ) ಮರುಭೂಮಿ   ಡ) ದೊಡ್ಡನಗರ ಪ್ರದೇಶ

30. ಶ್ರೀ ವಿಶ್ವೇಶ್ವರಯ್ಯನವರ ಭಾಷಣಕ್ಕೆ ಯಾವುದು ಸರಿಹೊಂದುವುದಿಲ್ಲ?
ಅ) ಆಲೋಚನೆಯಲ್ಲಿ ಸತ್ಯನಿಷ್ಠೆ.
ಬ) ಹಾವಭಾವ–ಮಾತಿನ ಮಂಟಪದಲ್ಲಿ ಜನರನ್ನು ಮರಳುಮಾಡುವುದು.
ಕ) ಭಾಷಣದ ಕುರಿತು ತಯಾರಿ
ಡ) ಶ್ರೋತೃವರ್ಗಕ್ಕೆ ಗೌರವ

* * * * *
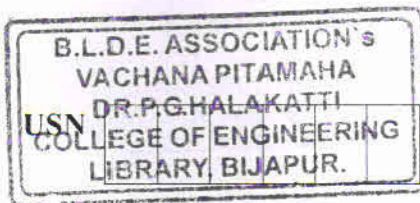
CBCS SCHEME

17CPH39

Question Paper Version : A

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Constitution of India, Professional Ethics and Human Rights (CPH)

(COMMON TO ALL BRANCHES)

Time: 2 hrs.]   [Max. Marks: 30

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the thirty questions, each question carries **ONE mark**.

2. Use only **Black ball point pen** for writing / darkening the circles.

3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**

4. Darkening two circles for the same question makes the answer invalid.

5. **Damaging/overwriting, use of whiteners** on the **OMR** sheets are strictly prohibited.

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1. The constitution of India derives its authority from the
    a) Parliament of India   b) Supreme Court of India
    c) People of India   d) Constituent Assembly of India

2. It is not the objective enshrined in the preamble
    a) Equality of status   b) Secure shelter and proper livelihood to all
    c) Liberty of thought and expression   d) Social, economic and political justice

3. Right of decent environment includes
    a) Freedom to reside in any part of India.   b) Right to religion
    c) Right to equal protection of law.   d) Right to life.

4. The Emergency provisions incorporated in the Constitution of India were influenced by the Constitution of
    a) German Reich   b) U.S.A
    c) Russia   d) Canada

5. The Directive Principles of State Policy directs the State to secure to all workers
    a) Minimum wages   b) Fair wages
    c) Living wages   d) Standard wages

6. This is not a fundamental duty.
   a) To defend the country
   b) To abjure violence
   c) To uphold and protect sovereignty of India
   d) To make scientific improvement

7. The ground for the impeachment of President is
   a) Failure to follow the advice given by the Prime Minister
   b) Unable to discharge his duties due to old age
   c) Violation of the constitution
   d) Misbehaviour with foreign dignitaries.

8. The size of the Union council of ministers including Prime Minister shall not be more than _____ percent of the members strength of Lok Sabha.
   a) 10
   b) 15
   c) 18
   d) 20

9. The total number of elected members from various states in Lok Sabha are
   a) 530
   b) 540
   c) 550
   d) 500

10. This is not the jurisdiction of the Supreme Court.
    a) Original Jurisdiction
    b) Emergency Jurisdiction
    c) Appellate Jurisdiction
    d) Advisory Jurisdiction.

11. Collective responsibility of the State Council of Ministers means, all Ministers are collectively responsible to the
    a) Chief Minister
    b) Governor
    c) State Legislative Council
    d) State Legislative Assembly.

12. The Governor may resign his office by writing to
    a) The Prime Minister
    b) The President
    c) The Chief Justice of High Court
    d) The Chief Minister of the State

13. The Election Commission of India does not conduct election to
    a) The Parliament
    b) The office of the President
    c) The post of Prime Minister
    d) The office of the Vice President

14. What is the tenure of the Chief Election Commissioner and other election commissioners?
    a) 3 years or upto 62 years of age
    b) 5 years or upto 65 years of age
    c) 6 years or upto 65 years of age
    d) 5 years or upto 70 years of age

15. The procedure for amending the Indian Constitution is detailed under
    a) Art. 356
    b) Art. 360
    c) Art. 366
    d) Art. 368

16. Art. 21A – Right to Education as a Fundamental Right was added to the Indian constitution by
    a) 61st Constitution Amendment
    b) 74th Constitution Amendment
    c) 86th Constitution Amendment
    d) 91st Constitution Amendment

17. When the State Emergency is in operation, the President cannot interfere in the matters of
    a) State Judiciary
    b) State Executive
    c) State Legislature
    d) All of these.

18. While Proclamation of National Emergency is in operation, the President cannot suspend certain Fundamental Rights. These are
    a) Art. 14 and Art. 15
    b) Art. 14 and Art. 16
    c) Art. 20 and Art. 21
    d) Art. 32

19. B. P. Mandal commission appointed in 1978 by the President of India dealt with
    a) Rights of the minority
    b) Laws relating to child labour
    c) Laws relating to sexual harassment at work places
    d) Reservation for other backward classes (OBC) people in Government Jobs.

20. Who are considered to be vulnerable group?
    a) Women and children
    b) Scheduled Caste people
    c) Scheduled Tribe people
    d) All of these

21. Who can be appointed as the Chairman of the National Human Rights Commission?
    a) Any sitting judge of the Supreme Court
    b) Any retired Chief Justice of the Supreme Court
    c) Any person appointed by the President
    d) Retired Chief Justice of any High Court

22. National Human Rights commission is a _____
    a) Statutory body
    b) Constitutional body
    c) Multilateral Institution
    d) Both (a) and (c)

23. Powers, authority and responsibilities of Municipalities have been provided under
    a) Article 243 N
    b) Article 243 W
    c) Article 243 M
    d) None of these

24. Which among the following is considered as the training ground for the development of democratic institutions?
    a) Nagar Panchayats
    b) Municipalities
    c) Municipal Corporations
    d) Gram Panchayats

25. Good works mean
    a) Superior work done with great care and skill
    b) Responsible work
    c) Work above and beyond the call of duty
    d) Work involving high risk.

26. Engineering profession is considered to be like a building, its foundation is
    a) Hard and sincere work
    b) Expert engineering knowledge and skill
    c) Sound common sense and expert knowledge
    d) Honesty

17CPH39

27. In engineering research work, cooking means
    a) Boiling under pressure
    b) Retaining only those results which fit the theory
    c) Making deceptive statements
    d) Misleading the public about the quality of the product

28. Engineering Ethics is a
    a) Preventive ethics   b) Natural ethics
    c) Technical ethics   d) Scientifically developed ethics

29. The author of a book retains the copy right for _____ after his or her death.
    a) 20 years   b) 30 years
    c) 60 years   d) 10 years

30. The public is put to increased risk by allowing increased number of deviations from specified standards of safety and acceptable risk is known as
    a) Normal accident   b) Normalizing deviance
    c) Risk assessment   d) Overestimated risk

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15CS42

Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Software Engineering

Time: 3 hrs.

Max. Marks: 80

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1 a. Explain briefly software engineering ethics. (04 Marks)
   b. With a suitable block diagram, explain water fall model. (06 Marks)
   c. Explain requirements engineering processes with suitable diagram. (06 Marks)

OR

2 a. With the help of neat diagram, explain insulin pump control system. (04 Marks)
   b. With a neat diagram, explain Boehm's spiral model. (08 Marks)
   c. Explain Ethnography in detail. (04 Marks)

Module-2

3 a. Draw a context model for Patient Management System. How the interactions are modeled? (06 Marks)
   b. With the help of a neat state diagram, illustrate the working of a microwave oven. (06 Marks)
   c. What is Model Driven Engineering? State the three types of abstract system models produced. (04 Marks)

OR

4 a. Illustrate how design models are the bridge between system requirements and the implementation of a system. Draw a sequence diagram describing data collection of weather information system. (05 Marks)
   b. What is design pattern? Explain four elements of design pattern. (05 Marks)
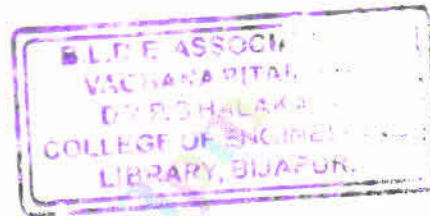   c. Discuss the implementation issues important in software engineering. (06 Marks)

Module-3

5 a. Explain development testing. Explain the three levels of granularity carried out in testing. (04 Marks)
   b. Discuss test driven development and state the benefits of test driven developments. (04 Marks)
   c. What is user testing? Explain six stages of acceptance testing process. (08 Marks)

OR

6 a. List and explain the 'Lehman's Law' concern to system change. (06 Marks)
   b. Explain software reengineering process with suitable diagram. State the activities of reengineering process. (06 Marks)
   c. Explain the four strategic options of legacy system management. (04 Marks)

Module-4

7 a. List and explain the factors affecting software pricing. (05 Marks)
   b. Explain in detail plan driven development approach to software engineering. (05 Marks)
   c. Explain the COCOMO – II estimation model. (06 Marks)

OR

8 a. Explain different types of software standards and mention their importance. (05 Marks)
   b. Explain how reviews and inspections are used to check the quality of project delivery.
      (06 Marks)
   c. List and explain the key stages in software component analysis. (05 Marks)
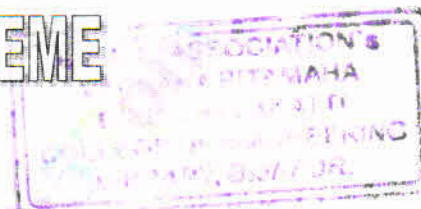
Module-5

9 a. Explain the ways of coping with change and reduction of rework cost. (06 Marks)
   b. Explain the practices involved in the extreme programming. (10 Marks)

OR

10 a. State the principle of agile methods. (05 Marks)
    b. Explain plan drive and agile development approach for software development. (05 Marks)
    c. Write a note on pair programming. (06 Marks)

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USN ☐☐☐☐☐☐☐☐☐☐   **15CS43**

Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Design and Analysis of Algorithms

Time: 3 hrs.   Max. Marks: 80

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1   a. What is an algorithm? What are the properties of an algorithm? Explain with an example.   **(04 Marks)**

    b. Explain the general plan for analyzing the efficiency of a recursive algorithm. Suggest a recursive algorithm to find factorial of a number. Derive its efficiency.   **(08 Marks)**

    c. If $t_1(n) \in O(g_1(n))$ and $t_2(n) \in O(g_2(n))$ prove that $t_1(n) + t_2(n) \in O(\max\{g_1(n), g_2(n)\})$.   **(04 Marks)**

OR

2   a. Explain the asymptotic notations with examples.   **(06 Marks)**

    b. Distinguish between the two common ways to represent a graph.   **(04 Marks)**

    c. Discuss about the important problem types and fundamental data structures.   **(06 Marks)**

Module-2

3   a. Discuss how quick-sort works to sort an array and trace for the following data set. Draw the tree of recursive calls made.

65	70	75	80	85	60	55	50	45

       Derive the best case complexity of quick sort algorithm.   **(10 Marks)**

    b. Briefly explain the Strassen's matrix multiplication. Obtain its time complexity.   **(06 Marks)**

OR

4   a. Explain the concept of divide and conquer. Design an algorithm for merge sort and derive its time complexity.   **(10 Marks)**

    b. What are the three major variations of decrease and conquer technique? Explain with an example for each.   **(06 Marks)**

Module-3

5 a. Explain the concept of greedy technique for Prim's algorithm. Obtain a minimum cost spanning tree for the graph shown in Fig.Q5(a). **(08 Marks)**
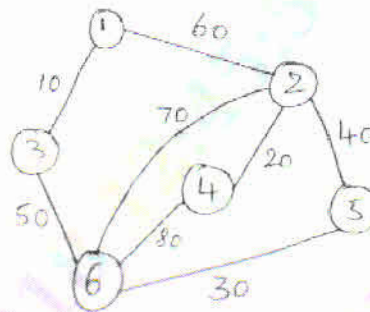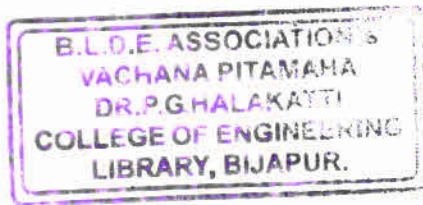
Fig.Q5(a)

b. Solve the below instance of the single source shortest path problem with vertex 6 as the source. With the help of a suitable algorithm. **(08 Marks)**
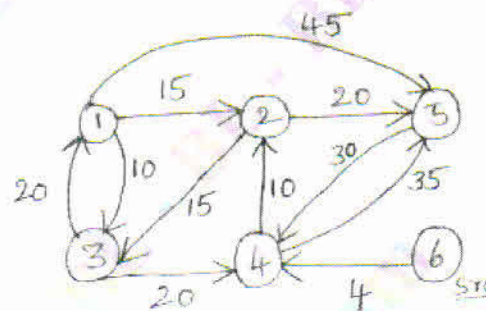
Fig.Q5(b)

