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Total No. of Pages : 2

S.E. (Computer Science and Engineering) (Semester - IV)

Examination, May - 2019

AUTOMATA THEORY

Sub. Code : 63531

Day and Date : Tuesday, 14 - 05 - 2019 **Total Marks : 50**

Time : 02.30 p.m. to 04.30 p.m.

Instructions :
1) **Question No. 1 and Question No. 4 are Compulsory.**
2) **Solve any one question from questions No.2 & question No. 3.**
3) **Solve any one question from questions No.5 & question No. 6.**
4) **Assume suitable data wherever necessary.**
5) **Figures to the right indicate full marks.**

Q1) Solve any three questions: **[15]**

a) Remove A productions from the grammar

S→ABCBCDA

A→CD

B→Cb

C→a| Λ

D→Bd| Λ

b) Write a regular expression for

i) The Language containing strings starting with 01?

ii) The Language containing strings not containing 00?

c) State & prove Kleen's theorem Part I.

d) Design a DFA For the regular expression (11+110)*.

Q2) a) Find the context free grammar for the following languages. **[6]**

i) $L=\{a^i b^j c^k \mid i = j + k\}$

ii) $L=\{ a^n b^m a^n \mid n \geq 0, m \geq 1\}$

b) Compare DFA with NFA. **[4]**

Q3) a) Explain recursive descent parsing. **[4]**

b) What is ambiguous CFG? Explain an example of ambiguous CFG. **[6]**

P.T.O.

Q4) Solve any three questions : **[15]**

a) Define Following Terms:

i) Pushdown Automata.

ii) Acceptance of a string by PDA.

b) Write Short note on "Universal Turing Machine".

c) Explain with suitable example intersection of two Context Free Languages.

d) Construct a Turing Machine for accepting even length string.

Q5) a) Construct PDA for following CFG. **[6]**

$S \rightarrow [S] \mid \{S\} \mid \Lambda$

b) Write short note on "Configuration of a PDA". **[4]**

Q6) a) Construct a Turing Machine to accept regular language represented by following regular expression **[6]**

r = (a + b)*abb

b) Define Turing Machine and acceptance of a string by Turing Machine. **[4]**

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Total No. of Pages : 2

S.E. (Computer Science and Engineering) (Semester - IV) (Revised) Examination, May - 2019

COMPUTER NETWORKS

Sub. Code : 63532

Day and Date : Thursday, 16 - 05 - 2019 **Total Marks : 50**

Time : 02.30 p.m. to 04.30 p.m.

Instructions : **1)** **Solve any two questions from each section.**
2) **Figures to the right indicate full marks.**
3) **Assume suitable data whenever necessary.**

SECTION - I

Q1) a) Write a short note comparison of virtual-circuit and datagram networks. **[7]**
b) Explain count-to-infinity problem. **[5]**

Q2) a) Write a short note on classful addressing. **[6]**
b) Explain following with reference to classful addressing. **[6]**
i) Subnetting
ii) Supernetting
iii) Address Depletion

Q3) a) In brief explain any two following regarding congestion control in datagram subnets. **[6]**
i) The Warning Bit
ii) Choke Packets
iii) Hop-by-Hop Choke Packets
b) With neat diagram explain leaky bucket algorithm. **[7]**

SECTION - II

Q4) a) Explain the Berkeley socket primitives for TCP. **[7]**
b) Discuss the connection establishment procedure in transport protocol. **[6]**

P.T.O.

Q5) a) Draw and explain architecture of WWW. **[6]**

b) Describe DNS message in detail. **[6]**

Q6) a) Explain the symmetric key encryption algorithm. **[6]**

b) Explain rotation cipher. In asymmetric-key cryptography, how do you think two persons can establish two pairs of keys between themselves? **[6]**

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Total No. of Pages : 1

S.E. (Computer Science & Engineering) (Semester - IV)
Examination, May - 2019
COMPUTER ORGANIZATION
Sub. Code : 63533

Day and Date : Monday, 20 - 05 - 2019 **Total Marks : 50**

Time : 02.30 p.m. to 04.30 p.m.

