

## Aliah University

End-Semester Examination (Spring Semester) - 2025

(For 4th Year 8th Semester BTech (CSE) Programme)

Paper Name: Professional Elective-IV [Operations Research]

Full Marks: 80

Paper Code: CSEUGPE22

Time: 3 hrs

### Group - A

(Answer all questions)

$5 \times 2 = 10$

1. What are the methods used for solving operations research models? [CO1, Remember] 2
2. Define a feasible solution Linear Programming Problems (LPP). [CO1, Remember] 2
3. Define the optimal solution to a Transportation Problem. [CO1, Remember] 2
4. What is the objective of the travelling salesman problem? [CO2, Remember] 2
5. What do you mean by an activity of a project? [CO3, Understand] 2

### Group - B

(Answer any six questions)

$6 \times 5 = 30$

6. Write down some characteristics of a good model. [CO1, Understand] 5
7. State the characteristics of standard form and write the standard form of LPP in matrix form? [CO1, Remember] 5
8. Explain an unbounded solution in a linear programming problem. [CO2, Understand] 5
9. Describe the Vogels approximation method for solving transportation problems. [CO2, Understand] 5
10. State the difference between the Transportation and Assignment Problems. [CO2, Understand] 5
11. How do you convert an unbalanced assignment problem into a balanced one? Explain using a suitable example [CO2, Apply] 5
12. Distinguish between PERT and CPM. [CO4, Analyze] 5
13. Distinguish between Pure and Mixed strategies. [CO3, Analyze] 5

### Group - C

(Answer any four questions)

$4 \times 10 = 40$

[All parts of the same questions should be written together]

14. Solve the following linear programming problem graphically.  
Minimize  $z = 20x + 10y$   
subject to  $x + 2y \leq 40$ ,  
 $3x + y \geq 30$ ,  
 $4x + 3y \geq 60$   
and  $x, y \geq 0$  [CO2, Apply] 10
15. Solve the following linear programming problem using the Simplex method.  
Maximize  $z = x + y + z$   
subject to  $3x + 2y + z \leq 3$   
 $2x + y + 2z \leq 2$

[Please Turn Over]

[CO2, Apply] 10

$$x, y, z \geq 0$$

16. Determine the initial basic feasible solution for the following transportation problem whose cost and rim requirement table is given below, using North West Corner Rule method:

Origin\Destination	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Supply
O <sub>1</sub>	21	16	25	13	11
O <sub>2</sub>	17	18	14	23	13
O <sub>3</sub>	32	17	18	41	19
Demand	6	10	12	15	43

[CO2, Apply] 10

17. There are five jobs to be assigned to five machines. Only one job can be assigned to one machine. The amount of time in hours required for the jobs per machine are given in the following matrix. Find an optimum assignment of jobs to the machines to minimize the total processing time. What is the total processing time to complete all the jobs?

Jobs	Machines				
	A	B	C	D	E
1	11	17	8	16	20
2	9	7	12	6	15
3	13	16	15	12	16
4	21	24	17	28	26
5	14	10	12	11	15

[CO2, Apply] 10

18. ~~a~~ State the maximin-minimax principle.

[CO3, Remember] 4

- ~~b~~ Determine the optimal minimax strategies for each player in the following game.

		Player B			
		B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>
Player A	A <sub>1</sub>	-5	2	0	7
	A <sub>2</sub>	5	6	4	8
	A <sub>3</sub>	4	0	2	-3

[CO3, Apply] 6

19. ~~a~~ A project schedule has the following characteristics.

[CO3, Apply] 6

A < C, D, I; B < G, F; D < G, F; F < H, K; G, H < J; I, J, K < E.

Construct a network diagram from the above precedence relations.

[CO3, Understand] 4

~~b~~ Describe forward pass computations for the earliest event time.

## Aliah University

End-Semester Examination (Even Semester) - 2025

(CSE 4<sup>th</sup> Year 8<sup>th</sup> Semester)

Subject Name: Cryptography and Network Security

Full Marks: 80

Subject Code: CSEUGPC26

Time: 3hrs

### Group-A

(Answer all questions)

(5 × 2 = 10)

1. Define Cryptanalysis. [CO1, BL2]
2. If 40 people need to communicate using symmetric key cryptography, then find out the numbers of symmetric keys needed. [CO3, BL5]
3. Explain Transpositional cipher with example. [CO1, BL2]
4. Convert the Given Text "SUNDAY" into cipher text using monoalphabetic substitution with key=3. [CO3, BL5]
5. Define block cipher. [CO2, BL2]

### Group-B

(Answer any five questions)

(5×6= 30)

1. Explain Rail Fence Cipher and polyalphabetic ciphers with example. (3+3=6) [CO2, BL3]
2. Given the prime numbers p=11 and q=17. Try to find out N, e, d using RSA . (6) [CO3, BL5]
3. Explain various types of passive attacks in details. (6) [CO5, BL4]
4. Explain packet filter firewall and Proxy based firewall with diagram. (3+3=6) [CO5, BL4]
5. Explain the reason for using nonce. Differentiate between block cipher and stream cipher. (2+4=6) [CO2, BL2]
6. Prove that the result of  $G^{xy} \bmod N$  is same as the result of  $(G^x \bmod N)^y \bmod N$ , using G=5 ,x=2,y=3 and N=11. (6) [CO3, BL5]

### Group-C

(Answer any four questions)

4 × 10 = 40

7. Describe the IDEA algorithm with neat diagram and explain the steps. (10) [CO3, BL4]
8. Explain man in the middle attack with diagram. (10) [CO5, BL4]
9. What is Kerberos? Explain Kerberos protocol in details. (2+8=10) [CO5, BL2]
10. Write short note on Biometric Authentication, S/MIME and AH Protocol (3+3+4=10) [CO2, BL2]
11. Illustrate Digital Signature with neat diagram. (10) [CO4, BL4]

Even (Spring) Semester Examination May-June, 2025  
Paper Code: MBAUGHU02; Paper name: Professional Values and Ethics  
B.Tech CSE/ECE/EEN/MEN/CEN VIIIth Semester

Full Marks: 80;

Time: 3Hrs.

