

PRANVEER SINGH INSTITUTE OF TECHNOLOGY KANPUR
Odd Semester Session 2022-23 Pre-University
B. Tech VII Semester
Cryptography and Network Security (KCS-074)

CO Number	Course Outcomes
CO1	Define [L1: Knowledge] various encryption & decryption algorithms, message authentication codes, digital signature and relate modular arithmetic approaches and network security approaches with data security.
CO2	Explain [L2: Comprehension] Key management & Distribution technique, Electronic mail security and discuss IP Security and System Security for keys used for encryption and decryption.
CO3	Solve [L3: Application] prime numbers, relative prime numbers and various modular arithmetic problems, discrete logarithmic problems and apply them in public key cryptosystem to compute keys for encryption and decryption purpose.
CO4	Compare [L4: Analysis] Fermat's and Euler's Theorem, public and private cryptosystem and various other techniques of cryptography and network security.

Time: 3 Hrs.

M. M. 100

Section A**Q1. Attempt all questions:**

(2X10 = 20 Marks)

- a) List the main security goals. CO1
- b) Define symmetric key cryptography. CO1
- c) Define relative prime numbers. CO1
- d) Find the result of “-7mod10”. CO1
- e) Find the value of $\Phi(240)$. CO1
- f) Differentiate SH-1 with MD5. CO2
- g) Discuss how padding bits are appended in MD5 algorithm. CO2
- h) Illustrate the RSA approach to digital signature. CO3
- i) Illustrate the uncontrolled public key distribution diagrammatically. CO3
- j) Illustrate the functional areas of IPsec. CO3

Section B**Q2. Attempt all questions:**

(10X3 = 30 Marks)

- a) Define the following terms: CO1
 - (i) Confidentiality (ii) Non-repudiation (iii) Access control
 - (iv) Authentication (v) Data integrity
- b) i) Differentiate monoalphabetic substitution cipher with polyalphabetic substitution cipher. CO2
 Or
 ii) Discuss the strength and weakness of data encryption standard (DES). CO2

- c) i) Calculate all primitive roots of $n=22$ and $n=24$. Describe the role of $\Phi(\Phi(n))$ and $\Phi(n)$ while computing the primitive root of number n . CO2
 ii) Explain pretty good privacy (PGP) algorithm. Explain various services supported by PGP. CO2
 Or

Section C

(10X5 = 50 Marks)

Q3. Attempt all questions:

- a i) Illustrate Diffie-Hellman key exchange technique. User A and B uses this technique with a common prime $q=71$ and a primitive root $a=7$. CO3
 (a) If user A has private key $X_A=5$, calculate A's public key.
 (b) If user B has private key $X_B=12$, calculate B's public key.
 (c) Calculate the shared secret key.
 Or
- b i) Illustrate the format of X.509 certificate showing the important elements of the certificate. CO3
 Examine the following terms in detail: CO4
 (a) Trojan horse (b) Logic bombs
 Or
- c i) Analyze various categories of firewalls used in networks with suitable diagrams. CO4
 Describe the Elgamal scheme of digital signature generation and verification. CO2
 Or
- d i) Explain the sequence of message used by Kerberos for authentication. CO2
 Illustrate the concept of Chinese remainder theorem. Solve the congruence: $X \equiv P \pmod{Q}$ where $P=(1,3,5)$ and $Q=(3,5,7)$. CO3
 Or
- e i) Illustrate the various approaches used for intrusion detection in networks with advantages and disadvantages of each approach. CO3
 Discuss Fermat's theorem. Determine the value of $3^{2005} \pmod{11}$ and multiplicative inverse of 38 under modulo 7 using Fermat's theorem. CO2
 Or
- ii) Discuss Miller-Rabin test for checking the primality of a number. Using Miller-Rabin test check the primality of $n=23$ and $n=9$. CO2

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PRANVEER SINGH INSTITUTE OF TECHNOLOGY, KANPUR

Odd Semester

Session: 2022-23

Pre-University

B. Tech VIIth Semester

Mobile Computing (KCS-711)

CO Number	Course Outcome
CO1	Define [L1: Knowledge] the different issues in mobile computing and describe the overviews of wireless telephony and channel allocation in cellular systems.
CO2	Explain [L2: Comprehension] the concepts of Wireless Networking and Wireless LAN.
CO3	Apply [L3: Application] the mobile computing techniques for solving the Data management issues like data replication for mobile computers, adaptive clustering for mobile wireless networks and Disconnected operations.
CO4	Analysing [L4: Analysis] the Mobile computing Agent's issues pertaining to security and fault tolerance and various routing protocols using Adhoc networks.

