Answer all the Groups
Group A
Answer all the questions of the following $5 \times 1 = 5$

1. a) What is scattering?
    b) When does large scale propagation occur?
    c) Differentiate time selective and frequency selective channel.
    d) Explain path loss.
    e) Define MS, BS and MSC.

GROUP –B
Answer *any three* of the following $3 \times 5 = 15$

2. Prove that for a hexagonal geometry, the co-channel reuse ratio is given by
    $Q = \sqrt{(3N)}$ where $N = i^2 + ij + j^2$.   [5]
3. a) Describe the different mechanisms of multipath phenomena.
    b) How is received power at the mobile station related with distance and path loss exponent?   [2+3=5]
4. Compare between FDMA and TDMA   [5]
5. a) What do you mean by cell splitting? Discuss its advantages and disadvantages.
    b) What is hard and soft hand off?   [3+2=5]

GROUP –C
Answer *any two* of the following $2 \times 10 = 20$

6. a) Prove that Bit Error rate in AWGN channel is $Q\sqrt{SNR}$
    b) Compute the BER of wireless communication system at SNR=20dB   [5+5=10]

7. . a) For the two ray model , how the Taylor series approximation applied in $\Delta\varphi = \frac{2\pi(x+x'-l)}{\lambda} \approx \frac{4\pi h_t h_r}{\lambda}$. Where $\Delta\varphi$ is phase difference, h_t is height of transmitter and h_r is height of receiver.

b) Find the far-field distance for an antenna with maximum dimension of 1 m and operating frequency of 900 MHz.   [7+3=10]

8. a) Explain Fast fading and Slow fading.

b) Consider a transmitter which radiates a sinusoidal carrier frequency of 1850 MHz. For a vehicle moving 60 mph, compute the received carrier frequency if the mobile is moving (a) directly towards the transmitter, (b) directly away from the transmitter, (c) in a direction which is perpendicular to the direction of arrival of the transmitted signal.

                                                                                        [4+6=10]

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