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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
- $$f(x) = \begin{cases} 0; & -\pi < x < 0 \\ x; & 0 < x < \pi \end{cases} \quad (08 \text{ Marks})$$
- 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 :
- $$f(x) = \begin{cases} \pi x; & 0 \leq x \leq 1 \\ \pi(2-x); & 1 \leq x \leq 2 \end{cases}$$
- and deduce $\frac{\pi^2}{8} = \sum_{n=1}^{\infty} \frac{1}{(2n-1)^2}$. (08 Marks)
- b. Expand in Fourier series $f(x) = (\pi-x)^2$ over the interval $0 \leq x \leq 2\pi$. (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 $\int_0^{\infty} \frac{x \cos x - \sin x}{x^3} dx$. (08 Marks)
- b. Find Fourier Cosine transform of the function :
- $$f(x) = \begin{cases} 4x; & 0 < x < 1 \\ 4-x; & 1 < x < 4 \\ 0; & x > 4 \end{cases} \quad (06 \text{ Marks})$$
- c. Find z-transforms of: i) $a^n \sin n\theta$ ii) $a^{-n} \cos n\theta$. (06 Marks)

1 of 3

OR

- 4 a. Find Fourier sine transform of $f(x) = e^{-|x|}$ and hence evaluate : $\int_0^{\infty} \frac{x \sin mx}{1+x^2} dx, m > 0$. (08 Marks)
- b. Find z-transform of $u_n = \cosh\left(\frac{n\pi}{2} + \theta\right)$. (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 $\text{Tan}\theta = \left(\frac{1-r^2}{r}\right) \left(\frac{\sigma_x \sigma_y}{\sigma_x^2 \sigma_y^2}\right)$. (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	130

- 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

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

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 $\int_C (\sin z dx - \cos x dy + \sin y dz)$ by using Stokes theorem, where C is the boundary of the rectangle $0 \leq x \leq \pi$, $0 \leq y \leq 1$ 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)

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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 JFET'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)

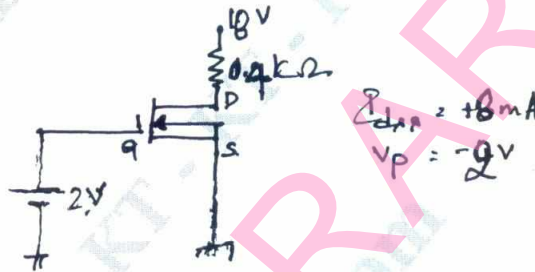


Fig.Q.1(c)

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-terms using K-map.
 $F(A, B, C, D) = \sum m(4, 5, 6) + d(10, 12, 13, 14, 15)$. (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.
 $f(a, b, c, d) = \sum m(0, 1, 10, 11, 13, 15) + d(2, 3, 12, 14)$. (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)

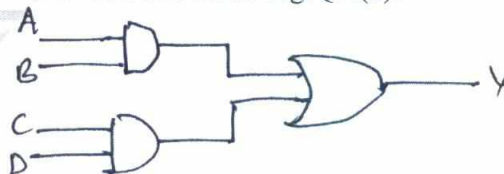


Fig.Q.4(c)
1 of 2

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

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

OR

- 2
- Explain dynamic memory allocation. (05 Marks)
 - Explain about the representation of two dimensional arrays in memory. (05 Marks)
 - 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
- Define stack. Write the procedure for two basic operations associated with stack. (05 Marks)
 - Write a short note on priority queues. (05 Marks)
 - 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
- Define queues. Write QINSERT and QDELETE procedures for queues using arrays. (10 Marks)
 - Write the postfix form of the following expression.
 $A + (B * C - D / E \uparrow F) * G * H$. (05 Marks)
 - Write a note on Ackermann function. (05 Marks)

Module-3

- 5
- Write the following algorithm for singly linked list.
 - Inserting ITEM as the first node in the list
 - Deleting the node with the given ITEM of information. (10 Marks)
 - 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 :
- Inverting a singly linked list
 - Concatenating the singly linked list
 - 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
- Pre-order traversal
 - In-order traversal
 - Post-order traversal.
- (10 Marks)
- b. Define binary search tree. Write the recursive search and iterative search algorithm for a binary search tree. (10 Marks)