OR

6 a. What are Huffman trees? Explain. Construct a Huffman code for the following data :

Character	A	B	C	D	E	–
Probability	0.5	0.35	0.5	0.1	0.4	0.2

Encode DAD_CBE using Huffman encoding. **(08 Marks)**

b. Explain transform and conquer technique. Sort the below list using Heap sort :
3, 2, 4, 1, 6, 5. **(08 Marks)**

Module-4

7 a. Define transitive closure of a graph. Write Warshall's algorithm to compute transitive closure of a directed graph. Apply the same on the graph defined by the following adjacency matrix :

$$R = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}.$$

(08 Marks)

b. Using Dynamic programming, solve the below instance of knapsack problem. **(08 Marks)**

Item	Weight	Value
1	2	12
2	1	10
3	3	20
4	2	15

Capacity w = 5

15CS43

OR

8 a. Obtain a optimal binary search tree for the following four–key set. (08 Marks)

Key	A	B	C	D
Probability	0.1	0.2	0.4	0.3

b. Solve the following travelling sales person problem represented as a graph shown in Fig.Q8(b), using dynamic programming. (08 Marks)
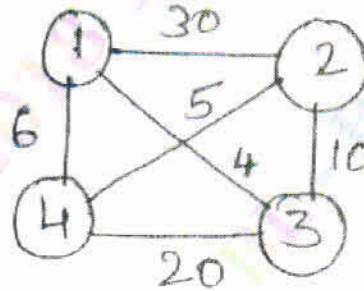

Fig.Q8(b)

Module-5

9 a. What is the central principle of backtracking? Apply backtracking to solve the below instance of sum of subset problem
$S = \{5, 10, 12, 13, 15, 18\}$ $d = 30$. (08 Marks)

b. Solve the below instance of assignment problem using branch and bound algorithm.

$$C = \begin{bmatrix} 9 & 2 & 7 & 8 \\ 6 & 4 & 3 & 7 \\ 5 & 8 & 1 & 8 \\ 7 & 6 & 9 & 4 \end{bmatrix} \begin{matrix} \text{Person a} \\ \text{Person b} \\ \text{Person c} \\ \text{Person d} \end{matrix}$$

$$\begin{matrix} \text{Job}_1 & \text{Job}_2 & \text{Job}_3 & \text{Job}_4 \end{matrix}$$

(08 Marks)

OR

10 a. Draw the state-space tree to generate solutions to 4-Queen's problem. (04 Marks)

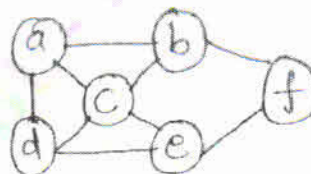b. Apply backtracking to the problem of finding a Hamiltonian circuit in the graph shown below : (04 Marks)

Fig.Q10(a)

c. Define the following :
   i) Class **P**
   ii) Class NP
   iii) NP complete problem
   iv) NP hard problem. (08 Marks)

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15CS44

Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Microprocessors and Microcontrollers

Time: 3 hrs.   Max. Marks: 80

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1 a. Explain with neat block diagram, the architecture of 8086 microprocessor.   (08 Marks)
   b. What are Addressing Modes? Discuss its types with suitable examples.   (08 Marks)

OR

2 a. Develop an assembly language program to calculate the sum of 5 bytes of data.   (05 Marks)
   b. With a neat block diagram, explain the three steps to create executable assembly language program.   (06 Marks)
   c. What are assembler directives? Discuss any three directives with examples.   (05 Marks)

Module-2

3 a. Discuss shift and rotate instruction of 8086 microprocessor with examples.   (08 Marks)
   b. Explain with suitable examples the logical instructions of 8086 microprocessor.   (04 Marks)
   c. Discuss multiplication (MUL) and division (DIV) instructions of 8086 microprocessor.   (04 Marks)

OR

4 a. What are interrupts? Discuss interrupt vector table with diagram for 8086 microprocessor.   (06 Marks)
   b. Write an assembly language program for 8086 that :
      i)   Clears the screen
      ii) Sets the cursor at the centre of screen.   (05 Marks)
   c. Develop an assembly language program for 8086 to convert Binary Coded Decimal (BCD) to ASCII.   (05 Marks)

Module-3

5 a. Explain the string instructions (MOVS, LODS, STOS, CMPS and SCAS) with suitable examples.   (08 Marks)
   b. Discuss the sign extension of 8 bit and 16 bit operands [CBW and CWD] in 8086 with suitable examples.   (08 Marks)

OR

6 a. Discuss 8086 input/output (IN and OUT) instructions with examples.   (04 Marks)
   b. Explain 8255 and its control word format with diagrams.   (08 Marks)
   c. Explain the features of 8255 PPI.   (04 Marks)

Module-4

7 a. Discuss the processor modes of CPSR with respect to ARM processor. (06 Marks)
   b. Write the comparison between microprocessor and microcontrollers. (04 Marks)
   c. Explain with neat block diagram the ARM based embedded device microcontroller.

   (06 Marks)

OR

8 a. Discuss the following with diagrams :
      i) Von Neumann architecture with cache
      ii) Harvard architecture with TCM. (08 Marks)
   b. Explain the pipeline mechanism in (Advanced RISC Machine)ARM processor. (08 Marks)

Module-5

9 a. Discuss the comparison instructions with examples with respect to ARM processor.

   (05 Marks)
   b. Explain the Barrel shifter operation in ARM processor with diagram. (06 Marks)
   c. Explain the arithmetic instructions with examples with respect to ARM process. (05 Marks)

OR

10 a. Explain briefly co-processor instructions of ARM processor. (04 Marks)
    b. Discuss the load store instructions with respect to :
       i) Single Register Transfer
       ii) Multiple Register Transfer. (07 Marks)
    c. Write a short note on Swap instructions with examples with respect to ARM processor.

    (05 Marks)

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15CS45

Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Object Oriented Concepts

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. Write the differences between procedure oriented program and object oriented program.
   (04 Marks)
   b. List and explain any four features of object oriented program. **(05 Marks)**
   c. What is function overloading? Write a C++ program to define three overloaded functions to find the sum of two integers, sum of two floating point numbers and sum of three integers.
   (07 Marks)

OR

2 a. Define a Student class with following measures:
   Data members: RollNo., Name, averagemarks
   Member function: to read the data, to print the data, write a C++ program to read the data of 10 students and print the 10 students information. **(05 Marks)**
   b. Define a friend function. Illustrate with an example. **(05 Marks)**
   c. What is constructor? Mention its types. Explain parameterized constructor with an example.
   (06 Marks)

Module-2

3 a. List and explain the java buzzwords. **(08 Marks)**
   b.
```
class Example {
 public static void main (String args[ ]) {
  int a;
  for (a = 0; a < 3; a++)
  { int b = –1;
    System.out.println ("      " + b);
    b = 50;
    System.out.println ("      " + b);
  }
 }
}
```
   What is the output of the above code? If you insert another 'int b' outside the for loop, what is the output. **(04 Marks)**
   c. With an example, explain in working of >> and >>> (unsigned right shift). **(04 Marks)**

OR

4 a. Define bytecode. How does it help java program(s) achieve portability? **(05 Marks)**
   b. Write a java program to sum only the first five elements of the array {1, 2, 3, 4, 5, 6, 7, 8, 9, 10} using "for each" version of the for loop. **(06 Marks)**
   c. Define type casting. Explain with an example. **(05 Marks)**

Module-3

5   a.   Define inheritance. Explain multilevel hierarchy with an example program.   (05 Marks)
    b.   Describe the various levels of access protections available for packages and their implications.   (07 Marks)
    c.   Distinguish between method overloading and overriding in Java, with suitable example.   (04 Marks)

OR

6   a.   Define exception. Explain exception handling mechanism with an example.   (08 Marks)
    b.   Discuss the following terms with example: i) super   ii) final   (08 Marks)

Module-4

7   a.   What is thread? Explain two ways of creating a thread in JAVA with example.   (08 Marks)
    b.   What is the need of synchronization? Explain with an example how synchronization is implemented in JAVA.   (08 Marks)

OR

8   a.   Explain the delegation event model used to handle events in JAVA. What are events, event listener and event sources?   (06 Marks)
    b.   With the syntax, explain the use of isAlive( ) and join( ) methods.   (04 Marks)
    c.   Explain Adapter class and Inner classes with example.   (06 Marks)

Module-5

9   a.   What is an Applet? Explain the skeleton of an Applet. Enlist applet tags.   (08 Marks)
    b.   Write a program using an Applet which will Print "key pressed" on the status window when you press the key, "key released" on the status window when you release the key and when you type the characters it should print "Hello" at coordinates (50, 50) on Applet.   (08 Marks)

OR

10 a.   Describe the two key features of swings.   (04 Marks)
    b.   Explain the following with an example for each and syntax:
        i)   JLabel
        ii) JTextfield
        iii) JButton
        iv) JComboBox   (12 Marks)

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Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Software Engineering

Time: 3 hrs.　　　　　　　　　　　　　　　　　　　　　Max. Marks: 80

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1　a. Explain briefly software engineering ethics. (04 Marks)
　b. With a suitable block diagram, explain water fall model. (06 Marks)
　c. Explain requirements engineering processes with suitable diagram. (06 Marks)

OR

2　a. With the help of neat diagram, explain insulin pump control system. (04 Marks)
　b. With a neat diagram, explain Boehm's spiral model. (08 Marks)
　c. Explain Ethnography in detail. (04 Marks)

Module-2

3　a. Draw a context model for Patient Management System. How the interactions are modeled? (06 Marks)
　b. With the help of a neat state diagram, illustrate the working of a microwave oven. (06 Marks)
　c. What is Model Driven Engineering? State the three types of abstract system models produced. (04 Marks)

OR

4　a. Illustrate how design models are the bridge between system requirements and the implementation of a system. Draw a sequence diagram describing data collection of weather information system. (05 Marks)
　b. What is design pattern? Explain four elements of design pattern. (05 Marks)
　c. Discuss the implementation issues important in software engineering. (06 Marks)

Module-3

5　a. Explain development testing. Explain the three levels of granularity carried out in testing. (04 Marks)
　b. Discuss test driven development and state the benefits of test driven developments. (04 Marks)
　c. What is user testing? Explain six stages of acceptance testing process. (08 Marks)

OR

6　a. List and explain the 'Lehman's Law' concern to system change. (06 Marks)
　b. Explain software reengineering process with suitable diagram. State the activities of reengineering process. (06 Marks)
　c. Explain the four strategic options of legacy system management. (04 Marks)

Module-4

7　a. List and explain the factors affecting software pricing. (05 Marks)
　b. Explain in detail plan driven development approach to software engineering. (05 Marks)
　c. Explain the COCOMO – II estimation model. (06 Marks)

OR

8 a. Explain different types of software standards and mention their importance. **(05 Marks)**
   b. Explain how reviews and inspections are used to check the quality of project delivery.
   (06 Marks)
   c. List and explain the key stages in software component analysis. **(05 Marks)**

Module-5

9 a. Explain the ways of coping with change and reduction of rework cost. **(06 Marks)**
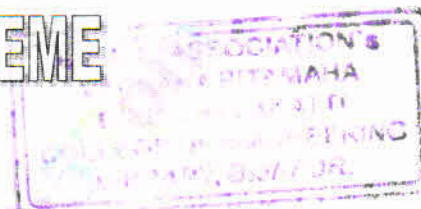   b. Explain the practices involved in the extreme programming. **(10 Marks)**

OR

10 a. State the principle of agile methods. **(05 Marks)**
   b. Explain plan drive and agile development approach for software development. **(05 Marks)**
   c. Write a note on pair programming. **(06 Marks)**

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Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Design and Analysis of Algorithms

Time: 3 hrs.   Max. Marks: 80

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1 a. What is an algorithm? What are the properties of an algorithm? Explain with an example.
   (04 Marks)
   b. Explain the general plan for analyzing the efficiency of a recursive algorithm. Suggest a recursive algorithm to find factorial of a number. Derive its efficiency. **(08 Marks)**
   c. If $t_1(n) \in O(g_1(n))$ and $t_2(n) \in O(g_2(n))$ prove that $t_1(n) + t_2(n) \in O(\max\{g_1(n), g_2(n)\})$.
   (04 Marks)

OR

2 a. Explain the asymptotic notations with examples. **(06 Marks)**
   b. Distinguish between the two common ways to represent a graph. **(04 Marks)**
   c. Discuss about the important problem types and fundamental data structures. **(06 Marks)**

Module-2

3 a. Discuss how quick-sort works to sort an array and trace for the following data set. Draw the tree of recursive calls made.

