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Total Number of Pages: 01

B.Tech.  
PEEC5417

**7<sup>th</sup> Semester Regular / Back Examination 2017-18**  
**Digital Switching and Telecommunication Networks**

**BRANCH : CSE, ECE, ETC, IT, ITE**

**Time: 3 Hours**

**Max Marks: 70**

**Q.CODE: B374**

**Answer Question No.1 which is compulsory and any five from the rest.**  
**The figures in the right hand margin indicate marks.**

**Q1 Answer the following questions : (2 x 10)**

- a) What do you mean by connection oriented services and connectionless services?
- b) What are non-blocking networks?
- c) What is traffic intensity? What is the unit of traffic?
- d) Which of the layers in the ISO – OSI reference model are known as link-to-link layers and which layers as end-to-end layers?
- e) Define the terms Trunk and Trunking.
- f) List the advantages of crossbar switching system over step-by-step switching system.
- g) What is grading? Explain different types of grading.
- h) What are the various models in loss systems?
- i) What are the types of fundamental channels in ISDN?
- j) Compare the features of single stage and multi stage networks.

**Q2 a) With a neat figure explain the operation of a time switch. (5)**  
**b) Explain the different types of switching. (5)**

**Q3 a) Compare S-T-S and T-S-T switching networks. (5)**  
**b) Derive the expressions for GOS of T-S-T and S-T-S switching networks. (5)**

**Q4 a) Discuss the need for frame alignment in the time division switching networks. (5)**  
**b) What is congestion? What is grade of service? How is it quantified? (5)**

**Q5 a) Explain with a neat diagram building block of a Digital switching system. (5)**  
**b) Define the terms: a) Full availability b) Link systems c) Progressive grading. (5)**

**Q6 a) Design a 3-stage network for 100 incoming trunks and 400 outgoing trunks. Specify assumptions and draw the 3-stage network. (5)**  
**b) Explain the role of exclusion device in load sharing configuration of SPC. (5)**

**Q7 Explain with a neat figure the operation of a  $k \times m$  size space switch. Give the equivalent representation using a space division network. (10)**

**Q8 Write short answer on any TWO : (5 x 2)**  
**a) Write short notes on distribution systems.**  
**b) Write short notes on stored program control (SPC) switching system.**  
**c) With a neat sketch explain crossbar switching and its operation.**  
**d) Explain with a neat diagram switching system hierarchy.**