

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)**

**CLASS: BE
BRANCH: ECE**

**SEMESTER: VII
SESSION : MO/2019**

SUBJECT : EC7205 TELECOMMUNICATION SWITCHING CIRCUITS & NETWORKS

TIME: 1.5 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 30.
 2. Candidates may attempt for all 30 marks.
 3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. The missing data, if any, may be assumed suitably.
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- Q1 (a) What is meant by DTMF system? Draw the pulse dialling waveform for the number 32. [2]
(b) In a 100-line folded network, how many switching elements are required for non-blocking operation? Name and explain different types of signalling tones. [3]
- Q2 (a) Explain the following terms: (a) Blocking network, (b) Symmetric network, (c) Folded network, (d) Non-blocking network. [2]
(b) What are the major components of telecommunication network? What are the advantages of Automatic switching systems over Manual switching systems? [3]
- Q3 (a) What are the four broad categories for the Enhanced services? Mention at least one prominent service in each category. [2]
(b) Prove that the minimum number of switching elements required for the three stage network to make it non-blocking is $S = 4N\sqrt{2N}$. [3]
- Q4 (a) Compare the features of single stage and multistage switching network configurations? [2]
(b) A three stage space switched network supports 128 inlets and 128 outlets. It is proposed to use 16 first stage and third stage matrices. Find the number of switching elements in the network, if it is non-blocking? [3]
- Q5 (a) Show that time division switching networks are more cost effective than space division networks? [2]
(b) What are the advantages of Automatic switching systems over Manual switching systems? [3]
- Q6 (a) Is TS network non-blocking? Explain. [2]
(b) Calculate the maximum access time that can be permitted for the data and control memories in a TSI switch with a single input and single output trunk multiplexing 2500 channels. Also estimate the cost of the switch and compare it with that of a single stage space division switch. [3]

::: 26/09/2019M ::::