65	70	75	80	85	60	55	50	45

   Derive the best case complexity of quick sort algorithm. **(10 Marks)**
   b. Briefly explain the Strassen's matrix multiplication. Obtain its time complexity. **(06 Marks)**

OR

4 a. Explain the concept of divide and conquer. Design an algorithm for merge sort and derive its time complexity. **(10 Marks)**
   b. What are the three major variations of decrease and conquer technique? Explain with an example for each. **(06 Marks)**

Module-3

5 a. Explain the concept of greedy technique for Prim's algorithm. Obtain a minimum cost spanning tree for the graph shown in Fig.Q5(a). **(08 Marks)**

Fig.Q5(a)

b. Solve the below instance of the single source shortest path problem with vertex 6 as the source. With the help of a suitable algorithm. **(08 Marks)**

Fig.Q5(b)

OR

6 a. What are Huffman trees? Explain. Construct a Huffman code for the following data :

Character	A	B	C	D	E	–
Probability	0.5	0.35	0.5	0.1	0.4	0.2

Encode DAD_CBE using Huffman encoding. **(08 Marks)**

b. Explain transform and conquer technique. Sort the below list using Heap sort :
3, 2, 4, 1, 6, 5. **(08 Marks)**

Module-4

7 a. Define transitive closure of a graph. Write Warshall's algorithm to compute transitive closure of a directed graph. Apply the same on the graph defined by the following adjacency matrix :

$$R = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}.$$ **(08 Marks)**

b. Using Dynamic programming, solve the below instance of knapsack problem. **(08 Marks)**

Item	Weight	Value
1	2	12
2	1	10
3	3	20
4	2	15

Capacity w = 5

15CS43

OR

8 a. Obtain a optimal binary search tree for the following four–key set. **(08 Marks)**

Key	A	B	C	D
Probability	0.1	0.2	0.4	0.3

b. Solve the following travelling sales person problem represented as a graph shown in Fig.Q8(b), using dynamic programming. **(08 Marks)**

Fig.Q8(b)

Module-5

9 a. What is the central principle of backtracking? Apply backtracking to solve the below instance of sum of subset problem
$S = \{5, 10, 12, 13, 15, 18\}$ $d = 30$. **(08 Marks)**

b. Solve the below instance of assignment problem using branch and bound algorithm.

$$C = \begin{bmatrix} 9 & 2 & 7 & 8 \\ 6 & 4 & 3 & 7 \\ 5 & 8 & 1 & 8 \\ 7 & 6 & 9 & 4 \end{bmatrix} \begin{matrix} \text{Person a} \\ \text{Person b} \\ \text{Person c} \\ \text{Person d} \end{matrix}$$

with columns Job_1, Job_2, Job_3, Job_4

(08 Marks)

OR

10 a. Draw the state-space tree to generate solutions to 4-Queen's problem. **(04 Marks)**

b. Apply backtracking to the problem of finding a Hamiltonian circuit in the graph shown below : **(04 Marks)**

Fig.Q10(a)

c. Define the following :
   i) Class **P**
   ii) Class **NP**
   iii) NP complete problem
   iv) NP hard problem. **(08 Marks)**

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15CS44

Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Microprocessors and Microcontrollers

Time: 3 hrs.

Max. Marks: 80

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1 a. Explain with neat block diagram, the architecture of 8086 microprocessor. **(08 Marks)**
   b. What are Addressing Modes? Discuss its types with suitable examples. **(08 Marks)**

OR

2 a. Develop an assembly language program to calculate the sum of 5 bytes of data. **(05 Marks)**
   b. With a neat block diagram, explain the three steps to create executable assembly language program. **(06 Marks)**
   c. What are assembler directives? Discuss any three directives with examples. **(05 Marks)**

Module-2

3 a. Discuss shift and rotate instruction of 8086 microprocessor with examples. **(08 Marks)**
   b. Explain with suitable examples the logical instructions of 8086 microprocessor. **(04 Marks)**
   c. Discuss multiplication (MUL) and division (DIV) instructions of 8086 microprocessor. **(04 Marks)**

OR

4 a. What are interrupts? Discuss interrupt vector table with diagram for 8086 microprocessor. **(06 Marks)**
   b. Write an assembly language program for 8086 that :
      i) Clears the screen
      ii) Sets the cursor at the centre of screen. **(05 Marks)**
   c. Develop an assembly language program for 8086 to convert Binary Coded Decimal (BCD) to ASCII. **(05 Marks)**

Module-3

5 a. Explain the string instructions (MOVS, LODS, STOS, CMPS and SCAS) with suitable examples. **(08 Marks)**
   b. Discuss the sign extension of 8 bit and 16 bit operands [CBW and CWD] in 8086 with suitable examples. **(08 Marks)**

OR

6 a. Discuss 8086 input/output (IN and OUT) instructions with examples. **(04 Marks)**
   b. Explain 8255 and its control word format with diagrams. **(08 Marks)**
   c. Explain the features of 8255 PPI. **(04 Marks)**

15CS44

Module-4

7   a.   Discuss the processor modes of CPSR with respect to ARM processor.   **(06 Marks)**
    b.   Write the comparison between microprocessor and microcontrollers.   **(04 Marks)**
    c.   Explain with neat block diagram the ARM based embedded device microcontroller.
                                                                              (06 Marks)

OR

8   a.   Discuss the following with diagrams :
         i)   Von Neumann architecture with cache
         ii) Harvard architecture with TCM.   **(08 Marks)**
    b.   Explain the pipeline mechanism in (Advanced RISC Machine)ARM processor.   **(08 Marks)**

Module-5

9   a.   Discuss the comparison instructions with examples with respect to ARM processor.
                                                                              (05 Marks)
    b.   Explain the Barrel shifter operation in ARM processor with diagram.   **(06 Marks)**
    c.   Explain the arithmetic instructions with examples with respect to ARM process.   **(05 Marks)**

OR

10 a.   Explain briefly co-processor instructions of ARM processor.   **(04 Marks)**
    b.   Discuss the load store instructions with respect to :
         i)   Single Register Transfer
         ii) Multiple Register Transfer.   **(07 Marks)**
    c.   Write a short note on Swap instructions with examples with respect to ARM processor.
                                                                              (05 Marks)

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15CS45

Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Object Oriented Concepts

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. Write the differences between procedure oriented program and object oriented program.
(04 Marks)

   b. List and explain any four features of object oriented program. **(05 Marks)**

   c. What is function overloading? Write a C++ program to define three overloaded functions to find the sum of two integers, sum of two floating point numbers and sum of three integers.
(07 Marks)

OR

2 a. Define a Student class with following measures:
Data members: RollNo., Name, averagemarks
Member function: to read the data, to print the data, write a C++ program to read the data of 10 students and print the 10 students information. **(05 Marks)**

   b. Define a friend function. Illustrate with an example. **(05 Marks)**

   c. What is constructor? Mention its types. Explain parameterized constructor with an example.
(06 Marks)

Module-2

3 a. List and explain the java buzzwords. **(08 Marks)**

   b.
```
class Example {
 public static void main (String args[ ]) {
  int a;
  for (a = 0; a < 3; a++)
  {  int b = –1;
    System.out.println ("     " + b);
    b = 50;
    System.out.println ("     " + b);
  }
 }
}
```
What is the output of the above code? If you insert another 'int b' outside the for loop, what is the output. **(04 Marks)**

   c. With an example, explain in working of >> and >>> (unsigned right shift). **(04 Marks)**

OR

4 a. Define bytecode. How does it help java program(s) achieve portability? **(05 Marks)**

   b. Write a java program to sum only the first five elements of the array {1, 2, 3, 4, 5, 6, 7, 8, 9, 10} using "for each" version of the for loop. **(06 Marks)**

   c. Define type casting. Explain with an example. **(05 Marks)**

Module-3

5 a. Define inheritance. Explain multilevel hierarchy with an example program. **(05 Marks)**
   b. Describe the various levels of access protections available for packages and their implications. **(07 Marks)**
   c. Distinguish between method overloading and overriding in Java, with suitable example. **(04 Marks)**

OR

6 a. Define exception. Explain exception handling mechanism with an example. **(08 Marks)**
   b. Discuss the following terms with example: i) super   ii) final **(08 Marks)**

Module-4

7 a. What is thread? Explain two ways of creating a thread in JAVA with example. **(08 Marks)**
   b. What is the need of synchronization? Explain with an example how synchronization is implemented in JAVA. **(08 Marks)**

OR

8 a. Explain the delegation event model used to handle events in JAVA. What are events, event listener and event sources? **(06 Marks)**
   b. With the syntax, explain the use of isAlive( ) and join( ) methods. **(04 Marks)**
   c. Explain Adapter class and Inner classes with example. **(06 Marks)**

Module-5

9 a. What is an Applet? Explain the skeleton of an Applet. Enlist applet tags. **(08 Marks)**
   b. Write a program using an Applet which will Print "key pressed" on the status window when you press the key, "key released" on the status window when you release the key and when you type the characters it should print "Hello" at coordinates (50, 50) on Applet. **(08 Marks)**

OR

10 a. Describe the two key features of swings. **(04 Marks)**
    b. Explain the following with an example for each and syntax:
        i)   JLabel
        ii) JTextfield
        iii) JButton
        iv) JComboBox **(12 Marks)**

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15CS51

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Management and Entrepreneurship for IT Industry

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. Explain the various roles of a manager. (06 Marks)
    b. Explain the contribution of FW Taylor to the theory of management. (10 Marks)

OR

2   a. Explain the steps involved in planning, and give the importance and purpose of planning process. (12 Marks)
    b. What are MBO and MBE? Explain. (04 Marks)

Module-2

3   a. Explain types of leaders or leadership styles. (06 Marks)
    b. Explain steps in controlling. (10 Marks)

OR

4   a. Explain Maslow's hierarchy theory. (10 Marks)
    b. Explain the following: (i) Cognitive evaluation theory
                              (ii) Herzberg (two factor theory) (06 Marks)

Module-3

5   a. Differentiate between entrepreneur, intraprenur and manager. (04 Marks)
    b. Explain various stages in entrepreneurial process. (12 Marks)

OR

6   a. List some of the most commonly attributed reasons for the lack of entrepreneurship in India. (12 Marks)
    b. Write short notes on: (i) Procrastination   (ii) Tying your dreams to age (04 Marks)

Module-4

7   a. Explain the phases of project identification with its sources. (04 Marks)
    b. List out various contents of project report. (12 Marks)

OR

8   a. Explain various factors to be considered for selection of a project. (06 Marks)
    b. Give the meaning of project appraisal. (10 Marks)

Module-5

9   a. Explain the following:
       (i) NSIC   (ii) DIC   (iii) NIMSMIET   (iv) NIESBUD   (v) KSFC (10 Marks)
    b. Justify WTO and its impact on Small Scale Industries in India. (06 Marks)

OR

10 a. What is TECSOK? Explain the services offered by TECSOK. (10 Marks)
    b. Explain the aims and objectives of KIADB. (06 Marks)

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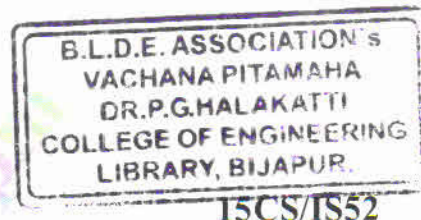
Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Computer Networks

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain HTTP messages.   (08 Marks)
   b. Explain web caching with diagram.   (08 Marks)

OR

2 a. Explain FTP with its commands and replies.   (08 Marks)
   b. Explain SMTP.   (04 Marks)
   c. Explain DNS resource record.   (04 Marks)

Module-2

3 a. Explain Sender's view of sequence numbers and its operation in Goback N protocol.
       (08 Marks)
   b. Draw TCP segment structure and explain.   (08 Marks)

OR

4 a. Explain 3 way handshake and closing a TCP connection.   (08 Marks)
   b. Explain the causes and costs of congestion.   (08 Marks)

Module-3

5 a. With diagram explain router architecture.   (08 Marks)
   b. Explain IP fragmentation.   (08 Marks)

OR

6 a. Explain distance vector algorithm.   (08 Marks)
   b. Explain 4 types of hierarchical OSPF routers.   (04 Marks)
   c. Compare link state with distance vector algorithm.   (04 Marks)

Module-4

7 a. Explain components of a cellular network architecture.   (08 Marks)
   b. Explain direct routing of a mobile node.   (08 Marks)

OR

8 a. Explain steps of handoff a mobile user.   (08 Marks)
   b. Explain HLR, VLR, home address, care-of-address.   (08 Marks)

Module-5

9 a. With diagram, explain naïve architecture for audio/video streaming.   (08 Marks)
   b. Explain audio compression in internet.   (08 Marks)

OR

10 a. With diagram, explain interaction between client and server using RTSP.   (08 Marks)
   b. Explain how streaming from streaming server to a media player is done.   (08 Marks)

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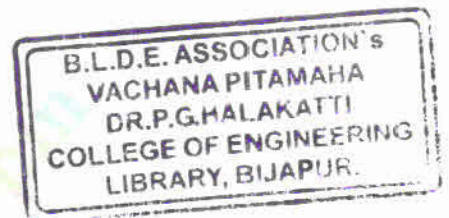
USN ☐☐☐☐☐☐☐☐☐☐ **15CS53**

