Transmission, Switching & Signaling

BS-Telecom

Instructions:

This is an open-book take-home mid-term assignment, to be submitted by 12:00 noon, Friday, April 17th, 2020. You may consult the textbook, your notes, and any material posted on sic. No other sources of information are allowed, including friends, classmates, materials from other classes, tutors, etc. Please write your solutions as clearly and neatly as possible. Also, show all your work, preferably with explanations for each step. If you are asked to do a problem a specific way (for example, "use the standard representation. . . "), then you will receive no credit for doing it any other way. You will also receive no credit for answers without sufficient work to produce them. Attempt all questions. Answers copied will both be marked zero. Late submission will not be accepted and marked zero.

<u>How to Submit?</u>

1. Write your names and Ids at the top of answer sheet.

2. Scan / Take Photo of each paper and save each photo with a number. E.g. photo of paper 1 of answer sheet be saved with name 1.jpg, then 2.jpg and so on.

3. Put all answer photos in a word file by simply copy and pasting images, name the document with subject name, your name and id e.g. TSS_Ali_12345.

4. You will be provided upload link on sic to submit your answers go to Lectures section and click on Upload Assignment and upload your answers document file in the subject.

Q.1A Determine the following equivalents:
   27dBm=? dBW
   36dBW= ? Watts
   34dBm=? dBW

   B A microwave transmitter has an output of 500 mW. What is its output in dBW? A combining network has two inputs: +29 dBm and +6 dBm. It has an insertion loss of 3 dB. What is the combined output in dBm?

Q.2A In a traditional TDM system, four devices A, B, C, & D are transmitting data at the rates L, L, L, & 2L kbps, respectively. What must be the minimum

transmission rate of output stream of the multiplexor? If the TDM frame size is 'M' k-bytes, then with the help of a diagram show a generic technique to keep the frames synchronized between multiplexor and de-multiplexor. Draw the format of an ISDN multiplexed frame.

B Describe Statistical TDM. How DWDM is different from WDM? Explain working of DWDM.

C What is PBX? What is its function? Draw PBX Architecture Diagram. What is an IP PBX & it differs from a normal PBX. Discuss the different services that can be provided by a PBX and an IP PBX.

Q.3A Elaborate at least three speech coding schemes. What advantages nonlinear encoding has over linear coding? How nonlinear encoding is implemented in practical systems?

B A Mobile Station (MS) is in idle mode and wants to originate a call, however it doesn't have a physical channel for communication with the base station. How communication takes place between MS and the base station?

C Explain in detail Incoming Traffic and Service Time Characterization.