

2026, C.P.E. 6<sup>th</sup> semester.

## LINUX OPERATING SYSTEM

CSE/CPE-406/IT-410

Full Marks : 75 SCTE/NGL/R-2026-II

Pass mark : 30

Time : 3 Hours

**I. Choose the correct answer: (7x1=7)**

- a. chmod is used to \_\_\_\_\_.  
i. Add or remove permissions to a user.  
ii. Add or remove permissions to a group.  
iii. Add or remove permissions to others.  
iv. All of the above.
- b. \_\_\_\_\_ command is used to delay the execution of the next command for a given number of seconds, hours, minutes, days.  
i. Wait  
ii. Sleep  
iii. Terminate  
iv. Wall
- c. Linux Operating System is \_\_\_\_\_.  
i. Paid  
ii. Subscribed  
iii. Open source  
iv. Close source
- d. comm is used to compare two \_\_\_\_\_ files.  
i. Unsorted  
ii. Sorted  
iii. Joined  
iv. Split
- e. The file system Ext stands for  
i. Extended File System  
ii. Expandable file system  
iii. Extended Format System  
iv. Expandable format system
- f. A scalar variable can hold \_\_\_\_\_ value at a time:  
i. One  
ii. Two  
iii. Three  
iv. Four
- g. Which of the following is not a cursor movement command?  
i. h  
ii. i  
iii. j  
iv. k

**II. Answer the following questions according to the marks given in the bracket:**

1. What are the two types of interfaces in Linux? (2)
2. How can you terminate a foreground and a background process? (2)
3. Describe tee command with example. (2)
4. How can you define abbreviations in vi editor? (3)
5. Write down the steps to write and execute shell scripts. (3)
6. What are the characteristics of X window system? (3)
7. What are the objectives of BIOS? (3)
8. Draw the structure of Linux and briefly explain its components. (4)
9. What is the purpose of the following commands? (4x1=4)
  - i. grep
  - ii. wc
  - iii. cal
  - iv. ls
10. Describe the different modes of vi editor. (4)
11. Briefly explain the different types of filters. (4)
12. Define Shell. What are the activities performed by shell. (4)
13. List duties of a system administrator. (4)
14. Explain two ways to backup and restore files. (5)
15. What are the different ways to create and display files? (5)
16. Differentiate between hard and soft link. (5)
17. Explain how to map frequently used sequence of characters in vi. (5)
18. Write a shell script that enters a number and returns it corresponding month. For eg: 1- January, 2-February, etc. (6)

**II. Answer the following questions according to the marks given in the bracket:**

1. What are the two types of interfaces in Linux? (2)
2. How can you terminate a foreground and a background process? (2)
3. Describe tee command with example. (2)
4. How can you define abbreviations in vi editor? (3)
5. Write down the steps to write and execute shell scripts. (3)
6. What are the characteristics of X window system? (3)
7. What are the objectives of BIOS? (3)
8. Draw the structure of Linux and briefly explain its components. (4)
9. What is the purpose of the following commands? (4x1=4)
  - i. grep
  - ii. wc
  - iii. cal
  - iv. ls
10. Describe the different modes of vi editor. (4)
11. Briefly explain the different types of filters. (4)
12. Define Shell. What are the activities performed by shell. (4)
13. List duties of a system administrator. (4)
14. Explain two ways to backup and restore files. (5)
15. What are the different ways to create and display files? (5)
16. Differentiate between hard and soft link. (5)
17. Explain how to map frequently used sequence of characters in vi. (5)
18. Write a shell script that enters a number and returns it corresponding month. For eg: 1- January, 2-February, etc. (6)