Instructions :
1) **Figures to the right indicate full marks.**
2) **Question Q.1 & Question Q.4 are compulsory.**
3) **Attempt any one Question from Q.2, Q.3 and one from Question Q.5, Q.6**

Q1) a) Explain the Mechanical era computers. **[4]**
b) Give the comparison between RISC and CISC. **[4]**
c) With a block diagram explain accumulator based CPU. **[5]**

Q2) a) Explain the architecture of Pentium 4 Processor. **[6]**
b) Explain the IEEE 754 standard 32 bit floating point format with a one example. **[6]**

Q3) a) With the HDL description explain the Booths algorithm. **[6]**
b) Explain non-restoring division algorithm for unsigned integers with one example. **[6]**

Q4) a) Explain One-hot method of designing control unit for GCD processor. **[7]**
b) With a neat diagram explain the basic structure of micro programmed control unit. **[6]**

Q5) a) Explain the micro programmed control unit for 2's-compliment multiplier. **[6]**
b) Draw and explain the structure of an associative memory. **[6]**

Q6) a) Write a short note on TLB. **[6]**
b) Write a short note on memory allocation. **[6]**

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Total No. of Pages : 2

S.E. (Computer Science and Engineering) (Semester - IV)
(Revised) Examination, May - 2019
Operating Systems - I
Sub. Code : 63534

Day and Date : Wednesday, 22 - 05 - 2019 **Total Marks : 50**

Time : 02.30 p.m. to 04.30 p.m.

Instructions : **1)** **Q. No. 3 and Q. No. 6 are compulsory.**
2) **Solve any one from Q.No. 1 and 2 and any one from Q.No.4 and 5.**
3) **Assume suitable data wherever necessary.**

SECTION - I

Q1) a) What is an Operating System? Explain Time sharing operating systems. **[5]**
b) Explain operating system with Monolithic Structure. **[5]**

Q2) a) Draw and explain Queueing-diagram representation of process scheduling. **[4]**

b) Consider the following processes with arrival time, burst time and priority. Calculate average waiting time using Non-preemptive priority scheduling & Preemptive priority scheduling algorithm. **[6]**

Process	Arrival time (in ms)	Burst time (in ms)	Priority
P_1	0	11	2
P_2	2	1	3
P_3	3	4	2
P_4	4	2	1

Q3) Write short notes on (any three) : **[15]**
a) Cooperating processes.
b) Algorithm 3 for two process solutions for critical-section problem.
c) Bounded buffer problem with structure of the producer and consumer process.
d) Multilevel Feedback Queue Scheduling.

P.T.O.

SECTION - II

Q4) a) Explain Banker's algorithm? Write an algorithm for finding out whether or not a system is in safe state. **[5]**

b) What is a Deadlock? What are the necessary conditions for deadlock? **[5]**

Q5) a) Explain the concept of segmentation with paging. **[4]**

b) What are the steps in handling a page fault? How we compute the effective access time for a demand-paged memory. **[6]**

Q6) Write short notes on (any three) : **[15]**

a) Resource allocation graph Algorithm for deadlock avoidance.

b) Optimal Page Replacement.

c) I/O Hardware.

d) Files and file operations.

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Total No. of Pages : 1

S.E. (CSE) (Semester - IV) Examination, May - 2019

SOFTWARE ENGINEERING (Revised)

Sub. Code : 63535

Day and Date : Friday, 24 - 05 - 2019 **Total Marks : 50**

Time : 02.30 p.m. to 04.30 p.m.

Instructions : 1) Attempt one questions from Q1 and Q2.
2) Q3 and Q6 are compulsory.
3) Attempt one question from Q4 and Q5.