OR

- 8 a. Write the routines for :
- Copying binary trees
 - 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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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
- Explain with a neat diagram the connection between the processor and the computer memory. (05 Marks)
 - Explain the Basic Instruction types with example. (05 Marks)
 - Define Addressing mode, explain the various addressing modes with example. (10 Marks)

OR

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

Module-2

- 3
- Define interrupt. Point out and explain the various ways of enabling and disabling interrupts. (07 Marks)
 - What are Exceptions? Point out and explain the different kinds of exceptions. (05 Marks)
 - 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
- What is Bus Arbitration? Explain centralized and distributed arbitration. With a neat diagram. (10 Marks)
 - Explain Universal serial Bus tree structure and split bus operation with a neat diagram. (10 Marks)

Module-3

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

OR

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

Module-4

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

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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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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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17CS36

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.
 $\{(p \vee q) \rightarrow r\} \leftrightarrow \{\neg r \rightarrow \neg(p \vee q)\}$ (06 Marks)
- b. Using the laws of logic, show that $(p \rightarrow q) \wedge [\neg q \wedge (r \vee \neg q)] \leftrightarrow \neg(q \vee p)$ (07 Marks)
- c. Establish the validity of the following argument
- $$\begin{array}{l} \forall x, p(x) \vee q(x) \\ \exists x, \neg p(x) \\ \forall x, \neg q(x) \vee r(x) \\ \forall x, s(x) \rightarrow \neg r(x) \\ \hline \therefore \exists x, \neg s(x) \end{array}$$
- (07 Marks)

OR

- 2 a. Define converse, inverse and contra positive of a conditional. Find converse, inverse and contra positive of $\forall x, (x > 3) \rightarrow (x^2 > 9)$, 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.
 \therefore 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.
 \therefore 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 consisting of all real numbers, find the truth values of:
 i) $\exists x\{p(x) \wedge q(x)\}$ ii) $\forall x\{p(x) \rightarrow q(x)\}$ iii) $\exists x\{p(x) \wedge r(x)\}$ (06 Marks)

Module-2

- 3 a. Prove that for any positive integer n, $\sum_{i=1}^n \frac{F_{i-1}}{2^i} = 1 - \frac{F_{n+2}}{2^n}$, 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 $a^2b^3c^2d^5$ in the expansion of $(a + 2b - 3c + 2d + 5)^{16}$. (07 Marks)

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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 carried out if
- There are no restrictions
 - There must be six men and six women
 - 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 $f: A \rightarrow B$, 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 $f: \mathbb{R} \rightarrow \mathbb{R}$ 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 $f: \mathbb{R} \rightarrow \mathbb{R}$ 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 $\ell_1 R \ell_2$ 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.

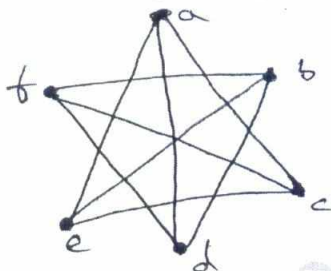


Fig.Q9(a)(i)

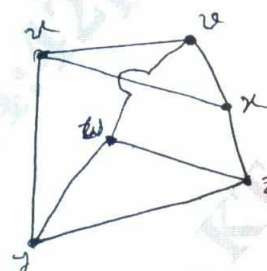


Fig.Q9(a)(ii)

(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 $\deg(v) \geq 4$ for all $v \in V$? (06 Marks)
- b. For every tree $T = (V, E)$ if $|V| \geq 2$, then prove that T has at least 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.

