

17657

11819

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. (A) Attempt any THREE : 12
- (a) Describe use of multiple access technologies. List multiple access technologies used for Cellular System.
 - (b) List the following specification of IS-95B for 2.5 G CDMA standards :
 - (i) Data rate
 - (ii) Modulation Technique
 - (iii) Duplexing Technique
 - (iv) Handoff method
 - (c) Compile the advantages of EDGE with respect to –
 - (i) Modulation Technique
 - (ii) Error Control
 - (iii) Channel Bandwidth
 - (iv) Duplexing Method
 - (d) Compare system used around the world (AMPS, IS-95, GSM and NAMPS) with the following points :
 - (i) Year of introduction
 - (ii) Frequency Range used
 - (iii) Modulation used
 - (iv) Channel Bandwidth

[1 of 4]

P.T.O.

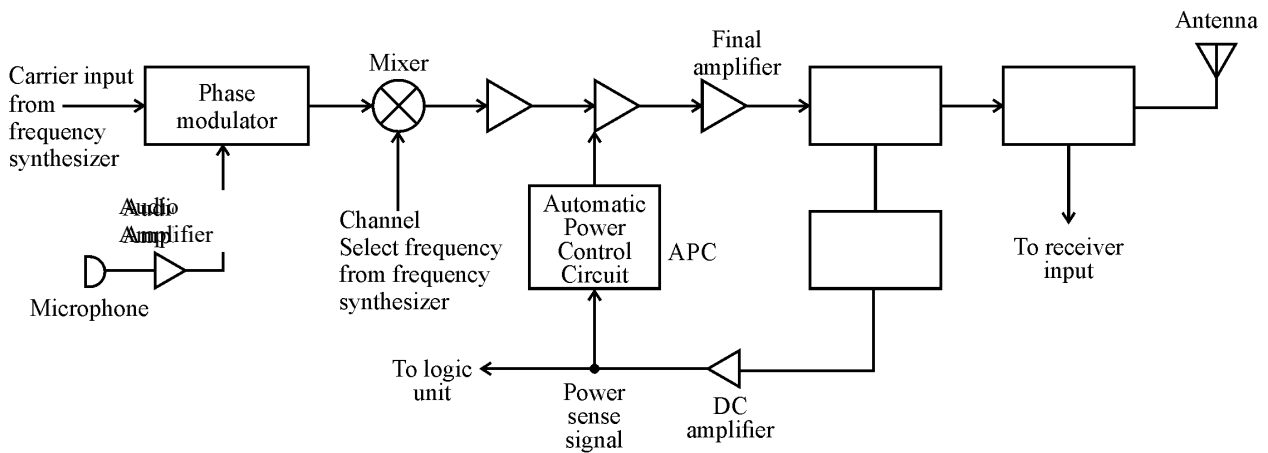
- (B) Attempt any ONE :** **6**
- (a) Write GSM Air interface specification for the following parameters :
- (i) Reverse channel frequency
 - (ii) Forward Channel Frequency
 - (iii) ARFCN number
 - (iv) Modulation
 - (v) TX/RX Frequency Spacing
 - (vi) Users per frame
- (b) Describe the call processing in cellular phone for mobile originated call with timing diagram.
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- 2. Attempt any FOUR :** **16**
- (a) How cell sectoring improve capacity in cellular system ?
- (b) List four specifications of 3G W-CDMA (UMTS).
- (c) Write four applications of MANET.
- (d) State data communication standards for GPRS using following points :
- (i) Channel Bandwidth
 - (ii) Duplexing Technique
 - (iii) Infrastructure change
 - (iv) Requirement of new Spectrum
- (e) State four features of Bluetooth.
- (f) If 20 MHz of total spectrum is available for duplex system which uses 225 kHz simplex channels to provide full duplex voice and control channels, compute number of channels available per cell if a system uses seven cell frequency reuse pattern.
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- 3. Attempt any FOUR :** **16**
- (a) Draw and describe the operation of logic unit in mobile unit.
- (b) Describe authentication process in GSM with A3 algorithm.
- (c) Illustrate microcell zone concept with neat sketch.
- (d) State feature of 3G TD-SCDMA. (Any four)
- (e) Describe various SS7 Services.

4. (A) Attempt any THREE : 12
- (a) List vision of IMT 2000.
 - (b) Draw Label diagram of GSM architecture.
 - (c) State the following specifications of HSCSD 2.5 G with respect to
 - (i) Data rate
 - (ii) Backward compatibility
 - (iii) Duplexing method
 - (iv) Channel Bandwidth
 - (d) What is cell splitting ? State its type.
- (B) Attempt any ONE : 6
- (a) What is Cell ? Describe the concept of frequency Reuse. Draw frequency Reuse pattern with cluster size 7.
 - (b) Draw SS7 protocol architecture. Describe MTP of SS7.
5. Attempt any FOUR : 16
- (a) Draw label diagram of mobile unit. State the function of frequency synthesizer.
 - (b) Describe the procedure for working of paging system.
 - (c) State the features of IS-95 with respect to
 - (i) Diversity
 - (ii) Power Control
 - (iii) Soft Hand off
 - (iv) Soft Capacity
 - (d) Describe operation of WLL with suitable diagram.
 - (e) State feature of 4G wireless Architecture.
 - (f) Define the following terms :
 - (i) Base Station
 - (ii) Control Channel
 - (iii) Mobile Station
 - (iv) Page

6. Attempt any FOUR :

16

- (a) Identify and complete given block diagram. State the function of APC.



- (b) Differentiate GSM and IS-95 w.r.t.

- (i) Frequency range
- (ii) Channel Bandwidth
- (iii) Radio Interface
- (iv) Hand off

- (c) Compare 3G and 4G wireless system with respect to

- (i) Frequency Band used
- (ii) Data rate
- (iii) Access Technique
- (iv) Switching used

- (d) With neat diagram describe logic unit of mobile phone. State the function of NAM.

- (e) Describe IS-95 forward link channel structure.
