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Hirasugar Institute of Technology, Nidasoshi.

Inculcating Values, Promoting Prosperity

Approved by AICTE, Recognized by Govt. of Karnataka and Affiliated to VTU Belagavi.

ECE Dept

Exam.

Internal  
Assessment

Even Sem(2017-18)

## SECOND INTERNAL ASSESSMENT

Sem: VIII

Date: 12/04/18

Sub: High Performance Computer Network

Time: 11:00am-12:00noon

Sub. Code: 10EC834

Max. Marks: 25

*Note: Answer two full questions, draw sketches wherever necessary.*

Q. No	Description of Question	Marks	CO	RBT Level	
1	a Explain SONET frame structure.	6	C411D4.3	L1,L2,L3,L4	
	OR				
	b Explain FTTH with Passive optical networks (PONs).	6	C411D4.3	L1,L2,L3,L4	
	c Explain the network element and functional components of intelligent network architecture(INA).	6	C411D4.3	L1,L2,L3,L4	
OR					
d Explain asymmetric digital subscriber line (ADSL).	6	C411D4.3	L1,L2,L3,L4		
2	a Explain the following with respect to ATM network: i) Features of ATM ii) QOS parameters iii) Types of delay.	7	C411D4.4	L1,L2,L3,L4	
	OR				
	b With a neat diagram, explain ATM header structures.	7	C411D4.4	L1,L2,L3,L4	
	c Explain ATM adaptation layer(AAL).	6	C411D4.4	L1,L2,L3,L4	
OR					
d Explain ATM addressing and ATM signaling.	6	C411D4.4	L1,L2,L3,L4		

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### SCHEME OF EVALUATION IA- II

Sem : VIII		Subject : High Performance Computer	Sub Code : 10CC 834	Date : 13 / 4 / 2018		
Q. No.	Bit	Description		Marks	CO's	RBT LEVEL
1	a	Explain SONET frame structure. <div style="text-align: center; margin-top: 10px;"> </div>		6	C411 D4.3	L1, L2 L3, L4
		<p>SONET frame consist of 810 byte STS-1</p> <ul style="list-style-type: none"> <li>* Organized in 9 rows of 90 byte</li> <li>* first three column (27 byte) are for SOH &amp; LOH</li> <li>* SPE is 9 rows 87 column</li> </ul> <p>Explanation of SONET Elements.</p>				
1	b	Explain FTTH with PONS <ul style="list-style-type: none"> <li>* cable subscribers loop changed to fiber loop</li> <li>* FTTH → Fiber to the home</li> <li>* Cost is less</li> <li>* High speed excess</li> </ul> <p>Passive optical Network (PONS)</p> <ul style="list-style-type: none"> <li>* Broadcast downstream channel &amp; shared upstream channels present</li> <li>* Downstream channel multiplexes several data using TDM</li> <li>* upstream data stream from individual subscribers are simply added to different data stream</li> </ul>		6	C411 D4.3	L1, L2 L3, L4
		<p>SONET frame consist of 810 byte STS-1</p> <ul style="list-style-type: none"> <li>* Organized in 9 rows of 90 byte</li> <li>* first three column (27 byte) are for SOH &amp; LOH</li> <li>* SPE is 9 rows 87 column</li> </ul> <p>Explanation of SONET Elements.</p>				

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**SCHEME OF EVALUATION IA- II**

Sem : VIII	Subject : HPCN	Sub Code : 10EC834	Date : 13/04/2018		
Q. No.	Bit	Description	Marks	CO's	RBT LEVEL
		<p>British Telecom TPN (Telephony ON PON)</p> <p>TPON Frame</p>	1.5		
1	C	<p>Explain the network element and functional components of intelligent network architecture (INA)</p> <p>Network element exchange information using signal transfer Point (STP).</p>	6	C411 D4.3	L1, L2 L3, L4
			3		

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(2017-18)

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**SCHEME OF EVALUATION IA-II**

