

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION MAY 2026
(Sixth Semester)**

Branch - ELECTRONICS

MAJOR ELECTIVE COURSE II - MOBILE TECHNOLOGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The shape most commonly used to represent a cell in analysis is (i) Circle (ii) Square (iii) Hexagon (iv) Triangle	K1	CO1
	2	Adjacent channel interference is mainly due to _____. (i) Poor filtering (ii) Same frequency reuse (iii) Cell splitting (iv) Sectoring	K2	CO1
2	3	Multiple access techniques are mainly used to _____. (i) Increase transmitter power (ii) Reduce antenna height (iii) Allow multiple users to share the same spectrum (iv) Improve battery life	K1	CO2
	4	Which multiple access technique is used in first-generation (1G) systems like AMPS? (i) TDMA (ii) FDMA (iii) CDMA (iv) SDMA	K2	CO2
3	5	Which database stores permanent subscriber information? (i) VLR (ii) HLR (iii) AUC (iv) BTS	K1	CO3
	6	GSM uses how many time slots per TDMA frame? (i) 4 (ii) 6 (iii) 8 (iv) 16	K2	CO3
4	7	GPRS stands for _____. (i) General Packet Radio System (ii) General Packet Radio Service (iii) Global Packet Radio Service (iv) GSM Packet Routing System	K1	CO4
	8	The GPRS support node connected to BSS is _____. (i) GGSN (ii) HLR (iii) SGSN (iv) VLR	K2	CO4
5	9	UMTS is based on which multiple access technique? (i) FDMA (ii) TDMA (iii) CDMA (WCDMA) (iv) OFDMA	K1	CO4
	10	The interface between Node B and RNC is _____. (i) lu (ii) lub (iii) lur (iv) Uu	K2	CO4

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Describe the concept of Frequency Reuse and explain reuse factor.	K2	CO1
		(OR)		
	11.b.	Discuss the concept of Cell Splitting and its advantages.		
2	12.a.	Explain spectral efficiency and calculate spectral efficiency if data rate is 2 Mbps and bandwidth is 1 MHz.	K2	CO2
		(OR)		
	12.b.	Explain how CDMA improves system capacity in cellular communication.		
3	13.a.	Analyze the GSM Multiple Access Scheme and explain how spectrum efficiency is achieved.	K3	CO3
		(OR)		
	13.b.	Explain the role of Authentication Center (AUC) and analyze the GSM security process.		
4	14.a.	Explain the architecture of GPRS network with a neat block diagram and describe the functions of SGSN and GGSN.	K3	CO4
		(OR)		
	14.b.	Explain the working principle of EDGE and how it improves performance over GPRS.		
5	15.a.	Analyze the UMTS architecture and explain the role of UE, UTRAN, and Core Network.	K4	CO4
		(OR)		
	15.b.	Analyze the mobility management procedures in UMTS.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Discuss various types of interference in cellular systems. Explain methods to reduce Co-channel and Adjacent Channel interference.	K2	CO1
2	17	With suitable block diagrams, explain TDMA and CDMA and compare their synchronization requirements.	K2	CO2
3	18	Describe in detail the Routing of a Call to a Mobile Subscriber, including HLR, VLR, and MSC interaction. Analyze the procedure during roaming.	K3	CO3
4	19	Compare and analyze GPRS, HSCSD, and EDGE technologies in terms of architecture, modulation technique, switching method, and data rate.	K3	CO4
5	20	Evaluate HSPA as a step toward 4G. Analyze its improvements in terms of data rate, latency, and spectral efficiency.	K4	CO4

Z-Z-Z END