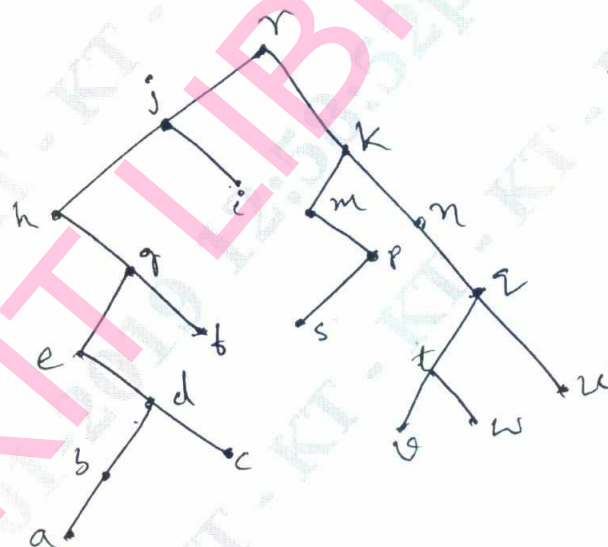


Fig.Q10(c)

(07 Marks)

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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

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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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 ೩೦ ಪ್ರಶ್ನೆಗಳಿಗೂ ಉತ್ತರಿಸಿರಿ. ಪ್ರತಿ ಪ್ರಶ್ನೆಗೆ ಒಂದು ಅಂಕ.
2. ಓ.ಎಂ.ಆರ್ ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಯು.ಎಸ್.ಎನ್ ಸಂಖ್ಯೆ ಹಾಗೂ ಪಶ್ಚಿಮ 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.

1. 'ಅಂಬಿಕಾತನಯದತ್ತ' ಕಾವ್ಯನಾಮದ ಕವಿ :
ಅ) ದ.ರಾ. ಬೇಂದ್ರೆ
ಬ) ಕೆ.ವಿ.ಪುಟ್ಟಪ್ಪ
ಕ) ವಿ.ಕೃ.ಗೋಕಾಕ
ಡ) ಗೋಪಾಲಕೃಷ್ಣ ಅಡಿಗ
2. ಕನ್ನಡಕ್ಕೆ ಸಂದಿರುವ ಜ್ಞಾನಪೀಠ ಪ್ರಶಸ್ತಿಗಳು :
ಅ) ೧೦
ಬ) ೮
ಕ) ೭
ಡ) ೯
3. 'ಶ್ರಾವಣ' ಕವನದಲ್ಲಿ ಕವಿ ಯಾವುದರ ಸೌಂದರ್ಯವನ್ನು ವರ್ಣಿಸಿದ್ದಾರೆ?
ಅ) ಧಾರವಾಡದ
ಬ) ಬೆಂಗಳೂರಿನ
ಕ) ನಿಸರ್ಗದ
ಡ) ಬೆಳಗಾವಿಯ
4. ಶ್ರೀ ವಿಶ್ವೇಶ್ವರಯ್ಯನವರು ಮೊದಲಬಾರಿ ಜೋಗ ಜಲಪಾತದ ಎದುರು ನಿಂತಾಗ ಹೇಳಿದ್ದು:
ಅ) ಎಷ್ಟೊಂದು ಬೆಳೆ ಪೋಲಾಗುತ್ತಿದೆ
ಬ) ಎಷ್ಟೊಂದು ಸಮಯ ಪೋಲಾಗುತ್ತಿದೆ
ಕ) ಎಷ್ಟೊಂದು ಹಣ ಪೋಲಾಗುತ್ತಿದೆ
ಡ) ಎಷ್ಟೊಂದು ಶಕ್ತಿ ಪೋಲಾಗುತ್ತಿದೆ