Sem : VIII		Subject : HPCN	Sub Code : <sup>10EC</sup> 834	Date : 13 / 04 / 2018		
Q. No.	Bit	Description	Marks	CO's	RBT LEVEL	
1	d	<p>Network Element</p> <ol style="list-style-type: none"> <li>1) Service switching Point (SSP)</li> <li>2) Service control Point (SCP's)</li> <li>3) Intelligent Peripherals (IP's)</li> </ol>	1.5			
		<p>Functional Components</p> <ol style="list-style-type: none"> <li>1) Control of Processing</li> <li>2) Connection Request</li> <li>3) User interaction Request</li> <li>4) Network Resource status Request</li> <li>5) Network information Revision Request</li> </ol>	1.5			
		<p>Explain asymmetric digital subscriber Line (ADSL)</p> <ul style="list-style-type: none"> <li>* High speed downstream channel.</li> <li>* Medium speed upstream / Duplex channel.</li> <li>* ISDN Channel.</li> </ul> <p>1MHz Bandwidth divided in three region</p> <ol style="list-style-type: none"> <li>1] voice</li> <li>2] upstream</li> <li>3] downstream</li> </ol>	6	C411 D4.3	L1, L2 L3, L4	
		<p>ATU-C      Splitter      Splitter      ATU-R</p> <p>voice      upstream      downstream</p> <p>0      10      100      1000KHz</p>	2			
		<p>ATU-C      ADSL Terminal Unit Centre</p> <p>ATU-R      ADSL Terminal Unit Remote</p>	2			

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### SCHEME OF EVALUATION IA-II

Sem : VIII		Subject : HPCN	Sub Code : <sup>101C</sup> 834	Date : 13 / 4 / 2018		
Q. No.	Bit	Description	Marks	CO's	RBT LEVEL	
		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">ADSL</div> <div style="border: 1px solid black; padding: 5px; margin-right: 5px;">ATU-C</div> <div style="margin: 0 5px;">—</div> <div style="border: 1px solid black; padding: 5px; margin-right: 5px;">DSLAM</div> <div style="margin: 0 5px;">—</div> <div style="border: 1px solid black; padding: 5px; margin-right: 5px;">Router/Switch</div> <div style="margin: 0 5px;">—</div> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;"> <span style="font-size: 8px;">ATM Network</span> </div> <div style="margin: 0 5px;">—</div> <div style="margin-left: 10px;">ISP</div> </div> <div style="margin-top: 10px;"> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">ADSL</div> <div style="border: 1px solid black; padding: 5px; margin-right: 5px;">ATU-C</div> <div style="margin: 0 5px;">—</div> <div style="border: 1px solid black; padding: 5px; margin-right: 5px;">DSLAM</div> <div style="margin: 0 5px;">—</div> <div style="border: 1px solid black; padding: 5px; margin-right: 5px;">Router/Switch</div> <div style="margin: 0 5px;">—</div> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center;"> <span style="font-size: 8px;">ATM Link</span> </div> <div style="margin: 0 5px;">—</div> <div style="margin-left: 10px;">Corporate Gateway</div> </div> </div> <p>ADSL subscribers are connected via DSLAM to a backbone network</p>	2			
2	a	<p>Explain the following with respect to ATM Network</p> <p>i] Features of ATM</p> <p>ii] QoS Parameter</p> <p>iii] Types of delay</p> <p>i] Features of ATM</p> <ul style="list-style-type: none"> <li>* service is connection oriented data transferred over virtual circuit (VC)</li> <li>* Data transferred in 53 byte packet called cells</li> <li>* cells from different VC's occupy same channel</li> <li>* ATM switch treat cell stream from different VC unequally to provide QoS</li> </ul> <p>ii] QoS Parameter</p> <ul style="list-style-type: none"> <li>* Cell loss Ratio</li> <li>* Cell delay variation</li> <li>* Peak to Peak cell delay variation</li> <li>* Maximum cell transfer delay (Max CTD)</li> <li>* Mean cell transfer delay (Mean CTD)</li> </ul>	7	CU11-04.4	L1, L2 L3, L4	
			2			
			2			

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**SCHEME OF EVALUATION IA-II**