## Marks Distribution

| Sl. No. | Question                                                                                                              | Marks | KCA | CO                                                       | Total |
|---------|-----------------------------------------------------------------------------------------------------------------------|-------|-----|----------------------------------------------------------|-------|
| 1       | a. Draw the structure of Linux and briefly explain its components.                                                    | 4     | K   | CO1: Recall the basics of Linux Operating System         | 7     |
|         | b. What are the two types of interfaces in Linux?                                                                     | 2     | C   |                                                          |       |
|         | c. Linux Operating System is _____.                                                                                   | 1     | A   |                                                          |       |
| 2       | a. What are the objectives of BIOS?                                                                                   | 3     | K   | CO2: Describe Linux essentials and utilities             | 14    |
|         | b. comm is used to compare two __ files                                                                               | 1     | K   |                                                          |       |
|         | c. chmod is used to _____.                                                                                            | 1     | K   |                                                          |       |
|         | d. What are the different ways to create and display files?                                                           | 5     | C   |                                                          |       |
|         | e. What is the purpose of the following commands?                                                                     | 4     | A   |                                                          |       |
| 3       | a. Briefly explain the different types of filters.                                                                    | 4     | K   | CO2: Describe Linux essentials and utilities             | 14    |
|         | b. How can you terminate a foreground and a background process?                                                       | 2     | C   |                                                          |       |
|         | c. __ command is used to delay the execution of the next command for a given number of seconds, hours, minutes, days. | 1     | C   |                                                          |       |
|         | d. Describe tee command with example.                                                                                 | 2     | C   |                                                          |       |
|         | e. Differentiate between hard and soft link.                                                                          | 5     | A   |                                                          |       |
|         | f. What is the difference between cp and mv?                                                                          | 2     | C   |                                                          |       |
| 4       | a. Describe the different modes of vi editor.                                                                         | 4     | K   |                                                          | 13    |
|         | b. Which of the following is not a cursor movement command?                                                           | 1     | C   |                                                          |       |
|         | c. How can you define abbreviations in vi editor?                                                                     | 3     | C   |                                                          |       |
|         | d. Explain how to map frequently used sequence of characters in vi.                                                   | 5     | A   |                                                          |       |
| 5       | a. A scalar variable can hold __ value at a time                                                                      | 1     | K   | CO3: Demonstrate Shell programs using vi editors         | 14    |
|         | b. Write down the steps to write and execute shell scripts.                                                           | 3     | K   |                                                          |       |
|         | c. Define Shell. What are the activities performed by shell?                                                          | 4     | C   |                                                          |       |
|         | d. Write a shell script that enters a number and returns it corresponding month.                                      | 6     | A   |                                                          |       |
| 6       | a. The file system Ext stands for                                                                                     | 1     | K   | CO4: Explain how to install Linux and its administration | 13    |
|         | b. What are the characteristics of X window system?                                                                   | 3     | K   |                                                          |       |
|         | c. List duties of a system administrator.                                                                             | 4     | C   |                                                          |       |
|         | d. Explain two ways to backup and restore files.                                                                      | 5     | A   |                                                          |       |