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Database Management System

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1. a. What are the responsibilities of the DBA and Database Designer? **(06 Marks)**
   b. With neat diagram, explain "three schema Architecture". **(05 Marks)**
   c. Discuss the different types of user friendly interfaces and the types of user who typically use each. **(05 Marks)**

OR

2. a. Explain with block diagram the different phases of database design. **(08 Marks)**
   b. Draw an ER-Diagram of movie database. Assume your own entities (minimum 4) attributes and relationships. **(08 Marks)**

Module-2

3. a. Discuss the characteristics of relations. **(06 Marks)**
   b. Outline the steps to convert the basic ER Model to relational Database schema. **(06 Marks)**
   c. Define the following:
      i) Relation state
      ii) Relation schema
      iii) Arity
      iv) Domain. **(04 Marks)**

OR

4. a. Discuss the various types of set theory operations with example. **(08 Marks)**
   b. Consider the two tables, show the results of the following:

T_1		
A	B	C
10	a	5
15	b	8
25	a	6

T_2		
P	Q	R
10	b	6
25	c	3
10	b	5

i) $T_1 \bowtie_{T_1.B = T_2.Q} T_2$

ii) $T_1 \bowtie_{T_1.A = T_2.P} T_2$

iii) $T_1 \bowtie_{(T_1.A = T_2.P) \text{ AND } (T_1.C = T_2.R)} T_2$

iv) $T_1 - T_2$

(08 Marks)

15CS53

Module-3

5 a. How does SQL implement the entity integrity constraints of the relational data model? Explain with an example. **(04 Marks)**

   b. Discuss: i) Shared variables   ii) Communication variables. **(06 Marks)**

   c. Explain with examples in SQL:
   - i) Drop command
   - ii) Delete command
   - iii) Update command. **(06 Marks)**

OR

6 a. With program segment, explain retrieving of tuples with embedded SQL in C. **(06 Marks)**

   b. Consider the following tables:
   works (Pname, Cname, Salary)
   lives (Pname, Street, City)
   located-In (Cname, City)
   write the following queries in SQL:
   - i) List the names of the people who work for the company 'Wipro' along with the cities they live in.
   - ii) Find the names of the persons who do not work for 'Infosys'.
   - iii) Find the people whose salaries are more than that of all of the 'oracle' employees.
   - iv) Find the persons who works and lives in the same city. **(10 Marks)**

Module-4

7 a. What do you mean by closure of attribute? Write an algorithm to find closure of attribute. **(06 Marks)**

   b. Explain any two informal quality measures employed for a relation schema design. **(04 Marks)**

   c. Given below are two sets of FDs for a relation R (A, B, C, D, E). Are they equivalent?
   - i) $A \rightarrow B$, $AB \rightarrow C$, $D \rightarrow AC$, $D \rightarrow E$
   - ii) $A \rightarrow BC$, $D \rightarrow AE$ **(06 Marks)**

OR

8 a. What do you mean by multivalued dependency? Explain the 4NF with example. **(06 Marks)**

   b. Suggest and explain three different techniques to achieve 1NF using suitable example. **(04 Marks)**

   c. Consider the following relation for CARSALE (CAR-NO, Date-Sold, Salesman No, Commission, Discount)
   Assume a car can be sold by multiple salesman and hence primary key is {CAR_No, Salesman_No}.
   Additional dependencies are
   Date_Sold $\rightarrow$ Discount
   Salesman_No $\rightarrow$ Commission
   - i) Is this relation in 1NF, 2NF or 3NF? Why or why not?
   - ii) How would you normalize this completely? **(06 Marks)**

Module-5

9 a. Discuss the ACID properties of a transaction. **(04 Marks)**

   b. What are the anomalies occur due to interleave execution? Explain them with example. **(06 Marks)**

c. Consider the three transactions T_1, T_2 and T_3 and schedules S_1 and S_2 given below. Determine whether each schedule is serializable or not? If a schedule is serializable write down the equivalent serial schedule (S).

$T_1 : R_1(x); \ R_1(z); \ W_1(x);$

$T_2 : R_2(x); \ R_2(y); \ W_2(z); \ W_2(y);$

$T_3 : R_3(x); \ R_3(y); \ W_3(y);$

S1 : $R_1(x); \ R_2(z); \ R_1(z); \ R_3(x); \ R_3(y); \ W_1(x); \ W_3(y); \ R_2(y); \ W_2(z); \ W_2(y);$

S2 : $R_1(x); \ R_2(z); \ R_3(x); \ R_1(z); \ R_2(y); \ R_3(y); \ W_1(x); \ W_2(z); \ W_3(y); \ W_2(y);$

(06 Marks)

OR

10 a. Describe the problems that occur when concurrent execution uncontrolled. Give examples.
(06 Marks)

b. What is two phase locking? Describe with the help of an example.
(04 Marks)

c. What is Deadlock? Consider the following sequences of actions listed in the order they are submitted to the DBMS.
Sequence S1: $R_1(A); \ W_2(B); \ R_1(B); \ R_3(C); \ W_2(C); \ W_4(B); \ W_3(A)$
Draw waits-for graph in case of Deadlock situation.
(06 Marks)

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15CS54

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Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Automata Theory and Computability

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Define the following with example :
   i) String   ii) Language   iii) Alphabet   iv) DFSM.   **(08 Marks)**
   b. Design a DFSM to accept each of the following languages :
   i) $L = \{W \in \{0, 1\}^* : W$ has 001 as a substring$\}$
   ii) $L = \{W \in \{a, b\}^* : W$ has even number of a's and even number of b's$\}$.   **(08 Marks)**

OR

2 a. Define NDFSM. Convert the following NDFSM to its equivalent DFSM.   **(08 Marks)**
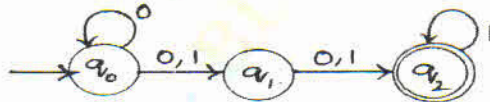
   b. Minimize the following DFSM.   **(08 Marks)**
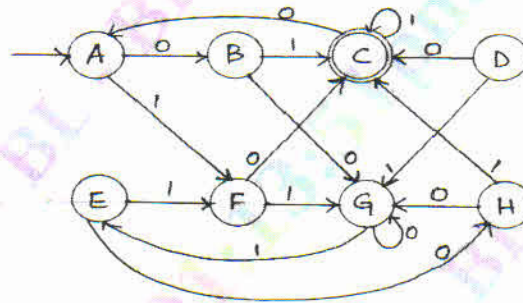
Module-2

3 a. Define Regular expression and write Regular expression for the following language.
   i) $L = \{a^{2n} b^{2m} \mid n \geq 0, m \geq 0\}$ **(08 Marks)**
   ii) $L = \{a^n b^m \mid m \geq 1, n \geq 1, nm \geq 3\}$.
   b. Obtain the Regular expression for the following FSM.   **(08 Marks)**
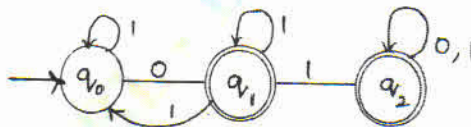
OR

4 a. Define a Regular grammar. Design regular grammars for the following languages.
   i)   Strings of a's and b's with at least one a.
   ii) Strings of a's and b's having strings without ending with ab.
   iii) Strings of 0's and 1's with three consecutive 0's.   **(08 Marks)**
   b. State and prove pumping theorem for regular languages.   **(08 Marks)**

15CS54

Module-3

5 a. Define context free grammar. Design a context free grammar for the languages. **(08 Marks)**
   i) $L = \{0^m 1^m 2^n \mid m \geq 0, n \geq 0\}$ ii) $L = \{a^i b^j \mid i \neq j, i \geq 0, j \geq 0\}$
   iii) $L = \{a^n b^{n-3} \mid n \geq 3\}$.

   b. Consider the grammar G with production.

   $S \rightarrow AbB$
   $A \rightarrow aA \mid \in$ **(08 Marks)**
   $B \rightarrow aB \mid bB \mid \in$

   Obtain leftmost derivation, rightmost derivation and parse tree for the string aaabab.

OR

6 a. Define a PDA. Obtain a PDA to accept
   $L = \{a^n b^n \mid W \in \{a, b\}^*\}$. Draw the transition diagram.   **(08 Marks)**

   b. Convert the following grammar into equivalent PDA.

   $S \rightarrow aABC$
   $A \rightarrow aB \mid a$ **(08 Marks)**
   $B \rightarrow bA \mid b$
   $C \rightarrow a$.

Module-4

7 a. State and prove pumping lemma for context free languages. Show that   **(10 Marks)**
   $L = \{a^n b^n c^n \mid n \geq 0\}$ is not context free.

   b. Explain Turing machine model.   **(06 Marks)**

OR

8 a. Design a Turing machine to accept the language $L = \{0^n 1^n 2^n \mid n \geq 1\}$.   **(08 Marks)**
   b. Design a Turing machine to accept strings of a's and b's ending with ab or ba.   **(08 Marks)**

Module-5

9 a. Explain the following :
   i) Non deterministic Turing machine   ii) Multi – tape Turing machine.   **(06 Marks)**

   b. Define the following :
   i) Recursively enumerable language   ii) Decidable language.   **(06 Marks)**

   c. What is Post correspondence problem?   **(04 Marks)**

OR

10 a. What is Halting problem of Turing machine?   **(06 Marks)**
    b. Define the following : i) Quantum computer   ii) Class NP.   **(06 Marks)**
    c. Explain Church Turing Thesis.   **(04 Marks)**

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15CS553

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Advanced JAVA and J2EE

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. What is auto-boxing? Write a program to demonstrate autoboxing/unboxing. **(05 Marks)**
    b. What do you mean by type wrapper? Explain numeric type wrapper with an example program in JAVA. **(05 Marks)**
    c. Explain the following methods of java.lang.Enum with an example:
       i) ordinal( )   ii) compareTo( )   iii) equals( ) **(06 Marks)**

OR

2   a. Demonstrate single annotation with an example. **(04 Marks)**
    b. Explain following built-in annotations with a program in Java:
       i) @Override   ii) @Inherited   iii) @Retention **(06 Marks)**
    c. Explain different retention policies for annotations in Java. **(06 Marks)**

Module-2

3   a. Explain ArrayList. Write a program to demonstrate how ArrayList can be used to insert and remover string. **(08 Marks)**
    b. Explain Queue interface. Explain different methods defined by Queue. **(08 Marks)**

OR

4   a. Create a class STUDENT with two private string members: USN, Name using LinkedList class in Java, write a program to add atleast 3 objects of above STUDENT class. Also display the data in neat format. **(08 Marks)**
    b. Explain ArrayList class and explain following methods:
       i) binarySearch   ii) copyOf   iii) equals   iv) fill **(08 Marks)**

Module-3

5   a. Explain following StringBuffer methods with an example:
       i) insert   ii) append   iii) replace   iv) substring **(08 Marks)**
    b. Differentiate String and StringBuffer class. Write a program to demonstrate different construction of String class. **(08 Marks)**

OR

6   a. Write a program to remove duplicate characters from a given string and display the resultant string. **(06 Marks)**
    b. Differentiate between equals( ) and = = with respect to string with a program. **(06 Marks)**
    c. Explain following character extraction method: i) charAt( )   ii) toCharArray( ) **(04 Marks)**

Module-4

7   a. What is the role of Tomcat server? Explain different steps involved in configuring for development of servlet program execution. **(08 Marks)**
    b. Write a Java servlet program to accept two parameter from webpage, find the sum of them, display the result in web page. Also give necessary html script to create web page. **(08 Marks)**

15CS553

OR

8   a. Explain different JSP tags with a program to demonstrate all tags. **(08 Marks)**
    b. What are cookies? How cookies are handled in JSP? Write a program to create with name "Username" and cookie value "xyz". Also display stored cookie in webpage. **(08 Marks)**

Module-5

9   a. What are database drivers? Explain different JDBC driver types. **(08 Marks)**
    b. List and explain various statement objects in JDBC. **(08 Marks)**

OR

10 a. Explain different steps involved in JDBC process, with a code snippet. Also give exception handling block. **(08 Marks)**
    b. Write a program to connect to database with following information:
        Drive: JDBC/ODBC bridge
        URL: "jdbc.odbc:Ex"
        Username: "xyz"
        Password: "123"
        Retrieve all rows with marks > 60 using prepared statement object. Assume following table:
        Table Name : STUDENT
        Fields : USN-Varchar (20)
                 Marks-int
                 Name-Varchar (25)

        (08 Marks)

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Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Advanced Algorithms

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain the various asymptotic notations with related graphs and examples. **(07 Marks)**
   b. Using the master method, solve the following recurrences.
      i) $T(n) = T(2n/3) + 1$
      ii) $T(n) = 2T(n/2) + \theta(n)$ **(04 Marks)**
   c. Apply Boyer-Moore algorithm to search for the pattern 'BAOBAB' in the text 'BESS_KNEW_ABOUT_BAOBABS. **(05 Marks)**

