Examination report – December 2011 series

Paper no 2730 - 011

Section 1 – Areas of good performance (question no/syllabus topic or reference)
1a) Statistics. Majority of answers were very good, with method being shown clearly. 1b) Plot cumulative frequency curve and determine median. This part was generally well answered from most centres. There were some cases where the points needed to draw the graph were not given in the answer. Some candidates had mis read the question and drawn histograms. 2b) Number systems. Mainly well answered, the main problems were the questions being wrongly copied from the exam paper or the questions not being answered using binary arithmetic. In a few cases the binary numbers were converted to decimal then calculated, often the answer being left in decimal. 3 b) Logic Network: Some good NAND circuits drawn but methods of derivation would have given the opportunity to allow marks where the circuit had some discrepancies. 4 a) Amplifiers: Majority of answers were correct. 4 c) d) Telecommunication systems: There were some very good answers to this question, however a few candidates confused the terms distortion and interference with each other. 5 a) Fixed Link Transmission: This section was answered reasonably well. 5 d) Noise Factor: Many good answers 6 b) c) Logarithms: Most centres answered these sections well. 7 b) Transmission Lines: This section was well answered with clear definitions given. 7 c) Transmission Lines: Generally well answered, most common errors for candidates that lost marks was omitting the square root step or misunderstanding the values of pico and nano. 8 a) Characteristic Impedance. Many good answers to this section. 8 c) Parallel LC circuit: Majority of answers were good. 9 b) Modulation: Many good answers 9 c) Frequency Modulation: This section was reasonably well answered in most cases. 10 b) c) Frequency Modulation: Some very good answers. 10 d) Phase Modulation: Most candidates answered this question well.

Section 2 – Areas for development (question no/syllabus topic or reference)
2a) Number Systems. This gave numerous problems. Some candidates were able to complete the decimal but many incorrectly converted the decimal fraction to binary. 2c) Logic: Even though there were a reasonable amount of correct answers many candidates struggled with this question. Constructing the Karnaugh map seemed to cause a lot of problems for some. Knowledge of the grouping method was limited in some centres. 3 a) i) ii) iii) Monostable: This question caused problems to many candidates. Quite a few candidates omitted the question. Some candidates had misread the question and attempted to draw the monostable electronic circuit and then explain the circuit operation instead of explaining the operation of a monostable device. Many just stated that it had one stable state and one unstable state. 3 a) ii) Not many gave the correct circuit symbol. 3 a) iii) Many wrongly gave the application as a memory device. 3 c) Even though some answers gave the wave-shapes correctly for this question, most did not include the component differences. 4b) Need for d.c. supplies: Quite a few answers mentioned the need for biasing but hardly any answers related to semiconductor device operation requirements. 5 b) Communication Terminology: Many answers confused parallel communication with duplex communication. 5 c) Communication Terminology: Many answers stated wrongly that noise caused distortion and omitted the effects of noise on the communication system. 5 e) Amplifier Calculation: This question caused some problems mainly due to the lack of understanding of the Noise Figure formula or use of logarithms. 6 a) Noise Voltage: Most answers just stated what Vn was, not a description of the term. 7 a) dBm: This section caused problems with most candidates stating that numbers are made smaller or calculation is simplified. This could possibly be due to not reading the question carefully. 7 d) Transmission Line: There were mixed responses to this section, very few gave a substantial description, majority of candidates stated that a mismatch caused the reflection but gave no further description. 8b) i) ii) Filters. This section caused problems to many candidates, mainly the labelling of axes and omission of the 3dB points 9 a) LC Circuit: This question seemed to confuse many candidates and many resorted to guessing by just stating" increase", "decrease", "maximum" or "minimum" for each part without any description of reason. 10a) Modulation: Most candidates omitted the ability to achieve more channels without interference

Section 3 – Recommendations
Candidates are advised to revise their logic systems as many candidates omitted or only partially completed the logic sections, particularly 2 c) and 3 a) Questions should be read carefully, it must be understood that no marks can be allocated to answers that only state the name of a term and fail to define or describe the term, for example 6 a) 7 b) Candidates should always check to make sure that graph axes are suitably labelled. An example of this is 8 b) where the shape of the filter response is dependent on the label on the y axis. No label means the answer is wrong. This question also required indication of the 3dB points, which meant a scale was necessary in particular indication of the 0db level so that the 3dB point is suitably positioned The presentation of graphs and sketches in most cases is good, however this is not so in all cases. Candidates should ensure they have reasonable drawing equipment and practice their graphical communication skills.

Section 4 – Tips
One of the observations made during the marking procedure was that there seemed to be an increase in candidates lack of knowledge of some unit prefixes, nano and pico in particular, A deeper study of these would result in candidates having the answers to calculations correct hence achieving all the marks.