# ENTREPRENEURSHIP DEVELOPMENT

G-304

Full Marks : 75 SCTE/NGL/R-2026-II

Pass Mark : 30

Time : 3 Hours

| Q. No |                                                                                                                                                                                                                                                                                                                          | CO | BL  | Marks    |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|----------|
| A     | MCQ                                                                                                                                                                                                                                                                                                                      |    |     | 15x1 =15 |
|       | 1).... is the process through which individual perceives opportunities without regard to resources they possess.<br>a) start up management    b) financial analysis<br>c) entrepreneurship <del>d) feasibility planning</del>                                                                                            | 1  | I   |          |
|       | 2) The idea generation process of entrepreneurship is<br>a) germination    b) incubation<br>c) preparation <del>d) all of these</del>                                                                                                                                                                                    | 1  | II  |          |
|       | 3) Entrepreneurial task depends upon the personality of the entrepreneur, organizational structure and<br><del>a) the environment</del> b) the labour<br>c) the market    d) the government                                                                                                                              | 1  | II  |          |
|       | 4) Entrepreneurship Development Programme (EDP) is required to help<br><del>a) existing entrepreneurs</del><br>b) first generation entrepreneurs<br>c) future generation entrepreneurs<br>d) none of the above                                                                                                           | 1  | III |          |
|       | 5) Samuel started a Travel Agency in 2025 by taking a small rent room in Kohima. His investment and efforts made the Agency to grow tremendously. Name the form of business organization owned and operated by Samuel.<br>a) partnership    b) joint venture<br><del>c) one-person company</del> d) sole trading concern | 2  | III |          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|
| 6) As per the government of India, size of small-scale industry can be decided on the basis of<br>a) number of employees working<br>b) volume of output<br>c) power consumed for business<br><del>d) investment in plant and machinery</del>                                                                                                                                                                                                                                                                     | 2 | II  |
| 7) You are the sales manager of Nagaland Pharmaceutical company. In the same geographical area, one of your sales representative deals with private practice physician and another sales representative deals with hospital group. As the sales manager, the ethical dilemma faced by you would be<br>a) determining compensation and incentives<br>b) equal treatment in hiring and promotion<br>c) fairness in the design of sales territory<br><del>d) fairness in the assignment of sales territories.</del> | 3 | III |
| 8) Large scale export help to solve.... problem<br><del>a) domestic</del> b) political<br>c) balance of payment d) none of these                                                                                                                                                                                                                                                                                                                                                                                 | 3 | II  |
| 9) EXIM policy stands for<br><del>a) Export-Import Policy</del><br>b) External-Internal Market<br>c) Exchange Improvement Management<br>d) Export-Investment Management                                                                                                                                                                                                                                                                                                                                          | 3 | I   |
| 10)....is a pioneer organization to develop small scale industries through counselling, consultancy and training.<br><del>a) SISI</del> b) DIC c) SFC d) B2B                                                                                                                                                                                                                                                                                                                                                     | 4 | I   |
| 11) RFP, a document used when the buyers need to evaluate which company is best vendor based on a number of factors besides price stands for<br><del>a) Request for Proposal</del> b) Required for Proposal<br>c) Referred for Proposal d) Recruited for Proposal                                                                                                                                                                                                                                                | 4 | I   |
| 12) At present in Nagaland, there are .... number of District Industry Centres (DICs)<br><b>(17)</b> a) 8 b) 12 c) 16 d) 20                                                                                                                                                                                                                                                                                                                                                                                      | 4 | I   |
| 13) The "break-even point" in a project report refers to<br>a) when the business loses all its money<br>b) when sales exceeds 100%<br><del>c) when the total revenue equals total costs</del><br>d) when the business closes down                                                                                                                                                                                                                                                                                | 4 | II  |

|          |                                                                                                                                                                                                                 |                 |     |  |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----|--|
|          | 14) In a project report, "feasibility study" which of the following aspect is <b>not</b> covered?<br>a) market analysis      b) financial analysis<br>c) ecological analysis      d) <del>gender</del> analysis | 4               | II  |  |
|          | 15) Project overrun is a frightening ..... problem facing India.<br>a) financial    b) resources    c) <del>economic</del> d) research                                                                          | 4               | II  |  |
| <b>B</b> | <b>Answer the following questions</b>                                                                                                                                                                           | <b>6x2 = 12</b> |     |  |
|          | 1) List one advantage and one disadvantage of a conglomerate business.                                                                                                                                          | 2               | II  |  |
|          | 2) Define ancillary industry with an example.                                                                                                                                                                   | 2               | II  |  |
|          | 3) Examine the importance of Trade License in India.                                                                                                                                                            | 2               | II  |  |
|          | 4) Despite the advantages provided by direct selling, why do you think it is <b>not</b> the most popular channel of distribution.                                                                               | 3               | III |  |
|          | 5) Differentiate between skimming and penetration pricing methods.                                                                                                                                              | 3               | II  |  |
|          | 6) Explain any two advantages of Preliminary Project Report.                                                                                                                                                    | 4               | II  |  |
| <b>C</b> | <b>Answer the following questions</b>                                                                                                                                                                           | <b>4x3= 12</b>  |     |  |
|          | 1) Explain any three essential characteristics of an entrepreneur.                                                                                                                                              | 1               | II  |  |
|          | 2) Examine any three objectives of SSI.                                                                                                                                                                         | 2               | II  |  |
|          | 3) "No country is self-sufficient in itself". Justify the statement in the context of significance of technical collaboration in international trade.                                                           | 3               | III |  |
|          | 4) Justify the need for legislation for solving environmental issues.                                                                                                                                           | 5               | III |  |
| <b>D</b> | <b>Answer the following questions</b>                                                                                                                                                                           | <b>4x4= 16</b>  |     |  |
|          | 1) Examine the role of an entrepreneur in a developing economy like India, giving appropriate examples.                                                                                                         | 1               | III |  |
|          | 2) Discuss any four salient features of Cooperative Organisation (Society).                                                                                                                                     | 2               | II  |  |