OR

2 a. Use a recursion tree to determine a good asymptotic upper bound on the recurrence $T(n) = 2T(n/2) + n$ **(08 Marks)**
   b. Working modulo q = 11, how many spurious hits does the Rabin-Karp matcher encounter in the text T = 3141592653589793, when looking for the pattern P = 26? Also, indentify them. **(04 Marks)**
   c. Compute the prefix function π for the pattern 'ababbabbabbabababbabb' in the alphabet $\sum = \{a, b\}$ for the KMP algorithm. **(04 Marks)**

Module-2

3 a. Write the extended Euclid's algorithm and compute the values (d, x, y) that the call Extended_Euclid (99, 78) returns. **(05 Marks)**
   b. Illustrate the Chinese remainder theorem to compute the solution to the equations
      $a \equiv 2 \pmod 5$
      $a \equiv 3 \pmod{13}$ **(05 Marks)**
   c. Consider a key set with p = 11, q = 29 and e = 3. Make use of RSA algorithm to find the value of 'd' which should be used in the secret key. What is the encryption of the message M = 100? **(06 Marks)**

OR

4 a. Draw the group operation tables for the groups $(z_4, +_4)$ and $(z_5^*, \cdot 5)$. **(04 Marks)**
   b. Find all solutions to the following equation using modular linear equation solver
      $35x \equiv 10 \pmod{50}$ **(05 Marks)**
   c. Write the Huffman code algorithm and apply it to find the optimal Huffman code for the following set of frequencies.
      a : 45 b : 13 c : 12 d : 16 e : 9 f : 5 **(07 Marks)**

15CS554

Module-3

5 a. Apply the Bellman – Ford algorithm for the following graph to find the shortest path from the source vertex 's' to all other vertices (Fig Q5(a)).
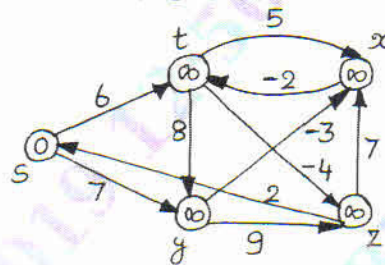
Fig Q5(a) **(10 Marks)**

b. Explain basic Ford-Fulkerson algorithm. **(06 Marks)**

OR

6 a. Write the single – source shortest path algorithm for DAG's. Apply this algorithm for the following graph (Fig Q6(a) by taking 's' as the source vertex. **(10 Marks)**
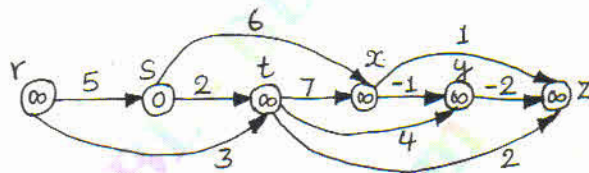
Fig Q6(a)

b. Define the DFT of a vector and also compute the DFT of the vector $(0, 1, 2, 3)$. **(06 Marks)**

Module-4

7 a. Explain the algorithm for classifying a point relative to a directed line segment with examples. **(10 Marks)**

b. Briefly explain the basic concepts involving polygons with a diagram. **(06 Marks)**

OR

8 a. Write an algorithm to construct a star shaped polygonization for a set of points. Illustrate with an example. **(10 Marks)**

b. Explain edge rotation and flipping with C/C++ functions. **(06 Marks)**

Module-5

9 a. Explain the Cyrus – Beck line clipping algorithm with an illustrative example. **(10 Marks)**

b. Briefly, explain the triangulation of monotone polygons. **(06 Marks)**

OR

10 a. Write an explain the gift – wrapping method of finding convex hulls with a suitable example. **(10 Marks)**

b. Briefly explain the hidden surface removal problem. **(06 Marks)**

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15CS565

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Cloud Computing

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a.   What is Cloud Computing? Explain the Cloud Computing Reference Model.   (07 Marks)
    b.   Explain the following :
         i) Amazon Web Services   ii) Manjrasoft Aneka   iii) Microsoft Azure.   (09 Marks)

OR

2   a.   What is Virtualization? Explain the pros and cons of virtualization.   (08 Marks)
    b.   What is Xen? Discuss its elements for virtualization.   (08 Marks)

Module-2

3   a.   Explain the Cloud Computing Architecture.   (08 Marks)
    b.   What is Aneka Container? Which types of services are hosted inside the Aneka Container?   (08 Marks)

OR

4   a.   Explain the IaaS based solution for cloud computing.   (08 Marks)
    b.   Discuss the public deployment of Aneka cloud.   (08 Marks)

Module-3

5   a.   Explain the different techniques for parallel computation.   (08 Marks)
    b.   Describe the major differences between Aneka Thread and Local Thread with a neat diagram.   (08 Marks)

OR

6   a.   Explain the following frameworks for Task computing : i) Condor   ii) Globus Toolkit
         iii) Sun Grid Engine (SGE).   (09 Marks)
    b.   Explain about offspring Architecture, with a neat diagram.   (07 Marks)

Module-4

7   a.   List the Open Challenges in data – intensive computing.   (08 Marks)
    b.   Explain the Aneka MapReduce Infrastructure.   (08 Marks)

OR

8   a.   What is Big – table? Explain with a neat diagram.   (08 Marks)
    b.   Explain the following MapReduce – like frameworks :
         i) Pig   ii) Hive   iii) Hadoop   iv) Twister.   (08 Marks)

Module-5

9   a.   Describe how cloud computing technology can be applied to support remote ECG monitoring.   (08 Marks)
    b.   What is AWS? What type of services does it provide?   (08 Marks)

OR

10 a.   Explain the Google AppEngine platform architecture.   (08 Marks)
    b.   Write short notes on the following : i) Animoto   ii) Maya rendering.   (08 Marks)

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Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Dot Net Frame Work for Application Development

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a.   Explain Namespaces and Assemblies in brief.   (04 Marks)
    b.   Explain concept of named arguments with programming example.   (06 Marks)
    c.   Write a C # program to find factorial of a given number.   (06 Marks)

OR

2   a.   Explain how to use while, for, and do statements to execute code repeatedly while some Boolean condition is true with an example.   (08 Marks)
    b.   Define Exception. Explain how to catch and handle exceptions by using the try and catch constructs with programming example.   (08 Marks)

Module-2

3   a.   Explain Anonymous classes, with an example.   (04 Marks)
    b.   Explain Boxing and Unboxing, with an example.   (06 Marks)
    c.   Explain how arguments are passed as method parameters by using 'ref' and 'out' keywords.   (06 Marks)

OR

4   a.   Define Constructor. Explain constructor overloading with a programming example.   (08 Marks)
    b.   Write a C # program to compute row sum and column sum of rectangular array.   (08 Marks)

Module-3

5   a.   Explain the concept of params array with programming example.   (06 Marks)
    b.   Define Inheritance. Explain how to create a derived class that inherits features from a base class, with an example program.   (06 Marks)
    c.   Explain Abstract class and Abstract method, with an example.   (04 Marks)

OR

6   a.   Explain how to manage system resources by using Garbage collector.   (06 Marks)
    b.   Explain how to implement interface in a class with programming example.   (06 Marks)
    c.   Explain Sealed classes and Sealed methods in brief.   (04 Marks)

Module-4

7   a.   Explain read – only and write – only properties with an example.   (04 Marks)
    b.   Compare indexers and arrays with an example.   (04 Marks)
    c.   Explain Binary tree Algorithm, with an example.   (08 Marks)

OR

8   a.   What is an Indexer? List and explain set of operators provided by C # that you can use to access and manipulate the individual bits in an int.   (08 Marks)
    b.   Explain Linked list < T > collection class with programming example.   (08 Marks)

15CS564

Module-5

9   a.   Explain how to implement an enumerator manually with an example.   **(06 Marks)**

    b.   Define Delegate. Explain how to declare delegate with an example.   **(05 Marks)**

    c.   Explain how to handle and event by using a delegate, with an example.   **(05 Marks)**

OR

10   a.   What is LINQ? Explain LINQ to selecting and ordering data, with an example.   **(08 Marks)**

    b.   Explain Operator overloading and their constraints with a programming example.   **(08 Marks)**

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Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Object Oriented Programming using C++

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing*
ONE full question from each module.

Module-1

1   a.   What is C++? List the applications of C++.   (04 Marks)
    b.   Describe the structure of a C++ program with an example.   (08 Marks)
    c.   When do we use cascading of input/output operators? Give example.   (04 Marks)

OR

2   a.   Write a C++ program to find the sum of digits of a given number.
         e.g If input number = 16738
         output is 25 i.e. $1 + 6 + 7 + 3 + 8$.   (04 Marks)
    b.   Explain the different types of expressions in C++. Give examples for each type. (any four)
                                                                        (08 Marks)
    c.   With an example, describe the purpose of new and delete operators in C++.   (04 Marks)

Module-2

3   a.   Mention the restrictions posed by the complier on inline functions.   (04 Marks)
    b.   Design a class 'triangle' containing data items 'base' 'height' and four member functions
         setdata( ), getdata( ), displaydata( ) and findarea( ), to set values to 'base' and 'height', to get
         the user input, to display and find area of triangle (i.e. $\frac{1}{2}$ * base*height) respectively. Write
         the main function which creates the object and uses the members of the class.   (08 Marks)
    c.   Discuss the different types of function overloading in C++.   (04 Marks)

OR

4   a.   When do we use default arguments? State the rules that need to be followed while using
         default arguments.   (04 Marks)
    b.   Draw a neat diagram and explain the process of memory allocation to objects in C++.
                                                                        (06 Marks)
    c.   Develop a C++ program to define two classes namely husband and wife that hold a private
         member 'salary' respectively. Calculate and display the total income of the family using
         friend function.   (06 Marks)

Module-3

5   a.   How are constructors differ from member functions of a class?   (04 Marks)
    b.   What is operator overloading? Give syntax and example. List the operators that cannot be
         overloaded.   (06 Marks)
    c.   Explain the significance of friend functions to overload operators.   (06 Marks)

OR

6   a.   Discuss the importance of dynamic constructors and destructor in a C++ class.   (08 Marks)
    b.   Write a C++ program to add two complex numbers by overloading the + operator. Also
         overload << and >> operators for reading and displaying the complex numbers.   (08 Marks)

15EC562

Module-4

7 a. What is inheritance? List its advantages. **(04 Marks)**
   b. Explain the visibility inheritance modes. Give an example. **(08 Marks)**
   c. Compare multiple inheritances with multilevel inheritance. **(04 Marks)**

OR

8 a. What is abstract class? Give an example. **(04 Marks)**
   b. Demonstrate the working of pointers as objects with a relevant example. **(08 Marks)**
   c. State the differences between virtual and pure virtual functions. **(04 Marks)**

Module-5

9 a. What is a data stream? Describe the hierarchy of file stream classes in C++. **(08 Marks)**
   b. Explain the following unformatted I/O functions :   i) getline( )   ii) write( ). **(04 Marks)**
   c. Compare and contrast width( ) and setw( ). **(04 Marks)**

OR

10 a. How file opening and closing is done? What are the functions required for reading and writing data in a file. Explain with an example. **(08 Marks)**
   b. Create a C++ program to read a text file and find number of characters, words and lines in a file. **(08 Marks)**

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Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
File Structures

Time: 3 hrs.   Max. Marks: 80

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1   a. Implement the UNIX command "head-n filename" where n is the number of lines from the beginning of the file using C language. Display the content on the standard output. **(08 Marks)**
    b. Suppose it is needed to store a back up of large mailing list with 1 million records of 100 bytes records on 2200 feet reels of 6250 bpi tape with an internal block gap of 0.3″ and tape speed is 100 inches per second.
       i) What would be the minimum blocking factor required to fit the file on the tape?
       ii) If a blocking factor of 60 is used, how long would it take to read one block, including the gap? How long would it take to read the entire file? **(08 Marks)**

OR

2   a. Write a C++ program to perform the following operations : i) read ii) write iii) display on the person data which has the attribute name, gender, age and city by overloading $<<$, $>>$ operators. **(08 Marks)**
    b. What are the different ways of adding structure to a field to maintain the identity of fields? Explain each with an example. **(08 Marks)**

Module-2

3   a. How spaces can be reclaimed from deletion of records in the variable length records? Explain with an example. **(08 Marks)**
    b. Explain the key sorting techniques and limitation with an algorithm. **(08 Marks)**

OR

4   a. Write a C++ program to simple index on primary key for a file of student objects. Implement add( ), search( ) functions using the index. **(08 Marks)**
    b. What are the limitations of retrieving records using secondary keys? Explain the solution by using 'Linking the Reference' techniques. **(08 Marks)**

Module-3

5   a. Write a C++ program snippets for co-sequential matching and merging with an example. **(08 Marks)**
    b. Write C++ functions for heap sorting. Show the construction and deletion of heap tree. **(08 Marks)**

OR

6 a. What are B-trees? Explain with an example, the creation of B-tree. **(10 Marks)**

   b. Derive an equation for worst-case search depth in B–trees. Find the depth of the B-tree for 2×10^9 records and the order of the tree is 2048. **(06 Marks)**

Module-4

7 a. What is indexed sequential access of a record? Describe maintenance of a sequence set. **(06 Marks)**

   b. Explain simple prefix B+ tree. Discuss the issues involved in maintenance of such tree. **(10 Marks)**

OR

8 a. Discuss the sequence of loading a simple prefix B+ tree. **(10 Marks)**

   b. Compare B-tree, simple prefix B+ trees and B+ tree. **(06 Marks)**

Module-5

9 a. Describe the collision resolution by progressive overflow method with an example. **(08 Marks)**

   b. Write short note on the following collision resolution techniques :
      i) Chained progressive overflow
      ii) Scatter tables. **(08 Marks)**

OR

10 a. Discuss the working principle of extendible hashing. **(08 Marks)**

   b. Explain the following with appropriate diagrams : i) dynamic hashing   ii) linear hashing. **(08 Marks)**

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15IS63

Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Software Testing

Time: 3 hrs.

Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Define Software quality. Explain the different measures of software quality. **(06 Marks)**
  b. Explain the perspective testing definitions of the following : i) Errors ii) Fault
    iii) Failure iv) Incident v) Test vi) Test case.
    Draw the flow diagram of a testing life cycle. **(08 Marks)**
  c. Consider the following :
    Requirement 1 : It is required to write a program that inputs two integers and outputs the
                   maximum of these.
    Comment on its completeness. **(02 Marks)**

OR

2 a. With the help of a test and debug cycle diagram, explain testing and debugging process.
    (08 Marks)
  b. Write pseudo-code for NextDate problem (simple version). **(04 Marks)**
  c. Explain the elements walk through and inspection of static testing. **(04 Marks)**

Module-2

3 a. With example, explain about boundary value analysis and mention its limitations.
    (04 Marks)
  b. Write Equivalence class test cases for the commission problem. **(06 Marks)**
  c. Explain the fault – based adequacy criteria. **(06 Marks)**

OR

4 a. Explain test cases for the triangle problem with respect to decision table based testing.
    (08 Marks)
  b. With a neat diagram, explain about i) Robustness testing ii) Worst case testing.
    (04 Marks)
  c. Explain Mutation analysis terminologies. **(04 Marks)**

Module-3

5 a. Explain about du – path test coverage metrices with dataflow diagram. **(08 Marks)**
  b. Explain in brief about : Scaffolding and Test Oracles. **(08 Marks)**

OR

6 a. Explain McCabe's basis Path method. **(08 Marks)**
  b. Explain about slice based testing in a dataflow testing by taking commission problem.
    (08 Marks)

Module-4

7 a. Explain the following :
    i) Sensitivity ii) Redundancy iii) Visibility iv) Partition. **(08 Marks)**
  b. Briefly explain test design specification documents. **(08 Marks)**

OR

8 a. Discuss the dependability properties. (08 Marks)
   b. List and explain the different types of Risk planning. (08 Marks)

Module-5

9 a. Explain about client / server testing with respect to interacting testing. (08 Marks)
   b. Explain about decomposition based integration with respect to integration testing. (08 Marks)

OR

10 a. Compare System , Acceptance and Regression testing. (08 Marks)
    b. Draw the display screens of both Simple Automatic Teller Machine (SATM) terminal and built with fifteen screens for the SATM system. (08 Marks)

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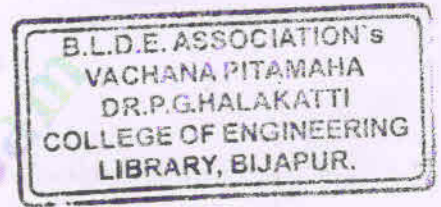
USN ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚ **15CS64**

Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Operating Systems

Time: 3 hrs. Max. Marks: 80

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1   a.   Distinguish between the following terms :
         i)   Multiprogramming and multitasking
         ii) Multiprocessor systems and clustered systems. **(04 Marks)**
    b.   Analyze modular kernel approach with layered approach with a neat sketch. **(06 Marks)**
    c.   List and explain the services provided by OS for the user and efficient operation of system. **(06 Marks)**

OR

2   a.   Illustrate with a neat sketch, the process states and process control block. **(08 Marks)**
    b.   Discuss the methods to implement message passing IPC in detail. **(08 Marks)**

Module-2

3   a.   Discuss the benefits of multithreaded programming. **(04 Marks)**
    b.   Consider the following set of processes with CPU burst time (in ms).

Process	Arrival time	Bunt time
P1	0	6
P2	1	3
P3	2	1
P4	3	4

Compute the waiting time and average turnaround time for the above process using FCFS, SRT and RR (time quantum = 2ms) scheduling algorithm. **(12 Marks)**

OR

4   a.   Illustrate with examples the Peterson's solution for critical section problem and prove that the mutual exclusion property is preserved. **(08 Marks)**
    b.   Show how semaphore provides solution to reader writers problem. **(08 Marks)**

15CS64

Module-3

5 a. Define deadlock. Write short notes on 4 necessary conditions that arise deadlocks. **(06 Marks)**

   b. Assume that there are 5 processes PO through P4 and 4 types of resources. At time T_0 we have the following state :

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P_0	0	0	1	2	0	0	1	2	1	5	2	0
P_1	1	0	0	0	1	7	5	0				
P_2	1	3	5	4	2	3	5	6				
P_3	0	6	3	2	0	6	5	2				
P_4	0	0	1	4	0	6	5	6				

   Apply Banker's algorithm to answer the following :
   i) What is the content of need matrix?
   ii) Is the system in a safe state?
   iii) If a request from a process P1(0, 4, 2, 0) arrives, can it be granted? **(10 Marks)**

OR

6 a. Write short notes on :
   i) External and internal fragmentation
   ii) Dynamic loading and linking. **(04 Marks)**

   b. Analyze the problem in simple paging technique and show how TLB is used to solve the problem. **(08 Marks)**

   c. Given the memory partitions of 200k, 700k 500k, 300k, 100k, 400k. Apply first fit and best fit to place 315k, 427k, 250k, 550k. **(04 Marks)**

Module-4

7 a. For the following page reference string 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5. Calculate the page faults using FIFO and LRU for memory with 3 and 4 frames. **(08 Marks)**

   b. Explain demand paging in detail. **(08 Marks)**

OR

8 a. What do you mean by free space list? With suitable example, explain any 3 methods of free space list implementation. **(08 Marks)**

   b. Write short notes on linked and indexed allocation method with a neat diagram. **(08 Marks)**

Module-5

9 a. Given the following sequences 95, 180, 34, 119, 11, 123, 62, 64 with the head initially at track 50 and ending at track 199. What is the total disk traveled by the disk arm to satisfy the request using FCFS, SSTF, LOOK and CLOOK algorithm. **(12 Marks)**

   b. Write short notes on access matrix and its implementations. **(04 Marks)**

OR

10 a. Explain the components of Linux system with a neat diagram. **(08 Marks)**

   b. Describe briefly on Linux Kernel modules. **(08 Marks)**

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USN | | | | | | | | | | **15CS664**

Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Python Application Programming

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. Explain the following :
     i)   Skills necessary for a programmer
     ii)   Interactive mode
     iii)   Short circuit evaluation of expression
     iv)   Modulus operator   **(04 Marks)**

   b. Mention three types of errors encountered in python programs. Explain the basic building block of python with an example python program to display format number ($F_n = 2^{2n} + 1$) for a 'n' value promoted by the users.   **(08 Marks)**

   c. Describe python language support for arithmetic operators. Write a python programs to calculate student result based on 2 exam, 1 sport event and 3 activities conducted in a college with weightage of the activity = 20% and sports = 20% for 50 marks.   **(04 Marks)**

OR

2 a. List and give syntax of all python supported conditional statements along with its usage with an example program to check whether given number is positive or negative or zero.   **(08 Marks)**

   b. Differentiate between argument and parameter. Illustrate the flow of execution of a python function with an example program to convert given Celsius to Fahrenheit temperature.   **(08 Marks)**

Module-2

3 a. Explain while and for loop write a program to generate Fibonacci series up to the given limit by defining FIBONACCI (n) function.   **(08 Marks)**

   b. Mention the advantages of continue statement. Write a program to compute only even numbers sum within the given natural number using continue statement.   **(08 Marks)**

OR

4 a. Define a string. How it can be traversed though using looping statement? Write a python program to display presence of given substring in main string.   **(08 Marks)**

   b. How computational fault or computational errors are handled in python? Show it with an example python program to copy all lines beginning with vowels from FROM.text file to VOWELTEXT.text file retaining other lines.   **(08 Marks)**

Module-3

5 a. Describe any two list opearations and list methods. Write a python program to accept 'n' numbers from user, find sum all even numbers and product of all odd numbers in entered list.   **(08 Marks)**

   b. List merits of dictionary over list. Write a python program to accept USN and marks obtained, find maximum, minimum and students USN who have scored in the range 100-85, 85-75, 75-60 and below 60 marks separately.   **(08 Marks)**

15CS664

OR

6 a. Compare and contrast tuples with lists. Explain the following operations in tuples
   i) Sum of two tuples
   ii) Slicing operators
   iii) Compression of two tuples
   iv) Assignments to variables. **(08 Marks)**

   b. Explain extracting data using regular expressions. Implement a python program to find for lines having '@' sign between characters in a read text file. **(08 Marks)**

Module-4

7 a. How class can be instantiated in python? Write a python program to express instances as return values to define a class RECTANGLE with members width, height, corner_x, corner_y and member function : to find centre, area and perimeter of a rectangle. **(08 Marks)**

   b. Explain init and str method with an example python program. **(08 Marks)**

OR

8 a. Define polymorphism. Demonstrate polymorphism with function to find histogram to count the numbers of times each letters appears in a word and in sentence. **(08 Marks)**

   b. What is a pure function? Write a python program to find duration of event if start and end time is given by defining class TIME. **(08 Marks)**

Module-5

9 a. Explain any 2 socket functions. Explain support for parsing HTML using regular expression with an example program. **(08 Marks)**

   b. Describe a support of security mechanism employed in Internet application with support of API usage with an example program to get four strings and put them in "hidden.PY". **(08 Marks)**

OR

10 a. Write a note on XML. Design python program to retrieve a node present in XML tree. **(08 Marks)**

    b. Brief on structured Query language, with suitable python program explain functions involved in creation of database table in python. **(08 Marks)**

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USN | | | | | | | | | | **15CS653**

Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Operations Research

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing
ONE full question from each module.

Module-1

1 a. Define operations research. Explain the phases of operations research. **(07 Marks)**
   b. A firm manufactures two types of products A and B and sells them at a profit of Rs.2 on type A and Rs.3 on type B. Each product is processed on two machines G and H. Type A requires one minute of processing time on G and two minutes of on H. Type B requires one minute of processing time on G and one minute on H. The machine G is available for not more than 6 hours 40 minutes while H is available for 10 hours during any working day. How many items of Type A and Type B should be produced so that the total profit is maximum? Formulate this problem as LPP. **(05 Marks)**
   c. Using Graphical method solve the following :
       Maximize $Z = 5x_1 + 4x_2$
       Subject to $6x_1 + 4x_2 \le 24$
       $x_1 + 2x_2 \le 6$
       $-x_1 + x_2 \le 1$
       $x_2 \le 2$
       and $x_1, x_2 \ge 0$. **(04 Marks)**

OR

2 a. Old hens can be bought at Rs.2 each and young ones at Rs. 5 each. The old hens lay 3 eggs per week and the young ones lay 5 eggs per week, each egg being worth 30 paise. A hen (young or old) costs Rs.1 per week to feed. You have only Rs.80 to spend for buying hens. How many of each kind should you buy to give a profit of more than Rs.6 per week assuming that you cannot house more than 20 hens? Formulate the problem as an LPP. **(06 Marks)**

   b. Using graphical method solve the LPP :
       Minimize $Z = 20x_1 + 10x_2$
       Subject to $x_1 + 2x_2 \le 40$
       $3x_1 + x_2 \ge 30$
       $4x_1 + 3x_2 \le 60$
       and $x_1, x_2 \ge 0$. **(06 Marks)**
   c. Write the meaning of following terms with respect to a LPP :
       i) Feasible solution   ii) Infeasible solution   iii) Optimal solution   iv) Unsounded solution. **(04 Marks)**

Module-2

3 a. Explain the steps involved in setting up of a Simplex method. **(08 Marks)**
   b. Solve the following LPP by using Big – M method
       Maximize $Z = 4x_1 + 5x_2 - 3x_3 + 50$
       Subject to $x_1 + x_2 + x_3 = 10$
       $x_1 - x_2 \ge 1$
       $2x_1 + 3x_2 + x_3 \le 40$
       and $x_1, x_2, x_3 \ge 0$. **(08 Marks)**

1 of 3

15CS653

OR

4 a. Using Simplex method, solve the following LPP

Maximize $Z = 4x_1 + 3x_2 + 6x_3$

Subject to $\quad 2x_1 + 3x_2 + 2x_3 \le 440$

$\qquad\qquad 4x_1 + 3x_3 \le 470$

$\qquad\qquad 2x_1 + 5x_2 \le 430$

and $\quad x_1, x_2, x_3 \ge 0$. **(08 Marks)**

b. Define basic solution and obtain all the basic solutions to the following system of linear equations :

