Printed Pages: 23D561 UID No: 23BCA10081

End Semester Examination

Academic year 2023–2024

Program Name/Code: Bachelor of Engineering

Semester: 1st

Subject Title: Physics for Computer Science

Subject Code: 23SPH-142

Time: 3 Hour Maximum Marks: 60

Instructions: Attempt all questions from Section A and B

Attempt any three questions from Section C

Q. No	Statement	CO mapping
	Section A 5 x 2 = 10 marks	
1	Explain meaning of force constant of a spring?	CO3
2	How Nicol Prism is used to analyze plane polarized light?	CO1
3	Distinguish between n and p type semiconductor. Write minimum three difference.	CO3
4	Explain why population inversion is necessary for stimulated emission.	CO3
5	List the main components of optical fiber. State through which component light actually travels.	CO4
	Section B 4 x 5 = 20 marks	
6	A 0.42 kg block is attached to the end of a horizontal ideal spring and rest on a frictionless surface. The block is pulled so that the spring stretches by 2.1 cm relative to its unstrained length. When the block is released, it moves with an acceleration of 9.0 m/s². What is the spring constant of the spring?	CO2
7	Explain the working of the Polaroid. Name some method of producing the polarized light.	CO1
8	The wavelength of emission of radiation is 3000Å and the coefficient of spontaneous emission is 10^12/s. Determine the coefficient for stimulated emission and analyze the result.	CO3
9	Write short note on applications of lasers in medical field?	CO4
	Section C 3 x 10 = 30 marks	
10	Derive young's double slit experiment for constructive and destructive interference. In a double-slit experiment, the two slits are 1 mm apart and the screen is placed 1 m away. A monochromatic light of wavelength 500 nm is used. What will be the width of each slit for obtaining ten maxima of double slit within the central maxima of a single slit pattern?	CO2
11	Describe Wave & Particle Nature of Matter Waves? A quantum particle confined to one dimensional box of width 'a' is known to be in its one dimension box find the energy of this particle.	CO2
12	a) Explain the reason for preferring optical pumping for solid lasers to achieve population inversion. (b) In a laser, total number of active Cr3+ions is 4.8x10^19.If the laser emits radiation of wavelength 7000 Å, calculate frequency, energy of one emitted photon and energy of one pulse generated.	CO3
13	Differentiate step index fibres (SIF) and graded index fibres (GIF) with profile view.	CO4