|          |                                                                                                                                     |               |     |  |
|----------|-------------------------------------------------------------------------------------------------------------------------------------|---------------|-----|--|
|          | 3) Explain the four promotional tools available to an entrepreneur for advertising his/her products. Give an example for each tool. | 3             | II  |  |
|          | 4) Differentiate between business quotes and business proposal.                                                                     | 4             | II  |  |
| <b>E</b> | <b>Answer the following questions</b>                                                                                               | <b>4x5=20</b> |     |  |
|          | 1) Analyse in detail the social responsibilities of an entrepreneur.                                                                | 1             | III |  |
|          | 2) Define small scale industries. Discuss three sicknesses faced by small scale industries in India.                                | 2             | III |  |
|          | 3) Define import trade. Discuss four objectives of Import trade.                                                                    | 3             | II  |  |
|          | 4) Examine the various aspects analysed under Techno-economic feasibility report.                                                   | 4             | II  |  |

# MULTIMEDIA TECHNOLOGY AND APPLICATION

CSE/CPE-501/IT-505

**Full Mark : 75**                      **SCTE/NGL/R-2026-II**

**Pass Mark : 30**

**Time : 3 Hours**

## **I. Answer the Multiple types of questions. (1x15=15)**

- 1) Which of the following is not an element of Multimedia?  
A. Text                                              B. Image  
C. Pixel                                              D. Audio
- 2) Sampling is used in \_\_\_\_\_.  
A. Analog signals                                              B. Digital signals  
C. Conversion process                                              D. Compression
- 3) Which of the following is a principle of animation  
A. Sampling                                              B. Anticipation  
C. Wait                                              D. Move
- 4) Keyframe is used in:  
A. Compression                                              B. Animation  
C. Audio editing                                              D. GUI
- 5) A \_\_\_\_\_ refers to the written story of a film or animation.  
A. Score                                              B. Script  
C. Dialogue                                              D. Storyboard
- 6) LZW coding is a \_\_\_\_\_ compression technique.  
A. Lossy                                              B. Lossless  
C. Analog                                              D. None
- 7) A Storyboard is used during the \_\_\_\_\_ phase.  
A. Design                                              B. Coding  
C. Testing                                              D. Maintenance
- 8) Tweening is a process of \_\_\_\_\_.  
A. Editing sound                                              B. Generating frames  
C. Compression                                              D. None

- 9) GTK+ is a \_\_\_\_\_.  
 A. Animation tool  
 B. GUI toolkit  
 C. Codec  
 D. File Compression tool
- 10) ASF Stands for:  
 A. Advanced System Format  
 B. Audio System File  
 C. Animation System File  
 D. None
- 11) Psycho-visual redundancy is useful in \_\_\_\_\_.  
 A. Lossy compression  
 B. Lossless compression  
 C. Huffman encoding  
 D. None
- 12) Motion cycling is a process used in  
 A. Audio  
 B. Compression  
 C. Animation  
 D. Text
- 13) Script in Multimedia defines \_\_\_\_\_.  
 A. Software  
 B. Sound Editing  
 C. Content structure  
 D. Dialogue
- 14) In Bitmap graphics the element is a \_\_\_\_\_.  
 A. Bit  
 B. Data  
 C. Byte  
 D. Pixel
- 15) Feasibility study is part of  
 A. Testing  
 B. Development cycle  
 C. Animation  
 D. Compression