Time: 3 Hours

M. M.: 100

Section A

Q1. Attempt all questions:

(2 x 10 = 20 Marks)

- a) Define the term Mobile Computing. CO1
- b) Describe the concept of *frequency reuse* in cellular communication. CO2
- c) List the advantages of Wireless LAN over Wired LAN. CO2
- d) Describe the use of *Care-of-Address* (CoA) in Mobile IP. CO2
- e) Illustrate the use of *prefetching* and *caching* in mobile data management. CO3
- f) Explain the concept of *disconnected operation* with reference to file management in agent based computing. CO2
- g) Describe *fault tolerance* for mobile agent computing. CO2
- h) Differentiate between *proactive* and *reactive* types of Ad-hoc routing protocols. CO4
- i) Explain the two types of reactive routing protocols. CO2
- j) List the four control packets used by TORA. CO1

Section B

Q2. Attempt all questions:

(10 x 3 = 30 Marks)

- a) Describe MAHO in 2G systems. CO2
- b) Illustrate the *near-far* problem in CDMA systems. CO3
OR
- c) Illustrate *data replication* for a mobile computing system. Describe its *three* types. CO3
- d) Differentiate between the types of faults associated with mobile agent computing. CO4
OR
- e) Describe Fisheye State Routing (FSR). Investigate the methodology used by FSR to compensate for the imprecise knowledge of the path from source to destination. CO4

Section C

Q3. Attempt all questions: (10 x 5 = 50 Marks)

- a i) Discuss different applications of mobile computing. Give any suitable live example CO2
with merit of mobile computing.

OR

- ii) Explain *hidden* and *exposed* node problems in WLAN. Describe its solution using CO2
MACA technique.

- b i) Explain the two modes of WLAN operation. Describe the components of WLAN CO2
with a clear drawing of its architecture.

OR

- ii) Describe the different services offered by GSM. Explain its architecture in detail. CO2

- c i) Explain the physical layer specification of Bluetooth. Describe *piconet* and *scatternet* CO2
formations in detail.

OR

- ii) Explain different data management *issues* in mobile computing system. Describe the CO2
features of CODA file system.

- d i) Illustrate all the *basic elements* of a Mobile IP system in detail. CO3

OR

- ii) Explain the *advantages* of agent base computing. Illustrate the characteristics of a CO3
fault tolerant mobile agent.

- e i) Illustrate the DSDV routing with an example demonstrating the exchange of updated CO4
routing table by a node, in response to a topological modification.

OR

- ii) List the three common message types used in reactive routing protocols for route CO4
maintenance. Illustrate in detail the route discovery mechanism of GSR.

Renewable Energy Resources (KOE-074)**Course Outcome**

CO Number	
CO1	Define Various Non-conventional and renewable Energy resources with their advantages and disadvantages.
CO2	Describe the challenges and problems associated with the use of various energy sources, including fossils fuels, with regards to future supply and the environment.
CO3	Apply the knowledge of Renewable energy resources so as to generate alternative energy resources other than the conventional energy resources.
CO4	Calculate parameters of various energy power plants.

Time: 3 Hrs.

M. M. 100

Section A**Q1. Attempt all questions:**

(2X10 =20 Marks)

- a) What are limitations of wind power plants? CO1
- b) Explain working principle of solar Cell. CO2
- c) Define Primary & Secondary Energy Resources. CO1
- d) Show the kelvin relationship for thermoelectric generator & thermionic converter. CO4
- e) Calculate Hour angle at 9:30 AM solar time on 13 Feb, 2017. CO4
- f) Write the chemical equation which take place in Solid Oxide Fuel Cell (SOFC). CO1
- g) Sketch fixed dome type Biogas power plant. CO3
- h) List advantages of waste recycling plant. CO1
- i) Discuss Peltier effect and Thomson effect. CO1
- j) Calculate the overall efficiency of an OTEC plant if the temperature of warm water in the surface layer is 30°C & temperature of cold water in the depth of tropical ocean is 8°C. It can be assumed that the relative efficiency factor of the power plant is 0.5. CO2

Section B**Q2. Attempt all questions:**

(10X3 = 30 Marks)

- a) Discuss the performance of solar cell and also show the relationship between Form factor, Voltage factor and Efficiency. CO2
- b i) Explain the working of open cycle MHD power system with suitable diagram. CO2
OR
- ii) Explain Different types of solar power plant with the help of block diagram. CO2
- c i) How would you select suitable material for a fabrication of solar cell? CO1
OR
- ii) Define the availability of different energy resources in India. CO1

Section C**Q3. Attempt all questions:**

(10X5 = 50 Marks)

- a i) Analyze the performance of thermionic generator in terms of efficiency & output power. CO4

OR

- ii) Analyze the performance of wind turbine in terms of maximum torque, efficiency, extracted power and axial force. CO4

- b i) Define the following Energy Resources with examples-

- (i) Primary & Secondary Energy Resources
(ii) Commercial & Non-Commercial Energy Resources
(iii) Renewable & Non Renewable Energy Resources
(iv) Conventional & Non-Conventional Energy Resources.