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End Semester Examination

Academic year 2023–2024

Program Name/Code: Bachelor of Engineering

Semester: 1st

Subject Title: Business Communication & Value Science - I

Subject Code: 23PCH-102

Time: 3 Hour Maximum Marks: 60

Instructions: Attempt all questions from Section A and B

Attempt any three questions from Section C

Q. No	Statement	CO mapping
	Section A 5 x 2 = 10 marks	
1	How skimming in reading is different from scanning ?	CO1
2	Define any two standards that a person should consider for making an Ethical Communication decision.	CO4
3	What are the key distinctions between a blog and a website, and how do their respective features and purposes differ in terms of content, structure, and functionality?	CO5
4	Change the active sentences below into passive sentences: 1. Would you rather learn English or French? 2. You must not come late to class.	CO2
5	Find out the errors in the following sentences and rewrite the correct sentence: 1. Both the shopkeepers are fighting with one another. 2. I have been in United States since a year. 3. I went to the India in 1967. 4. My colleague died from cholera.	CO2
	Section B 4 x 5 = 20 marks	
6	Fill in the blanks with the correct form of verbs. 1. She _____ asleep while she was watching TV. (fall) 2. Rain _____ an important source of water. (be) 3. Now he _____ questions to see if the students have understood the lesson. (asks/asked/is asking) 4. We _____ him yesterday. (were visiting, visited, have visited) 5. We _____ to visit the museum. (will like/would like)	CO2
7	You are the Managing Director of Alpha Electronics Pvt. Limited. Draft a memo to the Customer Relations Officer for not attending to a customer complaint. Give strict warnings to properly handle all queries and complaints of the customers. Invent all other necessary details.	CO5
8	What are some common barriers that individuals and organizations encounter when engaging in cross-cultural communication, and how can these barriers be effectively overcome to foster better understanding and collaboration across diverse cultural contexts?	CO4
9	Explain any five key components or parts that make up the structure of a story, and how do these individual elements contribute to the storytelling process.	CO5
	Section C 3 x 10 = 30 marks	
10	"The single biggest problem in communication is the illusion that it has taken place." In light of the above statement, analyze the different barriers to effective communication.	CO1
11	Write a letter of complaint to the Customer Complaint Handling Manager of an online shopping site about a few products that you bought and aren't happy with. In your letter - Give details of your order. - Explain the problem with the products. - Say what you want the manager to do about it.	CO5
12	What is the significance of cross-cultural communication, and what are the key elements and needs that must be considered to effectively navigate and foster understanding in a multicultural environment?	CO4
13	Write a blog on any one of the given topics (within 250-300 words). Articulate opinions on a topic with the objective of influencing others. a. Write about a goal you achieved and how you did it. b. Predict how AI will affect different industries.	CO5

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End Semester Examination

Academic year 2023–2024

Program Name/Code: Bachelor of Engineering

Semester: 1st

Subject Title: Fundamentals of Computer Science

Subject Code: 23CSH-104

Time: 3 Hour Maximum Marks: 60

Instructions: Attempt all questions from Section A and B

Attempt any three questions from Section C

Q. No	Statement	CO mapping
	Section A 5 x 2 = 10 marks	
1	State the purpose of pre-processor directive?	CO1
2	Distinguish between while and do-while statements?	CO3
3	Explain the significance of the asterisk (*) in pointer declaration? Provide an example.	CO2
4	Explain the role of functions returning a pointer in C.	CO3
5	Describe the benefits of using pointers in C programming.	CO5
	Section B 4 x 5 = 20 marks	
6	Write a program in C to find the sum of n natural numbers without using any loops?	CO3
7	Write a C Program to Reverse Letter in Each Word of the Entered String.	CO1
8	Write a program in C to find the factorial of a given number?	CO4
9	WAP to create memory for int, char and float variable at run time.	CO3
	Section C 3 x 10 = 30 marks	
10	Elaborate basic structure of a C program with example. (b) State type casting ? Explain different types of type casting. (c) Write short notes on the following : (i) Data Type, (ii) Constant, (iii) Variable.	CO5
11	What are Strings? Write a program to explain any five in-built string functions with suitable examples.	CO3
12	(a) Define Structure? What do u mean by nested Structure? Explain with example? (b) Explain Dynamic memory allocation function in c with the help of example?	CO5
13	WAP to read a one-dimensional array, print sum of all elements along with input array elements.	CO3