**II. Answer the following in brief.**

**(2X10=20)**

- 1) List some characteristics of multimedia.
- 2) What is the key difference between Raster and Vector graphics
- 3) Explain analog and digital signals.
- 4) What is stop motion animation?
- 5) What is onion skinning?
- 6) Why is compress important?
- 7) What is CODEC?
- 8) Define flow-line in multimedia design.
- 9) List 3 multimedia authoring tools.
- 10) Describe multimedia software life cycle.

**III. Answer the following.**

**(3X5=15)**

- 1) Explain any 3 principles of animation.
- 2) What are some techniques used in animation and explain them in brief?
- 3) Explain Run Length Encoding with an example.
- 4) Discuss the importance of GUI in the advancement of multimedia applications.
- 5) What is the significance of a storyboard?

**IV. Answer the following in Detail.**

**(5X5=25)**

- 1) What are the steps involved in multimedia application development. Explain in detail.
- 2) Give the full form of:
  - a. MIDI
  - b. WAV
  - c. MP3
  - d. QOS
  - e. TCP

- 3) Given below is a series of uncompressed data:

**AABCAFADDADCCBBFCDCCAABFC**

**Generate the Huffman tree and the codes for each character.**

- 4) Explain in detail the development process and the steps involved of a script for a multimedia project.
- 5) Compare timeline metaphor and icon-based metaphor for developing a multimedia presentation. In which scenario would each be more suitable? Justify your answer with examples.

# **NETWORK SECURITY & CRYPTOGRAPHY**

## **CSE/CPE/IT-601**

**Full Marks : 75      SCTE/NGL/R-2026-II**

**Pass Marks : 30**

**Duration : 3 Hours**

**A. Choose the correct answer.**

**(1x15=15)**

1. Firewalls and antivirus software belong to which security approach?
  - a) Detective
  - b) Preventive
  - c) Corrective
  - d) Administrative
2. Phishing attacks mainly exploit:
  - a) Software bugs
  - b) Hardware faults
  - c) Human trust
  - d) Encryption weakness
3. In substitution cipher, the plain text letters are:
  - a) Rearranged
  - b) Deleted
  - c) Replaced with other letters
  - d) Reversed
4. Converting plain text into cipher text is called:
  - a) Decryption
  - b) Authentication
  - c) Encryption
  - d) Authorization
5. Which property ensures that the sender cannot deny sending the message?
  - a) Confidentiality
  - b) Integrity
  - c) Non-repudiation
  - d) Authentication
6. RSA algorithm uses how many keys?
  - a) one key
  - b) two keys
  - c) three keys
  - d) four keys
7. RSA is widely used for:
  - a) data storage
  - b) secure communication
  - c) image processing
  - d) compression

8. Digital signatures are based on:  
a) Symmetric key cryptography  
b) Asymmetric key cryptography  
c) Hash tables  
d) Firewalls
9. A digital certificate contains:  
a) Public key  
b) Owner details  
c) Digital signature of CA  
d) All of the above
10. PKCS is developed by:  
a) ISO  
b) Microsoft  
c) RSA Laboratories  
d) Google
11. TLS is used to provide:  
a) Data compression  
b) Secure communication over networks  
c) File storage  
d) Routing
12. TSP ensures:  
a) Data availability  
b) Data integrity over time  
c) Data redundancy  
d) Data routing
13. Which protocol is commonly used in VPN?  
a) IPsec      b) HTTP      c) FTP      d) SMTP
14. Which IPsec protocol provides encryption?  
a) AH      b) ESP      c) HTTP      d) SMTP
15. Virtual Private Network ensures:  
a) Confidentiality  
b) Integrity  
c) Authentication  
d) All of the above

**B. Answer the following Questions:**

**(2X14=28)**

1. Why is security needed in computers?
2. Differentiate between active and passive attacks.
3. How does lack of security lead to system vulnerabilities?
4. Explain a cipher text.
5. Define cryptography.
6. Why encryption is important?