Maximize $z = x_1 + 3x_2 + 3x_3$

Subject to $\quad 2x_1 + 3x_2 + 4x_3 = 10$

$\qquad\qquad 3x_1 + 4x_2 + x_3 = 12$

Also classify the solutions into
   i) Basic Feasible Solution
   ii) Non–Degenerate Basic Feasible Solution
   iii) Optimal Basic Feasible Solution. **(04 Marks)**

c. Write the procedure to solve LPP of two-phase Simplex method. **(04 Marks)**

Module-3

5 a. Use dual Simplex method to solve LPP,

Minimize $Z = 2x_1 + 2x_2 + 4x_3$

Subject to $\quad 2x_1 + 3x_2 + 5x_3 \ge 2$

$\qquad\qquad 3x_1 + x_2 + 7x_3 \le 3$

$\qquad\qquad x_1 + 4x_2 + 6x_3 \le 5$

and $\quad x_1, x_2, x_3 \ge 0$. **(08 Marks)**

b. Explain the following :
   i) The essence of duality theory
   ii) Primal dual relationship. **(08 Marks)**

OR

6 a. Write the procedure to solve LPP of dual Simplex method. **(08 Marks)**

b. Write the dual of the following LPP :

i) Maximize $Z = 3x_1 - x_2 + x_3$

subject to $\quad 4x_1 - x_2 \le 8$

$\qquad\qquad 8x_1 + x_2 + 3x_3 \ge 12$

$\qquad\qquad 5x_1 - 6x_3 \le 12$

and $\quad x_1, x_2, x_3 \ge 0$

ii) Minimize $Z = 2x_2 + 8x_3$

subject to $\quad 3x_1 + x_2 \ge 12$

$\qquad\qquad 2x_1 + x_2 + 6x_3 \le 6$

$\qquad\qquad 5x_1 - x_2 + 3x_3 = 4$.

and $\quad x_1, x_2, x_3 \ge 0$. **(08 Marks)**

15CS653

Module-4

7 a. Find the initial basic feasible solution to the following transportation problem using VAM.

15	10	17	18	2
16	13	12	13	6
12	17	20	11	7
3	3	4	5	

(08 Marks)

  b. Find the optimal solution to the following assignment problem. **(08 Marks)**

Jobs

	J_1	J_2	J_3	J_4	J_5
M_1	11	17	8	16	20
M_2	9	7	12	6	15
M_3	13	16	15	12	16
M_4	21	24	17	28	26
M_5	14	19	12	11	13

Machine

OR

8 a. Write the procedure of Hungarian method. **(06 Marks)**

  b. There are 3 factories A, B and C. Supply goods to 4 dealers D_1, D_2, D_3 and D_4. The production capacities of these factories are 1000, 700, 900 respectively. The requirement from this dealers are 900, 800, 500 and 400 per month respectively. The per unit returns excluding transportation cost are Rs.8/-, 7/-, 9/- at the 3 factories. The following table gives the unit production cost from the factories to dealers. Determine the optimum solution to maximize the total returns.

	D_1	D_2	D_3	D_4	
A	2	2	2	4	1000
B	3	5	3	2	700
C	4	3	2	1	900
	900	800	500	400	

(10 Marks)

Module-5

9 a. Write short notes on : i) Simulated annealing algorithm i) Tabu search algorithm. **(08 Marks)**

  b. Using dominance concept, obtain the optimal strategies for both the players and determine the value of game. The payoff matrix for the players is given below.

Player B

Player A

2	−2	4	1
6	1	12	3
−3	2	0	6
2	−3	7	7

(08 Marks)

OR

10 a. Define the following with reference to game theory : i) Mixed strategy   ii) Two person − zero − sum game iii) Pure strategy iv) Saddle point. **(08 Marks)**

  b. Solve the following game graphically :

Player B

Player A

8	5	−7	9
−6	6	4	−2

(08 Marks)

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15CS71

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Web Technology And Its Applications

Time: 3 hrs.   Max. Marks: 80

**Note: Answer any FIVE full questions, choosing
ONE full question from each module.**

Module-1

1   a. Briefly explain the history of markup languages.   (04 Marks)
    b. Write a note on XHTML and HTML5.   (04 Marks)
    c. Explain : i) <a>   ii) <img>   iii) <p>   iv) <div> elements with examples.   (08 Marks)

OR

2   a. With an example explain different levels of style sheets.   (08 Marks)
    b. List the different selectors available in CSS and explain in detail (08 Marks)

Module-2

3   a. Explain different form widgets created with the <input> tag.   (08 Marks)
    b. Write HTML code for the following table :

Time Day		9.00 am to 1.15 pm	2.00 pm to 5.00 pm
Mon to Fri	Sub	Theory class	ML/WTA Lab
	FI	ABC/EFG/XYZ	AD block, 1st *floor
Sat	Sub	Extra curricular activity	
	FI		

(08 Marks)

OR

4   a. Discuss the difference between relative and absolute positioning.   (08 Marks)
    b. What does floating an element do in CSS? How do you float an element? (08 Marks)

Module-3

5   a. Discuss the advantages and disadvantages of client – side scripting.   (08 Marks)
    b. Write a JavaScirpt code that displays text "VTU BELAGAVI" with increasing font size in
        the interval of 100 ms in blue color, when the font size reaches 50 pt it should stop.
                                                                            (08 Marks)

OR

6   a. With a neat diagram, explain client and server script execution.   (08 Marks)
    b. Write a PHP program to greet the user based on time.   (08 Marks)

1 of 2

15CS71

Module-4

7   a. Explain $_GET and $_POST superglobal arrays. **(08 Marks)**
    b. How do you read or write a file on the server from PHP? Give example. **(08 Marks)**

OR

8   a. Write a PHP program to create a class STUDENT with the following specification.
       Data members   : Name, Roll number, Average marks
       Member function   : Read(getters) and write (setters)
       Use the above specification to read and print the information of 2 students. **(08 Marks)**
    b. How do you achieve data encapsulation in PHP? Give example. **(08 Marks)**

Module-5

9   a. What are HTTP cookies? How do you handle them in PHP? **(08 Marks)**
    b. Why is state is a problem for web applications? Explain. **(08 Marks)**

OR

10 a. What does $( ) short and stand for in JQuery? Explain any 3 JQuery form selectors. **(08 Marks)**

    b. Write DTD for the following XML code.

```
<?XML version = "1.0" encoding = "ISO – 8859 – 1"?>
<art>
    <painting id = "290">
     <title> Balcony </title>
      <artist>
       <name> Manet</name>
       <nationality> France</nationality>
      </artist>
     <year> 1868 </year>
     <medium> oil on canvas </medium>
    </painting>
</art>
```
(08 Marks)

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15IS72

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Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019

Software Architecture and Design Patterns

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1	a.	What is design pattern? How patterns and frame works are different?	(06 Marks)
	b.	Explain Object-Oriented Development.	(04 Marks)
	c.	What are the key concepts of object oriented design?	(06 Marks)

OR

2	a.	What does the design pattern do? How to select a design pattern?	(06 Marks)
	b.	What pitfalls, hints or techniques should be aware of, when implementing the pattern?	(06 Marks)
	c.	Describe the benefits to manipulating objects solely in terms of the interface defined by the abstract classes.	(04 Marks)

Module-2

3	a.	"The analysts need to learn the existing system and the requirements". Justify.	(05 Marks)
	b.	What are the Guidelines to remember when writing Use Cases?	(04 Marks)
	c.	Draw class diagram for library and class diagram for Member of Library.	(07 Marks)

OR

4	a.	Explain the major steps in analysis phase.	(06 Marks)
	b.	Compare functional requirements versus non-functional requirements.	(04 Marks)
	c.	Describe conceptual, software and implantation classes.	(06 Marks)

Module-3

5	a.	How classes and objects are composed to form larger structure?	(04 Marks)
	b.	Explain intent, Motivation, Applicability, Structure, Participants, Collaboration, Consequences and Implementation of Decorator Pattern.	(08 Marks)
	c.	Mention few common situations in which the Proxy pattern is applicable.	(04 Marks)

OR

6	a.	What do you mean by-part-whole hierarchies? Explain with suitable example.	(05 Marks)
	b.	Explain an object adapter and a class adapter.	(05 Marks)
	c.	What are the issues to consider when implementing the composite pattern?	(06 Marks)

Module-4

7	a.	Explain Model-View-Controller pattern in detail.	(06 Marks)
	b.	Draw and explain sequence diagram for adding a line.	(05 Marks)
	c.	Mention the characteristics of architectural patterns.	(05 Marks)

15IS72

OR

8 a. What are the benefits of design of the subsystems? (04 Marks)
  b. Explain the issues need to be highlighted when implementing the UNDO operation.

(06 Marks)
  c. Describe implementation of view class with example. (06 Marks)

Module-5

9 a. Explain the performance of client/server systems. (05 Marks)
  b. How the Library System can be deployed on the World-Wide-Web? (05 Marks)
  c. Describe the difficulties in accessing objects in a different SVM. (06 Marks)

OR

10 a. Explain how to implement object-oriented system on the web. (05 Marks)
  b. List and explain for hosting distributed applications. (05 Marks)
  c. Write short notes on:
    i) Marshalling and Demarshalling
    ii) GET or POST (06 Marks)

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Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Machine Learning

Time: 3 hrs.   Max. Marks: 80

Note: *Answer FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Specify the learning task for 'A checkers learning problem'. (03 Marks)
   b. Discuss the following with respect to the above,
      (i)   Choosing the training experience.
      (ii)   Choosing the target function and
      (iii) Choosing a function approximation algorithm. (09 Marks)
   c. Comment on the issues in machine learning. (04 Marks)

OR

2 a. Write candidate elimination algorithm. Apply the algorithm to obtain the final version space for the training example. (10 Marks)

Sl. No.	Sky	Air temp	Humidity	Wind	Water	Forecast	Enjoy sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

   b. Discuss about an unbiased Learner. (06 Marks)

Module-2

3 a. What is a decision tree & discuss the use of decision tree for classification purpose with an example. (08 Marks)
   b. Write and explain decision tree for the following transactions: (08 Marks)

Tid	Refund	Martial status	Taxable Income	Cheat
1	Yes	Single	125 K	No
2	No	Married	100 K	No
3	No	Single	70 K	No
4	Yes	Married	120 K	No
5	No	Divorced	95 K	Yes
6	No	Married	60 K	No
7	Yes	Divorced	220 K	No
8	No	Single	85 K	Yes
9	No	Married	75 K	No
10	No	Single	90 K	Yes

OR

4 a. For the transactions shown in the table compute the following :
      (i) Entropy of the collection of transaction records of the table with respect to classification.
      (ii) What are the information gain of a_1 and a_2 relative to the transactions of the table? (08 Marks)

Instance	1	2	3	4	5	6	7	8	9
a_1	T	T	T	F	F	F	F	T	F
a_2	T	T	F	F	T	T	F	F	T
Target class	+	+	−	+	−	−	−	+	−

   b. Discuss the decision learning algorithm. (04 Marks)
   c. List the issues of decision tree learning. (04 Marks)

Module-3

5 a. Draw the perceptron network with the notation. Derive an equation of gradient descent rule to minimize the error. **(08 Marks)**

b. Explain the importance of the terms : (i) Hidden layer (ii) Generalization (iii) Overfitting (iv) Stopping criterion **(08 Marks)**

OR

6 a. Discuss the application of Neural network which is used for learning to steer an autonomous vehicle. **(06 Marks)**

b. Write an algorithm for back propagation algorithm which uses stochastic gradient descent method. Comment on the effect of adding momentum to the network. **(10 Marks)**

Module-4

7 a. What is Bayes theorem and maximum posterior hypothesis? **(04 Marks)**

b. Derive an equation for MAP hypothesis using Bayes theorem. **(04 Marks)**

c. Consider a football game between two rival teams: Team 0 and Team 1. Suppose Team 0 wins 95% of the time and Team 1 wins the remaining matches. Among the games won by team 0, only 30% of them come from playing on teams 1's football field. On the otherhand, 75% of the victories for team 1 are obtained while playing at home. If team 1 is to host the next match between the two teams, which team will most likely emerge as the winner? **(08 Marks)**

OR

8 a. Describe Brute-force MAP learning algorithm. **(04 Marks)**

b. Discuss the Naïve Bayees classifier. **(04 Marks)**

c. The following table gives data set about stolen vehicles. Using Naïve bayes classifier classify the new data (Red, SUV, Domestic) **(08 Marks)**

Table

Color	Type	Origin	Stolen
Red	Sports	Domestic	Yes
Red	Sports	Domestic	No
Red	Sports	Domestic	Yes
Yellow	Sports	Domestic	No
Yellow	Sports	Imported	Yes
Yellow	SUV	Imported	No
Yellow	SUV	Imported	Yes
Yellow	SUV	Domestic	No
Red	SUV	Imported	No
Red	Sports	Imported	Yes