Sem : VIII	Subject : HPCN	Sub Code : 10 E C 8 3 4	Date : 13 / 4 / 18	Marks	CO's	RBT LEVEL
Q. No.	Bit	Description				
		<p>iii] Types of delay</p> <ul style="list-style-type: none"> <li>* Packetization delay (PD) at source</li> <li>* Transmission &amp; Propagation delay (TD)</li> <li>* Queuing delay (QD) at switch</li> <li>* Fixed processing delay (FD) at each switch</li> <li>* Jitters Compensator or Depacketization delay (DD) at destination</li> </ul>	3			
2	b	<p>With a neat diagram Explain ATM Header structure</p> <p>GFC - Generic flow Control  VPI - Virtual Path Identifiers  PT - Payload Type  HEC - Header Error Control  VCI - Virtual Channel Identifiers  CLP - Cell Loss Priority</p>	7	C411 D4.4	L1, L2 L3, L4	
			3			
			1			

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**SCHEME OF EVALUATION IA-II**

Sem : VIII		Subject : MPCN	Sub Code : 100C 234	Date : 13/04/18		
Q. No.	Bit	Description	Marks	CO's	RBT LEVEL	
		★ ATM switch can obtain the information it needs from cell header ★ AAL produce 48 byte cell/PDU ★ ATM layer add 5 byte header and forward 53 byte cell to physical layer & Block Explanation  ATM Header Structure is classified into two type 1] UNI User Network Interface 2] NNI Network Network Interface Explanation -	2			
2	C	Explain ATM adaptation Layer (AAL) type Information Stream ↓ Convergence Sublayer ↓ Segmentation/Reassembly (SAR) ↓ 48 byte cell <div style="margin-left: 20px;"> <math display="block">1: \boxed{SN   SNP   SAR-SDU}</math> <math display="block">2: \boxed{SF   H   SAR-SDU   PAD}</math> <math display="block">3: \boxed{ST   SN   RES/MID   SAR-SDU   LTR}</math> <math display="block">4: \dots</math> <math display="block">5: \boxed{SAR-SDU}</math> </div> AAL Converts information stream into 48 byte cell. AAL is decomposed into convergence sublayer and segmentation / reassembly layer AAL is divided into 5 types	7	CH1 D4.4	L1, L2 L3, L4	

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**SCHEME OF EVALUATION IA-II**

Sem : VIII		Subject : HPCN	Sub Code : <sup>10EC</sup> <sub>834</sub>	Date : 13/4/2018		
Q. No.	Bit	Description	Marks	CO's	RBT LEVEL	
2	d	<u>Type 1</u> Traffic is connection Oriented SN - Sequence Number - 4b SNP - Sequence number - 4b SAR SDU - Segmentation / Reassembly (SAR) Single data unit	1			
		<u>Type 2</u> Low bit rate traffic SF - Start field H - Header PAD - Payload	1			
		<u>Type 3/4</u> Type 3 - Connection Oriented Type 4 - connection less service ST - segment type LI - Length Indicator CRC - cyclic redundancy checker MID - Multiplexing Identifier	1			
		<u>Type 5</u> Traffic carries IP - Packet	1			
		Explain ATM addressing and ATM Signalling  ATM addressing * ATM Forum defined ATM addressing * Indicates location of ATM interface * Prefix of an address associated with group of interfaces with same prefix * Help in sending IP Packet to given IP address over network routes	4 4-4  3	L1, L2 L3, L4		

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**SCHEME OF EVALUATION IA-II**

Sem : VIII		Subject : HDN	Sub Code : <sup>SOEC</sup> 234	Date : 13/4/2018		
Q. No.	Bit	Description	Marks	CO's	RBT LEVEL	
		<p>★ ATM address is 20 byte long 7 byte → 48 bit mac address 1 byte → sr → start field</p> <p>★ ATM addressing is based on E.164 International Standard for ISDN number plan used in ISDN</p> <p><u>ATM signalling</u></p> <p>★ ATM switches are connected by point-to-point link</p> <p>★ ATM has two interfaces</p> <ol style="list-style-type: none"> <li>1] UNI - User network Interfaces</li> <li>2] NNI - Network Network Interface</li> </ol> <p style="text-align: center;">FUNI to ATM Conversion function</p> <p>UNI is interface between ATM end System and ATM switch, NNI is interface between two ATM switches, &amp; FUNI is frame interface between Non-ATM end system and an ATM switch</p>	3			

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