5. ಶ್ರೀ ಕುವೆಂಪುರವರ ಲೇಖನ ಯಾವ ಭಾಗದ ಚಿತ್ರಣವನ್ನು ನೀಡುತ್ತದೆ?
 ಅ) ಮಲೆನಾಡು ಬ) ಕರಾವಳಿ
 ಕ) ಮರುಭೂಮಿ ಡ) ದೊಡ್ಡನಗರ ಪ್ರದೇಶ
6. ಶ್ರೀ ವಿಶ್ವೇಶ್ವರಯ್ಯನವರ ಬಾಷಣಕ್ಕೆ ಯಾವುದು ಸರಿಹೊಂದುವುದಿಲ್ಲ?
 ಅ) ಆಲೋಚನೆಯಲ್ಲಿ ಸತ್ಯನಿಷ್ಠೆ.
 ಬ) ಹಾವಭಾವ-ಮಾತಿನ ಮಂಟಪದಲ್ಲಿ ಜನರನ್ನು ಮರಳುಮಾಡುವುದು.
 ಕ) ಭಾಷಣದ ಕುರಿತು ತಯಾರಿ
 ಡ) ಶೋತೃವರ್ಗಕ್ಕೆ ಗೌರವ
7. ಶ್ರೀ ಶಿವರಾಮ ಕಾರಂತರ "ದೋಣಿ ಹರಿಗೋಲುಗಳಲ್ಲಿ" ಲೇಖನ ಯಾವ ರೀತಿ ಯಾಗಿದೆ?
 ಅ) ವಿಡಂಬನೆ ಬ) ನಾಟಕ
 ಕ) ಪ್ರವಾಸ ಕಥನ ಡ) ತಂತ್ರಜ್ಞಾನ ಲೇಖನ
8. ಶ್ರೀ ವಿಶ್ವೇಶ್ವರಯ್ಯನವರ ವ್ಯಕ್ತಿತ್ವಕ್ಕೆ ಹೊಂದಿಕೊಳ್ಳುವಂತದ್ದು :
 ಅ) ಶಿಸ್ತು ಬ) ಪಾಶ್ಚಾತ್ಯ ದಿರಿಸು
 ಕ) ಹೊಣೆಗಾರಿಕೆ ಡ) ಮೇಲಿನ ಎಲ್ಲವು
9. 'ಸುಖ' ಪದಕ್ಕೆ ವಿರುದ್ಧಾರ್ಥಕ ಪದ :
 ಅ) ದುಃಖ ಬ) ನಲಿವು
 ಕ) ಸಂತೋಷ ಡ) ಒಲವು
10. 'ನಮ್ಮ ಎಮ್ಮೆಗೆ ಮಾತು ತಿಳಿಯುವುದೇ?' ಲೇಖನ ಯಾವ ರೀತಿಯಲ್ಲಿದೆ?
 ಅ) ತಂತ್ರಜ್ಞಾನ ಲೇಖನ ಬ) ವಿನೋದ ಲೇಖನ
 ಕ) ಪತ್ರಿಕಾ ಅಂಕಣ ಡ) ನಾಟಕ
11. ಶ್ರೀ ಪಿ.ಲಂಕೇಶ 'ಗುಬ್ಬಚ್ಚಿಗೂಡು' ಲೇಖನದಲ್ಲಿ ಚಿಂತಿಸಿರುವುದು :
 ಅ) ಭಟ್ಟಂಗಿಗಳ ಬದುಕು ಬ) ದೀನತೆಯ ಬದುಕು
 ಕ) ಸ್ವಂತಿಕೆಯ ಬದುಕು ಡ) ಅಸಮಾನತೆಯ ಬದುಕು
12. 'ಜನ' ಯಾವ ಲಿಂಗ
 ಅ) ಸ್ತ್ರೀ ಲಿಂಗ ಬ) ಪುಲ್ಲಿಂಗ
 ಕ) ಅಲಿಂಗ ಡ) ನಪುಂಸಕಲಿಂಗ
13. ಪತ್ರ ವ್ಯವಹಾರ - ಮನವಿಗಳಲ್ಲಿ ಇರಬೇಕಾದದ್ದು :
 ಅ) ಸ್ಪಷ್ಟ ಮಾಹಿತಿ ಬ) ನೇರ ನಿರೂಪಣೆ
 ಕ) ಸೌಜನ್ಯ ಡ) ಮೇಲಿನ ಎಲ್ಲವು