Q1) a) What is software engineering? Differentiate between industrial strength software and student software. **[6]**

b) What do you mean by software process. Briefly explain the two major component processes. **[6]**

Q2) a) What is SRS? Briefly explain the desirable qualities of the SRS document **[6]**

b) Explain PCMM model with the help of figure. **[6]**

Q3) a) What is project planning? State and explain principles of project planning. **[7]**

b) Evaluate the relationship between the development and the management process. **[6]**

Q4) a) What is cohesion? Explain several types of coupling? **[6]**

b) What is risk? State and briefly explain principles of effective risk management. **[6]**

Q5) a) What is performance testing? Explain white box testing. **[6]**

b) Explain any two methods of gathering requirements. **[6]**

Q6) a) Explain six sigma in detail. **[6]**

b) What is ISO 9000 certification? Explain in detail. **[7]**

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Total No. of Pages : 3

S.E. (Computer Science and Engineering) (Part - II) (Semester - III) Examination, April - 2019
APPLIED MATHEMATICS
Sub. Code : 63524

Day and Date : Friday, 26 - 04 - 2019 **Total Marks : 50**

Time : 09.30 a.m. to 11.30 a.m.

Instructions : **1)** **Attempt any two questions from each section.**
2) **Figures to the right indicate full marks.**
3) **Use of non-programmable calculator is allowed.**

SECTION - I

Q1) Attempt any two of the following (each six marks) : **[12]**

a) Find Karl Pearsons coefficient of correlation to the following data.

x	1	6	9	17	28
y	47	49	56	67	78

b) Find the value of the integral in six steps by using Simpsons 1/3 rule.

$$\int_1^{2.2} x^2 \log_e x dx.$$

c) Determine the root of the following equation correct up to four decimal places using Newton Raphson Method $x^3 - x - 1 = 0$.

Q2) Attempt any two of the following (each six marks) : **[12]**

a) Find the value of k if following function is discrete probability density function.

x	1	2	3	4	5
y	k	k^2	2k-1	k^2	4k-2

b) The weight of the soap barproduced by a company is normally distributed with mean weight 75 grams and standard deviation 2 grams. If soap bar is selected random and weighted, what is the probability that its will lie
i) between 75 and 79grams.
ii) below 79grams (Standard Normal Variate from z=0 to 2 is 0.4772)

c) Average number of mistakes per page in a book are 2. If a book is of 200 pages then how many pages contains
i) there is no mistakes
ii) only one mistake.

Q3) a) Fit a Binomial distribution to the following data. **[7]**

x	0	1	2	3	4	5
f	5	7	16	15	6	1

b) Fit a exponential curve $y = ab^x$ to the following data. **[6]**

x	1	2	3	4	5
y	2.93	3.15	3.5	3.85	4.2

SECTION - II

Q4) a) Define α-cuts and strong α-cuts and find α-cuts and strong α-cuts for α= 0.5,0.7 for the fuzzy set

$$A(x) = \frac{0}{a} + \frac{0}{b} + \frac{0.5}{c} + \frac{1}{d} + \frac{0.7}{e} + \frac{0.2}{f}.$$ **[6]**

b) If $A(x) = \frac{0.4}{x1} + \frac{0.2}{x2} + \frac{0.5}{x3} + \frac{0.8}{x4}$

$$B(x) = \frac{0.2}{x1} + \frac{0.3}{x2} + \frac{0.6}{x3} + \frac{0.1}{x4} + \frac{0.1}{x5}$$

Find $\overline{A \cup B}$ and $\overline{A \cap B}$. Also find height of $\overline{A \cup B}$ and $\overline{A \cap B}$. **[7]**

Q5) Attempt any Two of the following : **[12]**

a) Find the fuzzy cardinality of the Fuzzy set defined by

$$A(x) = \frac{35-x}{15},\ x \in \{20,22,24,26,28,30,32,34\}.$$

b) For the fuzzy sets A and B, calculate the degree of subset hood S(A,B)

$$A(x) = \frac{0}{0} + \frac{0.2}{1} + \frac{0.35}{2} + \frac{0.15}{3} + \frac{0.5}{4} + \frac{0.25}{5} + \frac{0.4}{6}$$

$$B(x) = \frac{1}{0} + \frac{0.15}{1} + \frac{0.2}{2} + \frac{0.35}{3} + \frac{0.4}{4} + \frac{0.15}{5} + \frac{0}{6}$$

c) Calculate the fuzzy number A-B for the following fuzzy sets.

