

2008 VISVESVARAYA TECHNOLOGICAL UNIVERSITY

B.E DEGREE EXAMINATIONS
DIGITAL SWITCHING SYSTEMS
(ELECTRONICS AND COMMUNICATION ENGINEERING)

TIME: 3 HOUR
MAXIMUM MARK :100

Note: 1. Answer any Five full questions.

1. a. Explain in brief with a neat diagram different Network configurations and structures.
- b. Explain in brief Regulations, standards in a telecommunication network
- c. Explain in brief Power levels encountered in telecommunication- transmission system
- 2 a. Explain in brief the operation of a Four-Wire circuit used in Two-way Transmission.
- b. A Four-Wire circuit has a round -trip delay of 20 ms. The propagation time for the 2 wire circuit connected is 1ms at each end , and it's attenuation is 6dB. The balance return loss is 3 dB, stability margin is also 3 dB. Determine :
 - i) Attenuation of the talker Echo. ii) Attenuation of the listner Echo.
 - iii) Delay of the Talker and the Listener echoes.
- c. Explain in brief PCM primary Multiplex group.
- 3 a. Explain in brief what do you mean by message switching and circuit switching.
- b. Explain in brief different functions of switching system.
- c. Explain in brief with a neat diagram distributed systems.
- 4 a. Define and explain the following terms:
 - i) Traffic intensity ii) Grade of service iii) Busy hour; iv) Blocking probability v) Blocking network .
- b. Derive the erlangs second distribution equation in case of switching systems , for a finite queue capacity.
- c. During the busy hour , on average 30E is offered to a group of trunks. On average , total period during which all trunks are busy is 12 secs and two calls are lost. Find the average no. of calls carried by the group and average call duration.
- 5 a. With a neat sketch, explain a space switch for K incoming PCM highways and m outgoing PCM highways.
- b. Discuss the need for frame Alignment in time division switching networks. Explain double ended unilateral and bilateral synchronization systems.
- 6 a. Explain in brief Basic software Architecture used in digital switching systems.
- b. Explain in brief calls models and connect sequence.
- 7 a. Explain in brief system outage and it's impact on DSS reliability.
- b. Explain in brief a methodology for proper maintenance of a DSS , such as diagnostic capabilities and firmware development.
- c. Explain in brief a strategy for improving software quality
- 8 a. Explain in brief generic switch hardware architecture.
- b. Explain in brief common characteristics of a digital switching system.
- c. Write a short notes on :
 - i) Reliability analysis or Network Control processors
 - ii) Recovery strategy