14. ಸಚಿವ + ಆಲಯ = ಸಚಿವಾಲಯ, ಇಲ್ಲಿರುವ ಸಂಧಿ :
 ಅ) ಸುವರ್ಣ ಸಂಧಿ ಬ) ಸರ್ವಧೀರ್ಘ ಸಂಧಿ
 ಕ) ರಾಜಯೋಗ ಸಂಧಿ ಡ) ವೃದ್ಧಿ ಸಂಧಿ
15. 'ವಿಶ್ವ ಮಾನವತೆ' ಎನನ್ನು ಪ್ರತಿಪಾದಿಸುತ್ತದೆ?
 ಅ) ಕಂದಾಚಾರ ಬ) ಮೂಢನಂಬಿಕೆ
 ಕ) ಸಾಮರಸ್ಯ-ಸಹಿಷ್ಣುತೆ ಡ) ಮತೀಯ ದ್ವೇಷ
16. 'ಪಡುವಣ' ಪದದ ವಿರುದ್ಧಾರ್ಥಕ ಪದ
 ಅ) ಕೊಂಕಣ ಬ) ಬಡಗಣ
 ಕ) ತೆಂಕಣ ಡ) ಮೂಡಣ
17. 'ನಾನು ನಿನ್ನೆ ಕೆ.ಜಿ.ಎಫ್‌ಗೆ ಹೋಗಿದ್ದೆನು' ಈ ವಾಕ್ಯದಲ್ಲಿರುವ ಕಾಲ :
 ಅ) ಭೂತ ಕಾಲ ಬ) ರಾಜಯೋಗ ಕಾಲ
 ಕ) ಯಮಗಂಡ ಕಾಲ ಡ) ರಾಹು ಕಾಲ
18. 'ಫೋಟೋಗ್ರಾಫಿ' ಪದಕ್ಕೆ ಸಮನಾದ ಕನ್ನಡದ ಪದ:
 ಅ) ವರ್ಣ ಚಿತ್ರ ಬ) ಛಾಯಾ ಚಿತ್ರ
 ಕ) ತೈಲ ಚಿತ್ರ ಡ) ಚಲನ ಚಿತ್ರ
19. 'ಬೆಣ್ಣೆ ಹಚ್ಚು' ಪದದ ಸರಿಯಾದ ಅರ್ಥ:
 ಅ) ರೊಟ್ಟಿಗೆ ಬೆಣ್ಣೆ ಹಚ್ಚು ಬ) ದೋಸೆಗೆ ಬೆಣ್ಣೆ ಹಚ್ಚು
 ಕ) ಹೊಗಳುವುದು ಡ) ರಾಗಿಮುದ್ದೆಗೆ ಬೆಣ್ಣೆ
20. 'ಎಲ್ಲ ಹುಡಿಗಿಯರ ಕನಸು' ಕವನ ಯಾವುದರ ಕುರಿತಾಗಿದೆ?
 ಅ) ಸಂಪ್ರದಾಯಗಳಿಗಿಂತಲು ಮಿಗಿಲಾಗಿರುವುದು ಮಹಿಳೆಯ ಘನತೆ.
 ಬ) ಮಹಿಳಾ ಮೀಸಲಾತಿ
 ಕ) ಸಮಾನತೆಗಾಗಿ ಚಳುವಳಿ
 ಡ) ಕನಸಿನ ಮದುವೆ
21. ಶ್ರೀ 'ಬಂದೇ ನವಾಜ್' ಯಾರು?
 ಅ) ಗುಲಬರ್ಗಾದ ಸೂಫಿ ಸಂತರು ಬ) ಬ್ರಿಟಿಶರಿಂದ ಉಂಬಳಿ ಪಡೆದವರು
 ಕ) ವಜ್ರ ವ್ಯಾಪಾರಿಗಳು ಡ) ಗಣಿ ಧಣಿ
22. 'ರೆಹಮಾನರ ಹಾಡಿನ ಕಂಪೋಷನ ಚೆನ್ನಾಗಿದೆ' ಎನ್ನುವ ವಾಕ್ಯದಲ್ಲಿ ಕಂಪೋಷನ ಪದಕ್ಕೆ ಸರಿಯಾದ ಕನ್ನಡದ ಪದ:
 ಅ) ಧ್ವನಿ ಸಂಪತ್ತು ಬ) ಸಂಯೋಜನೆ
 ಕ) ನಿರ್ದೇಶನ ಡ) ಕಂಠದಾನ