$$A(x) = \begin{cases} \frac{x+1}{2}, -1 < x \le 1 \\ \frac{3-x}{2}, 1 < x \le 3 \\ 0\ ,\ otherwise \end{cases} \quad \text{and} \quad B(x) = \begin{cases} \frac{x-1}{2}, 1 < x \le 3 \\ \frac{5-x}{2}, 3 < x \le 5 \\ 0\ ,\ otherwise. \end{cases}$$

Q6) Following table represent profit earned by workers from different jobs. Find assignment schedule to maximize profit. **[12]**

		Jobs			
		A	B	C	D
Workers	I	5	4	8	6
	II	4	2	5	4
	III	9	5	8	5
	IV	8	1	7	3

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Total No. of Pages : 2

S.E. (Computer Science and Engg.) (Semester - III) (New Course)

Examination, May - 2019

DISCRETE MATHEMATICAL STRUCTURES

Sub. Code : 63525

Day and Date : Tuesday, 14 - 05 - 2019 **Total Marks : 50**

Time : 09.30 a.m. to 11.30 a.m.

Instructions : **1)** **Q.3 and Q.6 are Compulsory from Section - I and Section - II.**

2) **Attempt any one from Q.1 and Q.2 also any one from Q.4 and. Q.5.**

SECTION - I

Q1) a) Obtain PDNF of the following without constructing Truth Table **[4]**

$$P \wedge (P \rightarrow Q)$$

b) Convert following prefix & suffix formulas into completely parenthesized form. **[4]**

i) $\rightarrow \neg PVQ \leftarrow \rightarrow R \neg S$

ii) $\rightarrow \rightarrow PQ \rightarrow \rightarrow QR \rightarrow PR$

c) Write a note on Cartesian Products and Ordered Pairs. **[5]**

Q2) a) Define with example **[4]**

i) Proper inclusion

ii) Symmetric difference

b) Let N be the set of natural numbers show that <N,+> and <N,x> are monoids. **[4]**

c) Given S={a_1, a_2, a_3, ... a_8} what subsets are represented by B_{17} and B_{31}? Also how will you designate the subsets { a_2, a_6, a_7 } and{ a_1, a_8 }? **[5]**

Q3) Write a short note on (Attempt any 3) : **[12]**

a) Properties of Binary Relation

b) Semigroup Homomorphism

c) Well formed Formula

d) Partial ordering

P.T.O.

SECTION - II

Q4) a) Define following with respect to Graph. **[6]**

i) Path

ii) Length of path

iii) Elementary Path

b) Explain PERT with example. **[6]**

Q5) a) Explain different properties of Lattice. **[6]**

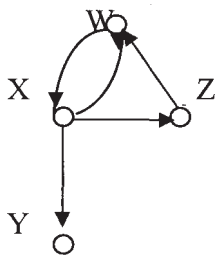
b) How many number of ways to choose three out of seven days (with repetitions allowed)? How many number of ways to choose seven out of three days (with repetitions necessarily allowed)? **[6]**

Q6) a) A box contains 6 white balls and 5 black balls find the number of ways 4 balls can be drawn from the box if **[6]**

i) Two must be white

ii) All of them must have the same color

b) Explain Storage representation of following diagraph **[7]**



OR

Write a note on Bays Theorem. **[7]**

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Total No. of Pages : 2

S.E. (Computer Science and Engineering) (Semester - III)
(Revised) Examination, May - 2019
DATA STRUCTURES
Sub. Code : 63526

Day and Date : Thursday, 16 - 05 - 2019 **Total Marks : 50**

Time : 09.30 a.m. to 11.30 a.m.

Instructions :
1) **All Questions are Compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume suitable data whenever necessary.**

Q1) a) With help of suitable example, explain working of PUSH and POP operations of Stack. **[7]**

OR

Explain applications of stack. Write an algorithm for converting infix to prefix notation using stack.

b) Explain following terms with help of suitable example. **[6]**
   a) Function.
   b) Time and Space Complexity.
   c) Data Types.