7. How 3DES is more secure then DES?
8. Write the function of a private key in digital signature.
9. List the components of a digital certificate.
10. Explain the role of Certificate Authority (CA).
11. State how HTTPS ensures secure communication.
12. Explain Secure Electronic Transaction (SET).
13. Why must private keys be protected?
14. How does IPsec support VPN?

**C. Answer the following Questions:**

**(4 X 8 = 32)**

1. Compare symmetric and asymmetric key cryptography.
2. Explain the transposition techniques in cryptography with one example.
3. Explain the process of Data Encryption standard (DES) with a block diagram.
4. Identify the uses of digital signature.
5. List the two types of symmetric key algorithm and explain one with a block diagram.
6. Given two prime numbers ( $p = 3$  and  $q = 11$ ),  $e=3$  and message ( $M$ ) =7, Compute the private Key ( $d$ ) from the given values and Encrypt the message ( $M$ ) using RSA encryption process.
7. Outline the PKIX model with a diagram.
8. A Department wants to implement secure email communication. How will digital certificates be used in this scenario?

**OR**

A user receives a warning that a website's certificate is not trusted. What steps should the user take to verify the authenticity of the website?

## Unit Wise Marks Distributions

| UNIT No | Question No          | Marks | KCA | CO  | Total Marks |
|---------|----------------------|-------|-----|-----|-------------|
| 1       | A1,A2,A3             | 3     | K   | CO1 | 8           |
|         | B2                   | 2     | C   |     |             |
|         | B1                   | 2     | A   |     |             |
| 2       | A3, A4, A5, B3, B5   | 7     | K   | CO2 | 13          |
|         | B4                   | 2     | C   |     |             |
|         | B6, B7               | 4     | A   |     |             |
| 3       | A6,A7,A8, B7, B8, B9 | 9     | K   | CO2 | 29          |
|         | C1,C2, C5            | 12    | C   |     |             |
|         | C3,C4                | 8     | A   |     |             |
| 4       | A9,A10, B10, B13     | 6     | K   | CO3 | 14          |
|         | C7                   | 4     | C   |     |             |
|         | C8                   | 4     | A   |     |             |
| 5       | A11, A12, A13        | K     | 3   | Co4 | 7           |
|         | B12                  | C     | 2   |     |             |
|         | B11                  | A     | 2   |     |             |
| 6       | A14,A15              | K     | 2   | CO4 | 4           |
|         | B14                  | C     | 2   |     |             |
|         |                      |       |     |     |             |

# WIRELESS AND MOBILE COMMUNICATION

## CSE/CPE/IT-602

**Full Mark : 75      SCTE/NGL/R-2026-II**

**Pass Mark : 30**

**Duration : 3 Hours**

### A. Multiple choice questions -

**(1x15=15)**

1. A user is looking for a wireless headphone for listening to songs stored on a Smartphone. What wireless technology would the headphone use?  
A. Bluetooth  
B. Wi-Fi  
C. Infrared  
D. 3G/4G
2. Identify the wave used by artificial satellites for communication.  
A. Radio wave  
B. Microwave  
C. Infrared  
D. X rays
3. The evolution of cell phone standards are from 1G to 5G. What is G stands for?  
A. General  
B. Gigabit  
C. Generation  
D. Gap
4. Which of the following electromagnetic waves have the maximum wavelength?  
A. Ultraviolet  
B. Infrared  
C. Microwave  
D. Radio wave
5. What is the full form of PSD?  
A. Power Spectral Density  
B. Power Spectral Display  
C. Power Supply Density  
D. Pulse Stream Data
6. Identify the modulation technique used by GSM.  
A. GMSK  
B. BPSK  
C. QPSK  
D. GFSK
7. What is the function of transceiver in radio communication?  
A. Transmit  
B. Receive  
C. Both A and B  
D. None of the above
8. GSM (Global System for Mobile) was earlier also known as  
A. Group System Mobile  
B. Global System Mobile  
C. Group Special Mobile  
D. Global Special Mobile