(The figures in the margin indicate full marks.)

Candidates are required to give their answers in their own words as far as possible)

**GROUP: A (Answer all the questions) (1 x 10 = 10)**

- X. Choose and write ONLY the correct option (a/b/c/d). DO NOT write full sentences.
- V. The rule of ethics are also called as  
A. Rule B. Law C. Responsibility D. None of the above
- II. Ethical issues that can affect an engineer's professional and personal life are termed as A.  
Macro-ethics B. Micro-ethics C. Morals D. Rights
- III. Business malpractice does not include  
A. Black Marketing B. Advertisement C. Duplication D. Adulteration
- IV. Which philosopher suggested wisdom, courage, temperance and justice as four cardinal virtues?  
A. Aristotle B. Plato C. Socrates D. Aquinas
- V. Ethics is the science of  
A. beauty B. conduct C. truth D. mind
- VI. .... is recognized as the father of 'Emotional Intelligence'.  
A. Salovey & Mayer B. Daniel Goleman C. Rokeach D. John Piaget
- VII. The word 'ethics' was derived from the Greek word  
A. ethies B. ethos C. ethees D. ethise
- VIII. Aesthetics deals with the standard of  
A. truth B. beauty C. goodness D. trust
- IX. Business ethics has a \_\_\_\_\_ application.  
A. natural B. universal C. practical D. none of the above
- X. The relevance of ethics is in its  
A. Context B. Applications C. Principles D. Understanding

**GROUP: B (Answer any five questions) (5 x 5 = 25)**

1. What do you mean by 'Values', 'Morals' and 'Ethics'?
2. Define empathy and sympathy.
3. What is a Moral Dilemma? Explain it with an example.
4. What are 'Intellectual Property Rights'(IPR)? Mention the different types of IPR.
5. Define 'Whistleblowing'. What are the different types of 'Whistleblowing'? Explain
6. Write a short note on 'Civic Virtues'.
7. What are the 'Codes of Ethics'? Discuss the importance of 'Codes of Ethics.'
8. What do you mean by the term 'Globalisation'? Explain the key components of globalisation in detail.

**GROUP: C (Answer any three questions) (15 x 3 = 45)**

- A. Discuss the essential skills for Engineers as effective managers in detail.
- B. Compare and contrast engineering experiments/Projects with standard experiments.
- C. What are the factors that affect risk acceptability?
- OR
- What are the four stages in Piaget's theory of moral development? Explain.
- D. Justify your view on inclusion of 'Professional Values and Ethics' course in the Engineering domain.

12. Explain any five ethical theories in the context of engineering ethics.  
13. Explain in detail any two analytical methods for testing the safety of an engineering product.

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## Aliah University

Even-Semester (Spring) Examination - 2025

(For 8<sup>th</sup> Semester BTech. CSE)

Paper Name: Cloud Computing  
Paper Code: CSEUGPE27

Full Marks: 80  
Time: 3 Hrs

(Answer the Questions as per the instruction in each Group and in Sequential Order.)

### Group - A

(10X1=10)

Sl. No.	Questions	Marks	CO	BT Level
a)	What is Cloud?	1	1	Remember
b)	What are IT resources in the cloud?	1	3	Understand
c)	What is Buckets?	1	2	Remember
d)	What is a Service-Level Agreement (SLA)?	1	1	Remember
e)	Define On-Demand Usage.	1	1	Remember
f)	Which of the following is an example of the cloud? a) Amazon Web Services (AWS) b) Dropbox c) Cisco WebEx d) All of the above	1	2	Understand
g)	Which of the following is a cloud platform by Amazon? a) Cloudera b) Azure c) AWS d) All of the above	1	1	Understand
h)	What is the most important concern of cloud Computing? a) Cost b) Space c) Security d) Platform	1	2	Understand
i)	Heroku is an example of : a) SaaS b) Paas c) IaaS d) None of the above	1	3	Understand
j)	Identify among the components which are known as a hypervisor. a) VMC b) VMM c) VC d) All of the above	1	2	Remember

### Group - B (Answer any 5 questions)

(5x6=30)

Sl. No.	Questions	Marks	CO	BT Level
2.	Briefly describe cloud characteristics.	6	1	Understand
3.	What are cloud provider and consumer?	6	2	Remember
4.	Define hypervisor in cloud computing and their types.	6	3	Apply
5.	List out the advantages and disadvantages of cloud computing.	2+4	1	Remember
6.	What is scaling in cloud? Explain different types of scaling with suitable diagram.	2+4	2	Understand
7.	Define DataStore in Google AppEngine.	6	4	Understand
8.	List out the advantages and disadvantages of cloud computing.	3+3	1	Remember, Understand

### Group - C (Answer any 4 questions)

(4x10=40)

Sl No.	Questions	Marks	CO	BT Level
9. a)	Differentiate between Distributed computing and Cloud computing	5+5	1	Apply

b)	Define Cloud computing. What are the characteristics of cloud computing?			
10. a) b)	Briefly explain SQL Azure. Explain storage services of Azure cloud.	5 5	4	Remember, understand
11.	What are the features of Google App engine?	10	4	Understand
12.	Explain different types of cloud service delivery models.	10	2	Remember
13.	What are Amazon cloud watch and S3? b) Explain Amazon EC2.	6+4	4	Understand
14.	What are the cloud deployment models? Explain these with a suitable diagram.	10	2	Remember