Q2) a) With help of suitable example, explain working of Bubble Sort. **[4]**

b) Choose appropriate search technique and solve search of given key elements **[4]**

12, 24, 26, 28, 35, 42, 44, 60, 70

Key : 24 Key : 42 Key : 100 Key : 35

c) What is Queue? Explain drawback of simple Queue. **[4]**

Q3) a) Construct algorithm for following operations on a Circular Linked List. **[7]**
   i) Create at Start
   ii) Delete at End
   iii) Traverse

OR

What is Doubly Linked List? List various operations of Doubly Linked List and explain any one operation.

b) Explain basic graph terminologies with help of suitable examples. **[6]**

P.T.O.

Q4) a) Write algorithm for counting the number of elements in a given singly linked list. **[4]**

b) What is B-Tree? Explain with help of suitable example, creation of B-Tree? **[4]**

c) Define Tree. Explain basic tree terminologies. **[4]**

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Total No. of Pages : 2

S.E. (Computer Science & Engineering) (Part - II) (Semester - III) (Revised) Examination, May - 2019

Data Communications

Sub. Code : 63527

Day and Date : Monday, 20 - 05 - 2019 **Total Marks : 50**

Time : 09.30 a.m. to 11.30 a.m.

Instructions : **1)** **Solve any TWO questions from each Section**

2) **Figures to the right indicate full marks.**

3) **Assume suitable data whenever necessary.**

SECTION - I

Q1) a) Define data communications & explain the effectiveness of a data communications system depends on which four fundamental characteristics. **[6]**

b) With neat diagram for data link layer discuss about any four responsibilities of data link layer in OSI model. **[7]**

Q2) a) Explain the Composite Signals with proper diagram. **[5]**

b) Explain about Self-synchronization. Draw a neat diagram for Effect of lack of synchronization. In a digital transmission, the receiver clock is 0.1 percent faster than the sender clock. How many extra bits per second does the receiver receive if the data rate is 1 kbps? **[7]**

Q3) a) Explain Coaxial cable with neat diagram. Mention the applications of Coaxial cable. **[6]**

b) Explain in brief about any TWO from following : **[6]**

i) NIC Cards

ii) Bridges

iii) Routers

P.T.O.

SECTION - II

Q4) a) Describe CRC (Cyclic Redundancy Check) and solve $G(x) = x^4 + x + 1$ polynomial using CRC to compute checksum. **[7]**

b) List and Explain HDLC frames with frame format. **[6]**

Q5) a) Describe static and dynamic channel allocation in detail. **[6]**

b) Explain Collision-Free Protocols in detail. **[6]**

Q6) a) Compare IEEE 802.3, IEEE 802.4 and IEEE 802.5 standards. **[6]**

b) Explain 802.6 standard (DQDB) and 802.2 logical link control. **[6]**

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Total No. of Pages : 2

S.E. (CSE) (Semester - III) Examination, May - 2019

MICROPROCESSORS

Sub. Code : 63528

Day and Date : Wednesday, 22 - 05 - 2019 **Total Marks : 50**

Time : 09.30 a.m. to 11.30 a.m.

Instructions : **1)** **Attempt any one Question from Q.No.1, 2 and 5, 6.**

2) **Question No. 3, 4 and 7,8 are compulsory.**

SECTION - I

Q1) a) Write and explain program of Addition between two 16-bit no. **[5]**

b) Explain Stack Memory addressing Mode of advanced microprocessors. **[5]**

Q2) a) Draw and explain Flag register for entire 80×86 and Pentium microprocessor. **[5]**

b) Explain descriptor of 80286 microprocessor with proper diagram. **[5]**

Q3) a) Draw and Explain internal architecture of Microprocessors in detail with programming model. **[5]**

b) Explain all Logical instructions of 8085 Microprocessors. **[5]**

Q4) Write Short Note on (any one) : **[5]**

a) Classification of Instructions.

b) Access Right Byte.

c) MOV Revisited.