23. 'ಆನೆಹಳ್ಳದಲ್ಲಿ ಹುಡುಗಿಯರು' ಲೇಖನದಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳ ಪ್ರವಾಸದ ಉದ್ದೇಶ :
 ಅ) ಆನೆ ದಂತ ಸಂಗ್ರಹಣೆ ಬ) ಖೆಡ್ಡಾಗಳ ಕುರಿತು ಅಧ್ಯಯನ
 ಕ) ಸಸ್ಯ ವೀಕ್ಷಣೆ ಡ) ಹುಲಿ ವೀಕ್ಷಣೆ
24. ಡಾ|| ಬೆಸಗರಹಳ್ಳಿ ರಾಮಣ್ಣನವರ 'ಗಾಂಧಿ' ಕಥೆ ಏನನ್ನು ಪ್ರತಿಪಾದಿಸುತ್ತದೆ?
 ಅ) ವರ್ಣಾಶ್ರಮ ಪದ್ಧತಿ
 ಬ) ಜಾತೀಯತೆ
 ಕ) ಮುಢ ನಂಬಿಕೆ
 ಡ) ಮಹಾತ್ಮ ಗಾಂಧೀಜಿಯವರ ಮೌಲ್ಯಗಳಿಗೆ ಒದಗಿರುವ ಅವಸ್ಥೆಯನ್ನು
25. ಶ್ರೀ ಸಿದ್ಧಲಿಂಗಯ್ಯನವರ 'ಬೆಳ್ಳಿಯ ಹಾಡು' ಕವನದಲ್ಲಿ ಕಂಡುಬರುವ ಅಂಶ :
 ಅ) ಸಮಾಜದ ಸುಸ್ಥಿತಿ ಬ) ಪ್ರೇಮದ ರಮ್ಯತೆ
 ಕ) ಭಕ್ತಿಯ ಪರವಶತೆ ಡ) ದಲಿತರ ಕನಸು
26. 'ಒಲೆಹತ್ತಿ ಉರಿದಡೆ ನಿಲಬಹುದಲ್ಲದೇ, ಧರೆಹತ್ತಿ ಉರಿದರೆ ನಿಲಬಾರದು, ಏರಿ ನೀರುಂಬಡೆ ಬೇಲಿ ಹೊಲದ ಮೇವೊಡೆ, ನಾರಿ ತನ್ನ ಮನೆಯಲ್ಲಿ ಕಳುವೊಡೆ, ತಾಯಿಯ ಮೊಲೆಹಾಲು ನಂಜಾಗಿ ಕೊಲವುಡೆ ಇನ್ನಾರಿಗೆ ದೂರುವೆ ಕೂಡಲ ಸಂಗಮದೇವಾ' ಈ ವಚನದ ರಚನೆಕಾರರು:
 ಅ) ಸರ್ವಜ್ಞ ಬ) ಚಾಮರಸ
 ಕ) ಅಲ್ಲಮಪ್ರಭು ಡ) ಬಸವಣ್ಣ
27. ಮಲೆಮಾದೇಶ್ವರ ಬೆಟ್ಟವಿರುವ ಸ್ಥಳ:
 ಅ) ಅರಿಶಿನಕುಂಟೆ ಬ) ಅಥಣಿ
 ಕ) ಅಫಜಲಪುರ ಡ) ಕೊಳ್ಳೆಗಾಲ
28. 'ಶ್ರೀ ಸಂಗೊಳ್ಳಿ ರಾಯಣ್ಣ' ಯಾರು?
 ಅ) ಅದ್ಭುತ ಭಾಷಣಕಾರ ಬ) ವಂದಿಮಾಗಧರಿಗೆ ಸೇರಿದವನು
 ಕ) ಬ್ಯಾಂಕಗಳಿಗೆ ಮೋಸ ಮಾಡಿದವನು ಡ) ಬ್ರಿಟಿಷರ ವಿರುದ್ಧ ಹೋರಾಡಿದ ಹೋರಾಟಗಾರ
29. ಮೊದಲು ಕನ್ನಡಕ್ಕೊಂದು ಅಪರೂಪ ನಿಘಂಟನ್ನು ರಚಿಸಿಕೊಟ್ಟವರು:
 ಅ) ಪಂಪ ಬ) ಹರಿಹರ
 ಕ) ಮೆಕಾಲೆ ಡ) ಕಿಟ್ಟೆಲ್
30. 'ಕನ್ನಡ ಸಂಸ್ಕೃತಿ' ಈ ರೀತಿಯಾಗಿದೆ :
 ಅ) ಬಹುರೂಪಿಯಾಗಿದೆ ಬ) ವರ್ಣರಂಜಿತವಾಗಿದೆ
 ಕ) ಜೀವಂತವಾಗಿದೆ ಡ) ಮೇಲಿನ ಎಲ್ಲವು

