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BIEL-035

DIPLOMA – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)

00136

Term-End Examination

June, 2016

BIEL-035 : DIGITAL COMMUNICATION

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt **five** questions in all. All questions carry equal marks. Use of scientific calculator is permitted.*

1. (a) Define channel capacity and derive the equation for the same. 7

(b) State and prove Shannon-Hartley theorem. 7

2. (a) Discuss flat-topped sampling method and state how the aperture effect can be compensated. 7

(b) Find the Nyquist rate and Nyquist interval for the following signals : 7

(i) $f(t) = \frac{1}{2\pi} \cos(4000\,\pi t) \cos(1000\,\pi t)$

(ii) $f(t) = \frac{\sin(500\,\pi t)}{\pi t}$

3. Discuss ASK, FSK and PSK modulation techniques with their transmitter and receiver block diagrams. *14*

4. What is source coding ? Explain how Huffman coding can determine the best possible variable length code for a given set of messages. *14*

5. (a) Explain multiplexing. What is the need of multiplexing in communication system ? *7*

   (b) What are the advantages and limitations of TDMA, FDMA and CDMA ? *7*

6. With a neat block diagram of a transmitter and receiver section, explain the frequency hopped spread spectrum system. *14*

7. Write short notes on any ***two*** of the following : *2×7=14*

   (a) Manchester Coding

   (b) M-ary Encoding

   (c) ADM