SECTION - II

Q5) a) Explain the structure of 80386 Microprocessor: The memory system. **[5]**

b) Write and explain all Division instructions of microprocessor with proper syntax. **[5]**

P.T.O.

Q6) a) Explain all register set of the Pentium-4 microprocessor. **[5]**

b) Explain DO-WHILE, REPEAT-UNTIL instructions. **[5]**

Q7) a) Explain WAIT, LOCK Prefix and ENTER and LEAVE instructions in details. **[5]**

b) Explain Short, Near and Far Jump with proper example. **[5]**

Q8) Write Short Note on (any one) : **[5]**

a) BOUND instruction

b) Hyper Threading Technology

c) Interrupt Vector Table

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Total No. of Pages : 7

II Year All degree (Semester - IV) Examination, May - 2019

ENVIRONMENTAL STUDIES (Compulsory) (New)

Sub. Code : 67103/67046/67044/67045/67047/67048/70646/61752/67043/67071/67072/67078/64275/51077/67087/58366/68189/67081/69847/67083/67084

Day and Date : Sunday, 05 - 05 - 2019 **Total Marks : 70**

Time : 11.00 a.m. to 02.00 p.m.

Instructions : **1)** **All the questions are compulsory.**

2) **Figures to the right indicates full marks.**

Q1) Select correct answer from the given alternatives. **[10]**

i) The first Earth summit of United Nation was held in _____.

a) Stockholm

b) Tokyo

c) Newyork

d) Montreal

ii) Following is the science of interrelationship between living organism and non living organism.

a) Biology

b) Bio-Technology

c) Ecology

d) Microbiology

iii) The Radiation is measured by the following unit.

a) Decibel

b) RAD

c) Erg

d) Dynes

P.T.O

iv) In which state of India, Radhanagari wildlife sanctuary is situated _____

a) Kerala

b) Karnataka

c) Orissa

d) Maharashtra

v) Tsunami is caused due to _____

a) Earthquake in sea

b) Cyclones

c) Floods

d) Landslides

vi) Chipako movement was started by _____.

a) Anna Hajare

b) Medha Patkar

c) Sundarlal Bahuguna

d) None of the above

vii) Micro-organism in ecosystem are composed of _____.

a) Animal

b) Bacteria

c) Plants

d) Viruses

viii) Minamata disease is caused by

a) Cadmium

b) Arsenic

c) Mercury

d) Chromium

ix) Percentage of water on the earth present in ocean is _____.

a) 97.2

b) 93.2

c) 80.12

d) 91.2

x) Following type of the ecological pyramid is always upright.

a) Pyramid of Number

b) Pyramid of biomass

c) Pyramid of energy

d) None of the above

Q2) Answer any three of the following. **[15]**

a) Explain impact of consumption of energy on the environment.

b) Give methods of solid waste management.

c) Explain the desert ecosystem.

d) Discuss need of environment education in India.

e) Explain the concept of conservation of biodiversity.

Q3) Write short notes on any three of the following. **[15]**

a) Role of individual in prevention of pollution.

b) Importance of Forest

c) Food web

d) Human right

e) Urbanization

Q4) Define Noise pollution. Explain the causes, effects & control measures of noise pollution. **[10]**

OR

What are natural disaster? Discuss disaster management in relation to drought.

Q5) Give salient features of air (prevention and control of pollution) Act. in India. **[10]**

OR

Give formation of environmental hazard of acid rain and ozone depletion.

Q6) Define environment and explain the concept & importance of environmental studies. **[10]**

OR

Discuss problems related to resettlement & rehabilitation of people affected by developmental projects.

मराठी रूपांतर

सूचना : 1) सर्व प्रश्न लिहणे गरजेचे आहेत.

2) प्रश्नांच्या उजवीकडील संख्या पूर्ण गुण दर्शवितात.

प्र.1) खालीलपैकी योग्य पर्याय निवडा. **[10]**

i) संयुक्त राष्ट्राची पहिली वसुंधरा परिषेद येथे झाली.