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CBBCS SCHEME

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17KKK39

Question Paper Version : B

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 : Translate the following English words to Kannada [from Q No. 1 to 5]

1. Near
a) Swalpa
c) heege
b) hattira
d) hosa
2. Shop
a) AngaDi
c) kante
b) dukan
d) Mane.
3. See
a) NooDu
c) BiDu
b) MaaDu
d) IDu
4. Moon
a) candra
c) Naksatna
b) Suurya
d) Boomi
5. Child
a) Maanava
c) MahiLe
b) Magu
d) HeNNU

Note : Write the English word for given Kannada word [From Q No. 6 to 9]

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

7. Kurci
a) Table
c) Chair
8. GaNita
a) Physics
c) Mathematics
9. Shaale
a) Home
c) Office
- b) Book
d) Pen
- b) Biology
d) English
- b) School
d) Room.

Note : Substitute the words from the following each sentence in appropriate place [From Q No. 10 to 12]

10. naanu uuTa maaDu
a) maaDuttene
c) maaDisu
11. Namma manege baa ?
a) Baruttiya
c) BeDa
12. Namma hattira Kutka.
a) KuLituko
c) Kundru
- b) maaDideya
d) maaDi
- b) Bandi
d) Baru
- b) KooDu
d) Nona

Note : Translate the Kannada word into English. [From Q No. 13 to 22]

13. Meenu
a) Animal
c) Crow
14. Nayee
a) Pig
c) Dog
15. Aat
a) See
c) Go
16. Mana
a) Home
c) Pen
17. Nanu
a) I
c) We
18. Maga
a) Father
c) Daughter
- b) Fish
d) Owl
- b) Cow
d) Cat
- b) Come
d) Play
- b) School
d) Mind
- b) You
d) He
- b) Sister
d) Son.

19. Baa
a) Go
c) Visit
b) Sit
d) Come
20. Kaagad
a) Chair
c) Mouce
b) Computer
d) Paper
21. Avanu
a) He
c) It
b) She
d) They
22. Aangla
a) Kannada
c) Marathi
b) English
d) Urdu.

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

23. nanage ninna sahayaasa khanditaa -----
a) BeDa
c) Ide
b) Beka
d) Ila.

**Note : Translate the following Kannada question into English.
[from question No. 24 to 25]**

24. Nivvu yaaru ?
a) who is this?
c) who are you?
b) what is this?
d) what is there?
25. Idu Enu?
a) who is this?
c) who are you?
b) what is this?
d) what is there?

**Note : Fill in the blank by translating the given English word to Kannada.
[From Question No : 26 to 30]**

26. He : -----
a) NANu
c) Avanu
b) Neenu
d) AvaLu
27. When : -----
a) Yaaru
c) Yelli
b) Yaavaga
d) Yaake
28. Teacher : -----
a) HuDuga
c) Shikshaka/ki
b) Manushya
d) Shishya
29. Vegetable : -----
a) tarakari
c) tavaruru
b) takararu
d) tamota
30. Garden : -----
a) Mane
c) TooTa
b) Shaale
d) Baagilu

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CBCS SCHEME

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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 $(1 + \cos\theta + i \sin\theta)^n + (1 + \cos\theta - i \sin\theta)^n = 2^{n+1} \cos^n\left(\frac{\theta}{2}\right) \cos\left(\frac{n\theta}{2}\right)$ (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 $\frac{3+4i}{3-4i}$ 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 $\tan\phi = r \frac{d\theta}{dr}$. (06 Marks)
- c. If $u = \log_e \frac{x^3 + y^3}{x^2 + y^2}$, prove that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = 1$. (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 $\frac{\partial(u, v, w)}{\partial(x, y, z)}$ at $(1, -1, 0)$. (06 Marks)

Module-3

- 5 a. Obtain a reduction formula for $\int_0^{\pi/2} \cos^n x \, dx$, ($n > 0$). (08 Marks)
- b. Evaluate $\int_0^a \frac{x^7}{\sqrt{a^2 - x^2}} \, dx$ (06 Marks)
- c. Evaluate $\int_1^2 \int_1^3 xy^2 \, dx \, dy$ (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)

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