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Total No. of Questions : 09

B.Tech. (Electronics & Communication Engineering) (Sem–6)
MICROWAVE AND ANTENNA ENGINEERING
Subject Code : BTEC-603-18
M.Code : 79376
Date of Examination : 06-05-2025

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION - A

1. Write briefly :

    a) Define aperture antenna.

    b) Write the properties of S- Matrix.

    c) Explain different types of Attenuators.

    d) Define beam efficiency.

    e) Explain SWR.

    f) Define the term antenna gain.

    g) List out the disadvantages of loop antenna.

    h) Explain the basic concept of reflector antenna.

    i) Define Horn antenna.

    j) What is backward wave oscillator?

2. Explore the need for impedance matching in antennas.

3. Describe the radiation pattern and fields on the axis of an E-plane and H-plane sectoral horns.

4. Calculate the diameter of the reflector antenna that has a 0.5 degree HPBW at a frequency of 8.2 GHz. Assume an efficiency constant = 0.6. Calculate the antenna gain and effective aperture.

5. Discuss the measurement of power at microwave frequency in detail.

6. Explain the operation and properties of two cavity Klystron amplifier.

SECTION - C

7. Discuss briefly micro strip lines and its losses and also derive the expression for quality factor.

8. What are avalanche transit time devices? Explain the operation and construction of IMPATT diode.

9. Explain Hansen-woodyard end fire array in detail.

B.Tech.(ECE)   (Sem.–6)
# MICROWAVE AND RADAR ENGINEERING
Subject Code : BTEC-601
M.Code : 71121
Date of Examination: 06-05-2025

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION - A

1.   **Answer briefly :**

   a. List four microwave frequency bands with their frequency range.

   b. Define blind speed in CW Doppler radar.

   c. Give the difference between isolator and circulator.

   d. What do you mean by slotted line?

   e. Draw V-I characteristic of TUNNEL diode.

   f. Describe the working of a PIN diode as a switch.

   g. Define maximum unambiguous range of radar.

   h. What is radar clutter?

   i. Write radar range equation.

   j. How Doppler frequency is related with velocity of target in radar?

SECTION - B

2. State various modes of Gunn diode and explain any one of them in detail.

3. With the help of neat sketches and sufficient equations explain the working of a reflex klystron.

4. Explain the wavelength measurement method at microwave frequency.

5. Explain horizontal and spiral scanning technique.

6. With block diagram explain the MTI radar system. Give its limitations.

SECTION - C

7. Explain frequency pushing and frequency pulling with reference to magnetron. Also, explain structure of magnetron tube and effects of various fields acting on electron moving in magnetron tube.

8. Draw and explain the energy level diagram in GaAs which causes the GUNN effect. Also, draw the schematic construction diagram for IMPATT diode and explain the negative resistance effect for IMPATT diode.

9. Derive expression for probability of false alarm in radar. Also, explain Doppler tracking system.

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B.Tech. (ECE) (Sem–6)
OPTICAL FIBERS & COMMUNICATION
Subject Code : BTEC-602-18
M.Code : 79375
Date of Examination : 03-05-2025

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION - A

1. Write briefly :

   a) Draw electromagnetic spectrum with highlighting the optical portion.

   b) Explain Snell's law.

   c) Give the basic difference between optical source and detector.

   d) What do you mean by wave propagation?

   e) What are the ways to reduce scattering effects?

   f) Enlist various fabrication methods of fiber manufacturing.

   g) How can you define non radiative recombination?

   h) What is absorption rate?

   i) Explain the term power penalty.

   j) What do you mean by frequency chirping?

2. Explain various light wave system components with suitable diagrams.

3. Derive the expression for dispersion in single mode fibers.

4. Draw and explain vertical cavity semiconductor lasers.

5. Explain loss limited light wave systems.

6. A silica optical fiber with a core diameter large enough to be considered by ray theory analysis has a core refractive index of 1.50 and a cladding refractive index of 1.47. Determine:

   a) The critical angle at the core-cladding interface.

   b) The NA for the fiber.

   c) The acceptance angle in air for the fiber.

SECTION - C

7. Draw and explain surface emitter and edge emitter LED's structures.

8. Explain model noise and mode partition noise in detail.

9. Differentiate between various types of photo diodes.

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Total No. of Questions : 09

B.Tech. (ECE)(Sem.–6)
COMPUTER NETWORKS
Subject Code : BTCS-504-18
M.Code : 79374
Date of Examination : 30-04-2025

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION - A

1. Explain the following:

    a) Define Ethernet.

    b) What is Hamming Code?

    c) What is Flow Control?

    d) Write main differences between TCP and UDP.

    e) Define Quality of Services.

    f) Describe WWW.

    g) List the advantages of Computer Networks.

    h) Discuss the functioning of bridge and router.

    i) Define checksum for error checking.

    j) What is Parity Checking?

SECTION - B

2. What is transmission media? Explain different forms of transmission media.

3. How CRC is used in error detection? Explain in detail with help of example.

4. Explain four ways of handshaking methods to terminate a connection in TCP.

5. What is ARP? Explain function of ARP

6. What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.224 subnet mask?

SECTION - C

7. Write a short note on circuit switching, packet switching and message switching.

8. What is framing? Explain the various methods of framing and what the problems Associated with each method are.

9. **Write a detailed note on :**

    a) Stop and wait ARQ Sliding window protocol.

    b) CSMA/CA

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B.Tech. (ECE)   (Sem. – 6)

WIRELESS COMMUNICATION SYSTEM

Subject Code: BTEC-602

M Code: 71122

Date of Examination: 20-05-2025

Time: 3 Hrs.   Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:
1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

   a) Define a basic cellular system.

   b) What is frequency reuse in cellular systems?

   c) List any two examples of wireless communication systems.

   d) What is co-channel interference?

   e) Define the concept of cell splitting.

   f) Write any two characteristics of a fading channel.

   g) What is selective diversity combining?

   h) State the difference between FDMA and TDMA.

   i) Mention any two services offered by GSM.

   j) What is LTE-Advanced technology?