अ) स्टॉकहोम

ब) टोकिओ

क) न्यूयॉर्क

ड) मॉन्ट्रीअल

ii) सजीव व निर्जीव घटकांमधे असणारा सहसंबंध दर्शविणाऱ्या शास्त्रास या नावाने ओळखतात.

अ) जीवशास्त्र

ब) जैवतंत्रज्ञानशास्त्र

क) परिस्थीतिकी

ड) सूक्ष्मजीवशास्त्र

iii) किरणोत्साराचे एकक खालीलपैकी कोणते.

अ) डेसीबल

ब) रॅड

क) अर्ग

ड) डाईन

iv) खालीलपैकी कोणत्या राज्यात राधानगरी अभयारण्य आहे.

अ) केरळ

ब) कर्नाटक

क) ओरिसा

ड) महाराष्ट्र

v) त्सुनामी कशामुळे निर्माण होतात.

अ) समुद्रातील भूकंप

ब) चक्रिवादळे

क) पूर

ड) जनिनीची घसरण

vi) चिपको आंदोलनाची सुरवात कोणी केली.

अ) अण्णा हजारे

ब) मेघा पाटकर

क) सुंदरलाल बहुगुणा

ड) यापैकी नाही

vii) परिसंस्थेमधील सूक्ष्मजीवांमध्ये कोणत्या जीवांचा समावेश होतो.

अ) प्राणी

ब) जीवाणू

क) वनस्पती

ड) विषाणू

viii) मीनामाटा आजार कशामूळे होतो ?

अ) कॅडमियम

ब) आरसेनीक

क) पारा

ड) क्रोमिअम

ix) पृथ्वीवरील एकूण पाण्यापैकी किती टक्के पाणी समुद्रामध्ये आढळते.

अ) 97.2

ब) 93.2

क) 80.12

ड) 91.2

x) खालीलपैकी कोणत्या प्रकारचा मनोरा हा नेहमी सरळ असतो.

अ) जीवसंख्येचा मनोरा

ब) जैव वस्तुमानाचा मनोरा

क) ऊर्जेचा मनोरा

ड) यापैकी नाही

प्र.2) खालीलपैकी कोणत्याही तीन प्रश्नांची उत्तरे लिहा. **[15]**

अ) ऊर्जा वापराचा पर्यावरणावरती होणारा परिणाम स्पष्ट करा.

ब) घनकचरा व्यवस्थापनाच्या पद्धती सांगा.

क) वाळवंटीय परिसंस्था स्पष्ट करा.

ड) भारतातील पर्यावरण शिक्षणाची गरज स्पष्ट करा.

इ) जैवविधतेचे संरक्षण ही संकल्पना स्पष्ट करा.

प्र.3) टिपा लिहा (कोणत्याही तीन) **[15]**

अ) प्रदूषण नियंत्रणातील वैयक्तिक भूमिका

ब) जंगलाचे फायदे

क) अन्नजाळी

ड) मानवी हक्क

इ) शहरीकरण

प्र.4) ध्वनी प्रदूषण म्हणजे काय? ध्वनी प्रदूषणाची कारणे परिणाम व नियंत्रण उपाय स्पष्ट करा. **[10]**

किंवा

नैसर्गिक आपत्ती म्हणजे काय? दुष्काळ आपत्ती व्यवस्थापन स्पष्ट करा.

प्र.5) भारताच्या वायु (प्रतिबंध व प्रदूषण नियंत्रण) कायद्या मधील प्रमुख तरतुदी सांगा. **[10]**

किंवा

आम्लपर्जन्य व ओझोन क्षयाची निर्मिती व त्यांचे पर्यावरणीय दुष्परिणाम सांगा.

प्र.6) पर्यावरण म्हणजे काय? पर्यावरण शिक्षणाची संकल्पना व महत्त्व स्पष्ट करा. **[10]**

किंवा

विकास प्रकल्पामुळे वाधीत होणाऱ्या लोकांच्या पुनर्वसन व पुनर्विस्थापन समस्यांची चर्चा करा.