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End Semester Examination

Academic year 2023–2024

Program Name/Code: Bachelor of Engineering

Semester: 1st

Subject Title: Statistics, Probability and Calculus

Subject Code: 23SMT-124

Time: 3 Hour Maximum Marks: 60

Instructions: Attempt all questions from Section A and B

Attempt any three questions from Section C

Scientific Calculator

Q. No	Statement	CO mapping
	Section A 5 x 2 = 10 marks	
1	The range of the scores 29, 3, 143, 27, 99 is:	CO4
2	Define Random experiment with examples.	CO1
3	Expand $x^2 y+3y-2$ in power of $(x-1)$and $(y+2)$ using Taylor 's theorem	CO2
4	Evaluate $\int_0^1 \int_{y^2}^{1-x} \int_0^{1-x} x \, dz \, dx \, dy$	CO4
5	If $x = r\cos\theta, y = r\sin\theta$, verify that $\frac{\partial(x,y)}{\partial(r,\theta)} \cdot \frac{\partial(r,\theta)}{\partial(x,y)} = 1$.	CO3
	Section B 4 x 5 = 20 marks	
6	Statistics affects everybody and touches life at many points.It is both a science and art. Explain the above statement with suitable examples.	CO1
7	Four balls are drawn from a bag containing 5 black, 6 white and 7 red balls. Let X is number of white balls drawn. Find p.m.f. of X	CO1
8	Evaluate $\int_0^a \int_0^{\sqrt{a^2-y^2}} \sqrt{a^2 - x^2 - y^2} \, dxdy$.	CO1
9	Evaluate $\int_0^{\log 2} \int_0^x \int_0^{x+y} e^{x+y+z} \, dx \, dy \, dz$.	CO4
	Section C 3 x 10 = 30 marks	
10	Find the mean from the following data. Marks 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90 No. of students 4 6 10 10 55 22 18 5	CO4
11	X is normally distributed and the mean and S.D is 4. Find out the probability of the following: (i) $X \geq 20$ (ii) $X \leq 10$ (iii) $0 \leq X \leq 12$	CO3
12	Evaluate $\iint y \, dxdy$, where R is the region bounded by the parabolas $y^2 = 4x$, $x^2 = 4y$	CO3
13	The area between the parabolas $y^2 = 4ax$, $x^2 = 4ay$	CO3

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End Semester Examination

Academic year 2023–2024

Program Name/Code: Bachelor of Engineering

Semester: 1st

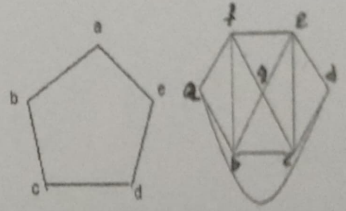
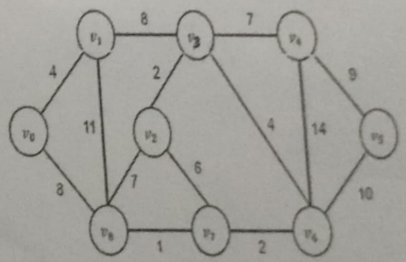
Subject Title: Discrete Mathematics

Subject Code: 23SMT-123

Time: 3 Hour Maximum Marks: 60

Instructions: Attempt all questions from Section A and B

Attempt any three questions from Section C

Q No	Statement	CO mapping
	Section A 5 x 2 = 10 marks	
1	Which of the following relations defined on X = {1, 2, 3} is a partial order? (a) {(1, 1), (2, 2), (3,3)} (b) {(1, 2), (1, 2), (2, 2) (3, 3)} (c) {(1, 1), (2, 1), (2, 2), (1, 3), (3, 3)} (d) All of the above	CO1
2	Check if $p \wedge q \rightarrow p$ is tautology or not.	CO3
3	Explain proper coloring and chromatic number with example.	CO2
4	Define tautology with an example	CO3
5	Differentiate Connected and Complete graph with example	CO3
	Section B 4 x 5 = 20 marks	
6	State and prove De Morgan's Law	CO2
7	Prove by Mathematical induction that x-y divides $x^n - y^n$ for $n \geq 1$.	CO3
8	Prove that the maximum number of edges in a simple graph with n vertices is n(n-1)/2.	CO4
9	Write a short notes on chromatic number & hence find the chromatic number of the following graph  	CO3
	Section C 3 x 10 = 30 marks	
10	Define a group. Let S = {0, 1, 2, 3, 4, 5, 6, 7} & * denote "multiplication modulo 8 i.e. $x * y = (xy) \bmod 8$. Check whether the above algebraic structure form the group or not.	CO2
11	Find the solution of the following Recurrence Relation- $S(K)-4S(K-1)-11S(K-2)+30S(K-3)=0$ where $s(0)=0$, $S(1)=-35$, $S(2)=-85$	CO3
12	Find the minimum spanning tree for the graph below. What is its total weight?  	CO3
13	State and prove Euler theorem on Graphs.	CO1