9. Identify the application of IR (Infrared) communication?  
A. GPS navigation                      B. Bluetooth headset  
C. TV remote control                  D. Satellite phone
10. Pick out the electromagnetic wave which is highly harmful to human.  
A. Radio wave                              B. Microwave  
C. Infrared                                  D. Ultraviolet rays
11. The main parts of a GSM architecture are  
A. Mobile station  
B. Network & switching subsystem  
C. Base station subsystem  
D. All the above
12. A Base Station Subsystem consists of  
A. Base station controller  
B. Base transceiver station  
C. Mobile station  
D. Both A and B
13. Which of the following stores all user related data in GSM network?  
A. VLR                                          B. HMR  
C. CMR                                          D. SIM
14. In block codes, parity bits are ..... to block of messages.  
A. Added                                          B. Subtracted  
C. Multiplied                                      D. Divided
15. Which one of the following is used in LTE?  
A. GSM                                              B. CDMA  
C. OFDMA                                          D. TDMA

**B. Short answer questions –**

(2x11=22)

1. What is Link budget?
2. What do you mean by Handoff?
3. What is pulsed data stream?
4. What is Power Spectral Density?
5. Give the advantages of wireless communication.
6. Define Bit Error Rate?
7. What do you mean by mobility of users and equipment?
8. Write the full form of EDGE and VoLTE.
9. Differentiate between GPS and GPRS.
10. What is authentication?
11. State the Shannon channel theorem.

**C. Long answer questions –**

(4x5=20)

1. Explain the two main parts of Base Station Subsystem (BSS).
2. Explain Quadrature Amplitude Modulation (QAM).
3. Explain circuit switching and packet switching.
4. What is microwave? Give its advantages and disadvantages.
5. Write a short note on Public Key Infrastructure.

**D. Answer any three (3) questions –**

(6x3=18)

1. Explain digital communication system architecture with a block diagram.
2. Explain GSM network architecture with a neat block diagram.
3. Explain Electromagnetic Spectrum.
4. Explain LTE(4G) and its features.
5. What is CDMA? Give the comparison between CDMA and GSM.

## Marks Distribution

| Question No.     | Unit | K | C | A | Total marks | Course Outcome |
|------------------|------|---|---|---|-------------|----------------|
| A-5, B-1,4       | 1    | 5 |   |   | 13          | CO1            |
| D-1              |      |   | 6 |   |             | CO1            |
| A-3,7            |      |   |   | 2 |             | CO2            |
| B-6,11           | 2    | 4 |   |   | 13          | CO1            |
| C-2              |      |   | 4 |   |             | CO4            |
| A-14, B-3        |      |   |   | 5 |             | CO1            |
| A-4,10, B-5, C-4 | 3    | 8 |   |   | 15          | CO3            |
| D-3              |      |   | 5 |   |             | CO3            |
| A-1,2            |      |   |   | 2 |             | CO1            |
| A-13, B-2,10     | 4    | 5 |   |   | 15          | CO4            |
| C-1,3            |      |   | 8 |   |             | CO4            |
| A-3,9            |      |   |   | 2 |             | CO4            |
| A-6,8,11,12,15   | 5    | 5 |   |   | 15          | CO4            |
| B-8,9            |      |   | 4 |   |             | CO4            |
| D-5              |      |   |   | 6 |             | CO1            |
| C-5              | 6    | 4 |   |   | 4           | CO4            |
|                  |      |   |   |   | 75          |                |