Name :	
Roll No. :	Andrew (Y Kambily Ind Under
Invigilator's Signature :	

TELECOMMUNICATION SWITCHING & SYSTEMS

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

Answer any *five* questions. $5 \times 14 = 70$

- 1. a) Write down four advantages of automatic switching over manual switching.
 - b) Give brief description of "Dial tone & Ring tone".
 - c) Explain the "Selector Hunter" operation used in step-bystep switching with proper diagram. 4 + 5 + 5
- 2. a) Derive Erlang-B formula for loss system to calculate blocking probability.
 - b) Define the following :
 - i) Peak Busy Hour
 - ii) CCR
 - iii) BHCR
 - iv) Erlang.

920593

[Turn over



- c) 10,000 subscribers are connected to an exchange. If the exchange is designed to achieve a call completion rate of 0.8, when the busy hour calling rate is 4.8, what is the BHCA for that exchange ?
 6 + 4 + 4
- a) Write down the difference between circuit switching and packet switching.
 - b) Explain operation of "Load Sharing Mode" centralisedSPC. What are the levels of functions in SPC system ?
 - c) If MTTR = 5 hours and MTBF = 2500 hours, then calculate the unavailability of single & dual processor system for 75 years and 50 years. 3 + (4 + 2) + 5
- 4. a) Write down the advantages & disadvantages of channelassociated and outband signalling.
 - b) Explain the operating principle of a four-subscriber diagonal cross-point switching system.
 - c) A non-blocking cross-bar exchange has 200 subscribers. Calculate its EUF & CCI.
 - d) Write the advantages of cross-bar switching over strowger system. 4 + 4 + 4 + 2
- 5. a) Give the "Data/Command" frame structure in "Token Ring" system. Explain the access method of token ring LAN.

920593

- b) Give the HDLC frame format showing different types of control fields & write the functions of the other fields.
- c) Why transport layer performs the error control functions, though DLL performs the same functions. (2+5)+6+1
- 6. a) Explain the operation of a STS combination switch.What is its disadvantage ?
 - b) Explain the access arrangement and interface techniques used in N-ISDN. Name two supplementary services served by ISDN.
 - c) If *M* channels are multiplexed in each stream of a trunk and 4 trunks can be supported on a time muxed space switch. Give that, CM access time is 200 ns, bus switching time is 150 ns and transfer time is 100 ns. Find the value of *M*.
- 7. a) What is the difference between "Multicasting & Broadcasting".
 - b) Find the class and subnetwork address, host address :

	IP address	Mask			
i)	125.34.12.56	255.255.0.0			
ii)	200.34.22.39	255.255.255.240			
iii)	140.11.36.22	255.255.255.0			

920593

[Turn over

- c) What is the maximum no. of subnets in Class *B* & Class *C* network using the given masks?
 - i) 255.255.255.0
 - ii) 255.255.255.224

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1	2	3	4	5	6	7	8	9	10	11
D		G	G	0	А	Ο		0	0	D
D		Ι	Ι	Ν	F	E	R		S	
R		Т	Т	E	В	Т	E	А	Н	Ν
Α	S	Т	U	E	А	R		E	R	

d)	Find	the	plaintext	from	the	given	Ciphertext	&
	Decry	ntion	kev :					

<i>K</i> _{<i>d</i>} =	1	2	3	4	5	6	7	8	9	10	11
	9	6	3	10	5	1	2	4	8	7	11

What is *P*-box ?

1 + 5 + 2 + 6

- 8. Write short notes on any *two* of the following : 2×7
 - i) Touch-tone dialling & its advantages
 - ii) Associated circuits in step-by-step switching
 - iii) Client-server model in application layer
 - iv) Public key method & authentication technique
 - v) OSI model
 - vi) No. 5ESS system.

920593