CO1

OR

- ii) List all the advantages and disadvantages of the following Energy Resources-

- (i) Nuclear Energy
(ii) Tidal Energy
(iii) Ocean Energy
(iv) Biogas Energy

CO1

- c i) Interpret vapour phase dominated geothermal system with T-S diagram.

CO3

- (i) Using Direct contact Condenser
(ii) Without using direct contact condenser.

OR

- ii) Illustrate the working of following:-

CO3

- (i) open cycle OTEC
(ii) closed cycle OTEC

- d ii) Explain the working principle of flat plate collector in detail with the proper diagram.

CO2

OR

- ii) Discuss the following application of flat plate collector: -

CO2

- (i) Solar water pump
(ii) Space heating

- e i) What factors are taken into consideration of site selection of wind turbine? Draw operational and load characteristics of wind energy.

OR

- ii) Define manufacturing of ethanol and Methanol from biogas with the help of block diagram.

PRANVEER SINGH INSTITUTE OF TECHNOLOGY KANPUR
Odd Semester Session 2022-23 Pre-University
B. Tech. 7th Semester

Project Management & Entrepreneurship (KHU-702)

CO Number	Course Outcome (Please include all COs of your Course here)
CO1	Define the basic terms and performance indicators of Entrepreneurship, Project Management and finance Management.
CO2	Describe the theories of Entrepreneurship, Project Management and finance Management.
CO3	Illustrate business models, Project Models and financial sheets of various Enterprise.
CO4	Analyze all performance indicating parameters of the Project Managements & Finance.
CO5	NA

M. M. 100

Time: 3 Hrs.

Section A

(2X10 = 20 Marks)

Q1. Attempt all questions:

- a) State the advantages of social enterprise over business enterprise. CO1
- b) Write various phases involved in project life cycle. CO1
- c) Explain social entrepreneurship and name some successful social enterprises. CO2
- d) Differentiate between daily progress report and detailed project report. CO1
- e) Explain the importance of accuracy and over heads in cost estimation of a project. CO2
- f) State the basic difference between an entrepreneur and a manager. CO1
- g) Explain the importance of project management for entrepreneurs. CO1
- h) Differentiate between incremental innovation and breakthroughs. CO1
- i) Differentiate between entrepreneur and Intrapreneur. CO1
- j) Classify the Innovation on various behalves. CO2

Section B

(10X3 = 30 Marks)

Q2. Attempt all questions

- a) Highlight the importance of project appraisal. Distinguish various types of appraisals associated to a project. CO4
- b i) Mention the significance of detailed project report in project management. Classify various elements of project report. CO3
- OR
- ii) Demonstrate the role of marketing in social entrepreneurship. Summarize the concept of various platforms of social media in the marketing of such enterprises. CO3
- c i) Explain in detail the McClelland's Achievement Motivation Theory. CO2
- OR
- ii) Discuss the management for value creation. Illustrate with suitable examples, how value is different for different stakeholders of an enterprise. CO2

Section C**Q3. Attempt all questions**

(10X5 = 50 Marks)

- a i) Explain briefly the roles and responsibilities of social entrepreneurship. Discuss the characteristics of a social entrepreneur. CO2
- OR
- ii) Discuss a successful social entrepreneurial model. CO2
- b i) Discriminate between risk and uncertainty in a project with suitable examples. CO4
- OR
- ii) Inspect various sources for financing of a project. CO4
- c i) Construct the outlines of project feasibility report and mention the points to be considered for preparing a feasibility report. CO3
- OR
- ii) Classify various types of projects and explain them briefly with suitable examples. CO3

d i) Explain the strategies for innovation with suitable examples.

CO2

OR

ii) Explain various sources of innovation in brief.

CO2

e i) Explain various characteristics of a successful entrepreneur.

CO2

OR

ii) Explain various types of entrepreneurs on behalf of innovation & its acceptance on behalf of behavioral science.

CO2