Module-5

9 a. Write short notes on the following:
   (i) Estimating Hypothesis accuracy.
   (ii) Binomial distribution. **(08 Marks)**

b. Discuss the method of comparing two algorithms. Justify with paired to tests method. **(08 Marks)**

OR

10 a. Discuss the K-nearest neighbor language. **(04 Marks)**

b. Discuss locally weighted Regression. **(04 Marks)**

c. Discuss the learning tasks and Q learning in the context of reinforcement learning. **(08 Marks)**

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15CS744

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Unix System Programming

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1   a.   What are major differences between ANSI C and K and R C? Explain width examples.
                                                                          (08 Marks)
    b.   Mention the prototypes of sysconf, pathconf, and fpathconf functions. Write a program to
         demonstrate querying of limits by using above functions.   **(08 Marks)**

OR

2   a.   Differentiate between ANSI C and C++.   **(03 Marks)**
    b.   Explain the ANSI C CPP symbols. And also write a program to demonstrate these symbols.
                                                                          (05 Marks)
    c.   Define API. Explain the common characteristic of APIs.   **(08 Marks)**

Module-2

3   a.   With a neat diagram, explain how UNIX Kernel supports for file manipulation.   **(10 Marks)**
    b.   Explain the following APIs. i) lseek   iii) access.   **(06 Marks)**

OR

4   a.   What is the relationship between file stream pointer and file descriptor? Which functions are
         used to convert them one from each other and mention their prototypes.   **(06 Marks)**
    b.   Explain fcntl API. Give an example to demonstrate file locking using fcntl API.   **(10 Marks)**

Module-3

5   a.   Explain with a neat diagram, how a process can be initiated and how it can be terminated.
                                                                          (08 Marks)
    b.   Explain wait and waitpid APIs with their prototype. Mention the differences between wait
         and waitpid.   **(08 Marks)**

OR

6   a.   Explain setjmp and longjmp APISs, with an example.   **(08 Marks)**
    b.   Explain BSDs job control mechanism with a neat diagram.   **(08 Marks)**

Module-4

7   a.   Explain sigaction API with a demonstrating program.   **(08 Marks)**
    b.   What are daemon processes? Explain with a neat diagram the error logging facility for a
         daemon process.   **(08 Marks)**

OR

8   a.   Write a C/C++ program to show the use of alarm API.   **(06 Marks)**
    b.   Explain daemon characteristics and coding rules.   **(10 Marks)**

Module-5

9   a.   What are pipes? Explain different ways to view a half-duplex pipe. Write a program to send
         data from parent process to child process using pipes.   **(08 Marks)**
    b.   What is a FIFO? With a neat diagram explain client server communication using a FIFO.
                                                                          (08 Marks)

OR

10 a.   Explain message queue APIs wih their prototypes.   **(08 Marks)**
    b.   Explain semctl and semop APIs with their prototypes.   **(08 Marks)**

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15IS753

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Information Management System

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing one full question from each module.*

Module-1

1   a.   How can you classify business as a system? Explain.   **(06 Marks)**
    b.   List the competitive forces that business need to confron and explain the strategies that can be implemented to overcome them.   **(10 Marks)**

OR

2   a.   What is an Information System? Explain the evolution of IS and its impact on the users.   **(08 Marks)**
    b.   What is a virtual company? List the basic business strategies of virtual companies.   **(06 Marks)**
    c.   What is a cybernetic system? Give an example.   **(02 Marks)**

Module-2

3   a.   Explain the major components for targeted marketing in e-commerce.   **(06 Marks)**
    b.   State the objectives of CIM.   **(03 Marks)**
    c.   Briefly explain the following marketing systems
       •   Interactive Marketing
       •   Sales force automation.   **(07 Marks)**

OR

4   a.   What is a Transaction Processing System? Explain the stages of Transaction processing cycle.   **(07 Marks)**
    b.   With example, explain financial management systems.   **(06 Marks)**
    c.   List and describe the essential accounting system used in business.   **(03 Marks)**

Module-3

5   a.   What is ERP? Explain its benefits and challenges. Also list the costs associated with the implementation of ERP.   **(10 Marks)**
    b.   Write a note on the trends in CRM.   **(06 Marks)**

OR

6   a.   With a neat diagram, explain the trends in SCM.   **(06 Marks)**
    b.   Explain the major application clusters in CRM.   **(06 Marks)**
    c.   What is SCM? Explain the roles and activities of SCM.   **(04 Marks)**

Module-4

7   a.   Describe the term e-commerce. List and explain the different e-commerce success factors.   **(08 Marks)**
    b.   With a neat diagram, explain the electronic payment systems.   **(08 Marks)**
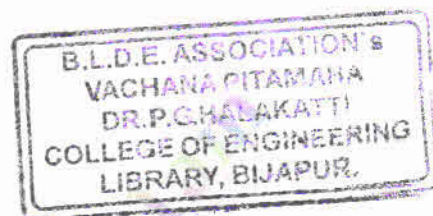
OR

8 a. Explain the web store requirements to host an e-commerce establishment. **(10 Marks)**

b. List and describe the various e-commerce market places used by business. **(06 Marks)**

Module-5

9 a. What are the different attributed that determine information quality? Explain. **(09 Marks)**

b. Define the term Artificial Intelligence (AI). Explain the various application areas of AI.
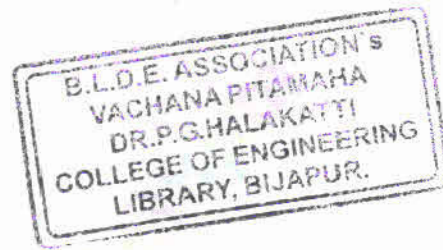**(07 Marks)**

OR

10 a. Explain the major application categories of Expert system with examples. **(10 Marks)**

b. Explain the analytical Modeling activities involved in the use of DSS. Give proper examples for each. **(06 Marks)**

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10IS81

Eighth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Software Architectures

Time: 3 hrs. Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO full questions from each part.

PART – A

1 a. With the help of neat block diagram of ABC (Architecture Business Cycle). Explain in detail the different activities which are involved in creating a software architecture.**(10 Marks)**
   b. Write short notes on:
      i)   Architectural patterns
      ii)   Reference model
      iii) Reference architectures. **(06 Marks)**
   c. Why is software architecture important? **(04 Marks)**

2 a. Discuss the invariants, advantages and disadvantages of pipes and filter architecture style. **(10 Marks)**
   b. Explain the brief about KWIC (Keyword in context) with shared data solution. **(10 Marks)**

3 a. What is quality attribute scenario? List the parts of such a scenario. Distinguish between availability scenario and modifiability scenario. **(10 Marks)**
   b. What do you mean by tactics? Explain the availability tactics with a neat diagram. **(10 Marks)**

4 a. Discuss the guidelines involved in the implementation of pipes and filter architecture. **(10 Marks)**
   b. Discuss in brief the pattern. From mud-to structure. **(10 Marks)**

PART – B

5 a. Define broker architectural pattern. Explain types of participating components which comprises it. **(10 Marks)**
   b. Explain with neat diagram the dynamic scenarios of Model View Controller (MVC). **(10 Marks)**

6 a. What are the steps involved in implementing the microkernel system? **(10 Marks)**
   b. Explain the dynamic scenarios of reflection with neat diagram. **(10 Marks)**

7   Write short notes on:
   a. Design pattern
   b. Master-slave pattern
   c. Whole-part pattern
   d. Proxy pattern. **(20 Marks)**

8 a. Explain with neat diagram evolutionary delivery life cycle model. **(08 Marks)**
   b. White a note on creating a skeletal system. **(06 Marks)**
   c. What are the uses of architectural documentation? **(06 Marks)**

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10IS846

Eighth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Decision Support Systems

Time: 3 hrs.

Max. Marks:100

**Note: *Answer any FIVE full questions, selecting
at least TWO full questions from each part.***

PART – A

1   a. Explain the major roles performed by managers. **(05 Marks)**
    b. Explain the various reasons needed for computerized decision support systems. **(05 Marks)**
    c. Explain with block diagram the decision making and modeling process. **(10 Marks)**

2   a. Define system. Explain the structure of a system with a neat block diagram. **(10 Marks)**
    b. What is a model? Explain the classification of models according to their degree of abstraction. **(05 Marks)**
    c. Explain implementation in decision making. **(05 Marks)**

3   a. Explain the characteristics and capabilities of decision support system. **(10 Marks)**
    b. Explain the structure of the data management subsystem. **(10 Marks)**

4   a. Explain the traditional system development life cycle. **(05 Marks)**
    b. Explain DSS technological levels with a neat diagram. **(05 Marks)**
    c. Explain rapid application development methodologies, with neat diagrams. **(10 Marks)**

PART – B

5   a. Explain the time/place communication frame work and some collaborative computing support systems. **(10 Marks)**
    b. Explain the structure of group systems for windows. **(10 Marks)**

6   a. Compare EIS and DSS on different dimensions. **(10 Marks)**
    b. Explain supply chain problems and solutions. **(05 Marks)**
    c. Define EIS. List the major benefits of an EIS. **(05 Marks)**

7   a. Define knowledge management and explain the major activities of knowledge management. **(06 Marks)**
    b. Describe organizational learning and its relationship to knowledge management. **(08 Marks)**
    c. With a neat diagram, explain knowledge management cycle. **(06 Marks)**

8   a. What is system integration? Explain the major objectives for management support systems software integration. **(05 Marks)**
    b. Explain the problems and issues of MSS integration. **(05 Marks)**
    c. Briefly explain the issues of legality privacy and ethics. **(05 Marks)**
    d. Describe the MSS impacts on individuals. **(05 Marks)**

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10CS/IS831

Eighth Semester B.E. Degree Examination, Dec.2018/Jan. 2019
Wireless Networks and Mobile Computing

Time: 3 hrs.

Max. Marks:100

Note: *Answer FIVE full questions, selecting*
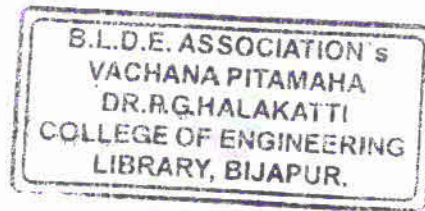*atleast TWO questions from each part.*

PART – A

1   a.   What is middleware? Explain 4 major categories of middle wares.   (10 Marks)
    b.   What is a context aware system? What all can be the types of information nedded for developing a fully context aware system.   (10 Marks)

2   a.   Explain the GSM system architecture, in detail.   (12 Marks)
    b.   Write a note on :   i) SMMT ii) SMMO.   (08 Marks)

3   a.   Write a note on GPRS protocol stack, with a neat figure.   (10 Marks)
    b.   Explain different GPRS specific applications.   (10 Marks)

4   a.   Explain IS–95 architecture main elements with neat diagram.   (12 Marks)
    b.   Give functional different between CDMA and GSM.   (08 Marks)

PART – B

5   a.   What are the design constraints for applications targeted for handheld devices?   (10 Marks)
    b.   What is mobile IP? Explain 3 main phase of mobile IP process.   (10 Marks)

6   a.   Write short notes on any 3 mobile operating systems.   (12 Marks)
    b.   Explain data synchronization in server component of smart client applications with neat diagram.   (08 Marks)

7   a.   Explain any two markup languages used in wireless commuting.   (10 Marks)
    b.   Explain steps involved in processing a wireless request with neat diagram.   (10 Marks)

8   a.   Explain MIDlet lifecycle. How is provisioning done in MIDP applications   (10 Marks)
    b.   What is record management system in J2ME? How do you handle records in J2ME?   (10 Marks)

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10CS/IS835

Eighth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Information Network Security

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO full questions from each part.

PART – A

1 a. Define policy and explain specific security policy. (10 Marks)
  b. Explain the characteristics of viable security policies. (10 Marks)

2 a. Explain the dual homed host firewall. (10 Marks)
  b. Define firewall and explain all the firewall rules. (10 Marks)

3 a. What is IDPS? Explain the advantages and disadvantages of NIDPS. (10 Marks)
  b. Explain the following terms in detail:
    i)   Honey pots
    ii)   Honey Nets
    iii) Padded cell system. (10 Marks)

4 a. Explain Vernam Cipher with suitable example. (10 Marks)
  b. List and explain the attacks on a cryptosystem. (10 Marks)

PART – B

5 a. Explain the different authentication procedures in X.509 certificate. (10 Marks)
  b. Explain briefly OSI security architecture. (10 Marks)

6 a. Explain the procedure along with diagram to implement confidentiality in PGP. (10 Marks)
  b. Explain the different MIME content types. (10 Marks)

7 a. Explain the IP security architecture in detail. (10 Marks)
  b. Describe how authentication header is implemented in transport and tunnel modes with a neat diagram. (10 Marks)

8 a. Explain the handshake protocol action in SSL. (10 Marks)
  b. Explain the different alert codes of TLS protocols. (10 Marks)

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