SECTION - B

2. Explain the operation of a basic cellular system.

3. Derive the formula for calculating co-channel interference ratio (C/I) for omni-directional antennas.

4. Compare Bluetooth and ZigBee wireless systems.

5. Explain the frame structure of GSM in detail.

6. Differentiate between Pure ALOHA and Slotted ALOHA with simple throughput calculations.

SECTION - C

7. Explain the concept of digital communication over a slow fading channel and discuss the impact on system performance.

8. Describe the GSM architecture, channel types and speech processing.

9. Compare IS-95 CDMA .system and 3G UMTS system with respect to channel specifications and technologies.

B.Tech. (ECE)   (Sem.–6)
C# AND .NET PROGRAMMING
Subject Code : BTEC-906D-18
M.Code : 79380
Date of Examination : 20-05-2025

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION - A

1. Write briefly :

   a) What is an event listener in C#?

   b) Explain the purpose of generics in C#.

   c) Describe the difference between managed and unmanaged memory.

   d) What is an abstract class?

   e) Explain the purpose of localization in .NET.

   f) Define ADO.NET and its key functions.

   g) What is SAX and how does it differ from DOM?

   h) What is an assembly in .NET?

   i) Explain the concept of app domains in .NET.

   j) Define bubbling and tunneling events.

SECTION - B

2. Discuss the role of delegates and events in C# with examples.

3. Explain the use of lambda expressions with multiple scenarios in C# programming.

4. Explain the concept of indexers in C# and provide an example of index overloading.

5. Describe threading in C# focusing on its advantages in concurrent applications.

6. Describe the process of using ADO.NET for data access in a C# application.

SECTION - C

7. Explain the methods used for handling errors and exceptions in C#, including custom exceptions and exception chaining.

8. Provide an in-depth comparison of polymorphism, inheritance and interfaces in C#, including code examples to highlight their differences and usage.

9. Provide a detailed overview of networking for mobile devices using the .NET Compact Framework, including XAML for mobile UIs and compact data storage solutions:

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BCA / B.Sc. (IT) / B.Tech. (CE / CSE /EE / ECE / EEE / IT/ AI & ML / AI & DS/ CSE(IoT) / DS / IoT and cyber security including block chain technology)   (Sem.–6)

WIRELESS COMMUNICATION

Subject Code : BTEC-601-18

M.Code : 79373

Date of Examination : 31-05-2025

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly:

   a) Define cellular system.

   b) What do you mean by reduction factor?

   c) Explain ISI.

   d) What is fading?

   e) What is the significance of combining methods?

   f) Differentiate between FDM and TDM.

   g) Define the term AMPS.

   h) How CDMA is better than previous systems?

   i) What is Zigbee?

   j) Write the communicating range of Bluetooth.

SECTION-B

2. Explain the operation of cellular system.

3. Draw and explain switched combining and maximal ratio combining techniques.

4. Derive the expression for frequency reuse parameters.

5. Explain CDMA2000 standards and its specifications.

6. With the help of diagrams, explain spread spectrum multiple access.

SECTION-C

7. Draw and explain the system architecture of global system for mobile (GSM).

8. Describe Pure ALOHA and Slotted ALOHA.

9. Explain cell splitting and the various methods and techniques of cell splitting.

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B.Tech. (Civil Engineering / Electrical Engineering / Electronics &
Communication Engineering) (Sem.–6)

OPERATING SYSTEMS

Subject Code : BTCS-402-18

M.Code : 79262

Date of Examination : 14-06-2025

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

   a) Differentiate between long term scheduler from short term scheduler.

   b) Distinguish between a process and a program.

   c) What is the difference between a page table and a page frame?

   d) What are Semaphores? Why are they used?

   e) What is the need of page replacement?

   f) Explain the concept of locality of reference.

   g) What is boot block? Explain with a diagram.

   h) What is File concept?

   i) What are indexed files? How is indexing implemented?

   j) Explain the difference between time-sharing and multi-programming.

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SECTION - B

2. What are the various views of the operating system? Explain.

3. What is a PCB? What is stored in it? What is its role in the CPU scheduling? Explain.

4. In a variable partition scheme, the operating system has to keep track of allocated and free space. Suggest a means for achieving this. Describe the effects of new allocations and termination in your suggested scheme.

5. Explain the File Protection and Security methods.

6. Explain the concept of direct memory access in detail.

SECTION - C

7. Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive currently Services a request at cylinder 143 and the previous request was at cylinder 125. The queue of pending request in FIFO order is:

   86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130.

   Starting from the current position, what is the total distance (in cylinders) that the disk arm moves to satisfy all pending requests, for each of the following algorithms a)FCFS b) SSFT c) SCAN d) LOOK e) C-SCAN.

8. Consider the following page-reference string: 1, 2, 3, 2, 5, 6, 3, 4, 6, 3, 7, 3, 1, 5, 3, 6, 3, 4, 2, 4, 3, 4, 5, 1.

   Indicate the page faults and calculate total number of page faults and successful ratio of FIFO, optimal and LRU algorithms. Assume that there are four frames and initially all the frames are empty.

9. **Explain the following:**

   a) Internal and external fragmentation.

   b) Mapping between logical and physical address space.

   c) Difference between paging and segmentation.

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