

06/06/2025 BE EXTC SEM-VII C-SCHEME CCAS QP CODE: 10080996

Time: 3 hours

Max. Marks: 80

INSTRUCTIONS

- (1) Question 1 is compulsory.
- (2) Attempt any **three** from the remaining questions.
- (3) Draw neat diagrams wherever necessary.

**Q1** **20 marks**

- a) Compare cloud service models IAAS, PAAS, SAAS
- b) Explain the advantages of Virtualization.
- c) Short note on Compute Services.
- d) Describe different streaming protocols.

**Q2** **20 marks**

- a) Illustrate the different Design Considerations for Cloud Applications in detail.
- b) Explain the implementation levels of virtualization with the necessary diagrams.

**Q3** **20 marks**

- a) Explain analytics services in cloud with an example of any one cloud service provider
- b) Describe fog and edge computing with necessary diagrams.

**Q4** **20 marks**

- a) Explain how Cloud Storage Gateways (CSGs) provide data protection with its features and necessary diagram.
- b) Describe Storage Services - Amazon Simple Storage Service, Google Cloud Storage, Windows Azure Storage.

**Q5** **20 marks**

- a) Describe various database services, Amazon Dynamo DB, Google Cloud SQL, and Amazon Relational Data Store in detail.
- b) Compare Hypervisor and XEN Architecture with diagram and explain Virtualization in Multicore processors?

**Q6** **20 marks**

- a) Illustrate AAA Administration for Clouds.
- b) Describe the different key elements and methods of RESTful web services.

Duration: 3hrs

Total Marks: 80

N.B.:

1. Question no.1 is compulsory.
2. Attempt any three questions from the remaining five questions.
3. Total four questions need to be solved.
4. Assume suitable data whenever necessary, justify the same.

Attempt any four questions from Q1

- Q.1 a Explain the overview of the TCP/IP model. [5]
- Q.1 b Compare Telnet and SSH remote login protocol. [5]
- Q.1 c Explain the working of Domain Name System (DNS). [5]
- Q.1 d Differentiate between MPEG and JPEG compression standards. [5]
- Q.1 e Explain the working of a Firewall. [5]
- 
- Q.2 a Explain the detail working of different steps of Image compression technique. [10]
- Q.2 b Analyze how S/MIME protocol provides security to electronic mail. [10]
- 
- Q.3 a Draw and explain the physical design of IoT. Also explain the characteristics of IoT. [10]
- Q.3 b Explain the working of different types of Audio (sound) signal compression techniques. [10]
- 
- Q.4 a Explain working of Transport layer security protocol, Secure Sockets Layer (SSL). [10]
- Q.4 b What is a Software Defined Network? Describe network automation in SDN. [10]
- 
- Q.5 a Explain working of RSVP: reservation protocol and its different types of messages. [10]
- Q.5 b Explain the working of Network Layer Security in detail. [10]
- 
- Q.6 Write a short note on the following. [20]
- a Real-Time Streaming Protocol(RTSP)
  - b H.261 and H.263
  - c Differentiated services (diffserv)
  - d VoIP

02/06/2025 BE EXTC SEM-VII C-SCHEME MICROWAVE ENGG. QP CODE: 10083719

Time: 3 Hours

Marks: 80

**Note:**

1. Question No.1 is compulsory.
2. Attempt any three from the remaining questions.
3. Assume suitable data if applicable.
4. Figures on the right hand side indicate full marks.

Q1: Solve any four

- a) Explain working principal of PIN diode 5
- b) Describe characteristics of E plane tee 5
- c) Compare Stripline and Microstrip line 5
- d) List the microwave frequency bands with frequency range and applications 5
- e) Explain pi mode oscillations in Magnetron 5

Q2: A) Design a single stub matching network using short circuited shunt stub to 10

Match the terminating load  $Z_L = (200 + j300) \Omega$  to the characteristics impedance

$$Z_0 = 300\Omega.$$

B) A rectangular waveguide is filled by dielectric material of  $\epsilon_r = 9$  and has inside 10

Dimensions of  $7 \times 3.5$  cm. It operates in dominant  $TE_{10}$  mode.

- i) Determine the cut-off frequency
- ii) Find the phase velocity in the guide at a frequency of 2 GHz
- iii) Find the guided wavelength at the same frequency

Q3: A) Explain characteristics of Magic Tee 10

B) List various modes of oscillation of Gunn diode. Explain working of any One mode. 10

Q4: A) What are ferrite devices? Explain any two in detail. 10

B) Explain method to measure low and high VSWR at microwave frequency. 10

Q5: A) Derive the expression for input impedance for a lossless transmission line. 10

B) Explain working of Reflex Klystron with appropriate schematic diagram and 10

Applegate diagram with gap voltage.

Q6: A) Derive the field equations for a wave propagation in TM mode inside A rectangular 10

waveguide.

B) Explain principal of operation of TRAPATT diode with the help of voltage and 10

Current waveform.

\*\*\*\*\*

Time: 3 Hours

Marks: 80

- N.B.: (1) Question No.1 is compulsory  
(2) Write any three questions from Q.2 to Q.6.  
(3) Draw a neat diagram wherever necessary.  
(4) Assume suitable data if required and state it clearly.

- Q.1 Attempt **any four** **20**  
A Explain power control process in WCDMA.  
B Explain FHSS with diagram.  
C How MIMO increases data rate.  
D Explain large scale and small-scale fading.  
E Explain RAKE receiver.
- Q.2 A Explain handoff process with diagram, also explain soft and hard handoff. **10**  
B Draw GSM architecture and explain working of it. **10**
- Q.3 A Compare multiple access techniques SDMA, TDMA, FDMA and CDMA **10**  
B Explain following terms related to fading **10**  
1. Coherence BW  
2. Doppler spread  
3. Multipath propagation  
Determine the received signal power by a mobile at a distance of 10km from a 50W cell-site transmitter operating at a carrier frequency of 1900Mhz. The transmitter antenna gain is unity and receive antenna gain is 2. Assume free-space propagation conditions.
- Q.4 A Draw UTRAN block diagram and explain function of each block. **10**  
B Explain speech signal processing in GSM. **10**
- Q.5 A Explain technologies enabling 5G. **10**  
B Draw and explain 3GPP LTE architecture. **10**
- Q6 Write short notes (**any two**) **20**  
A Explain reverse link traffic channel of IS 95 CDMA system.  
B Software Defined Radio  
C Compare 1G, 2G, 3G and 4G  
D Explain architecture of EDGE technology, how EDGE technology enhances data rate.