

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Senior Secondary School Examination, 2026 (XIIth)
SUBJECT NAME: Electronics & Hardware (Q.P. CODE 847/371)

General Instructions: -

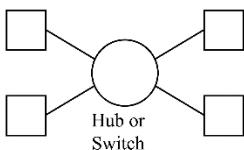
1	The CBSE has decided to introduce On Screen Marking (OSM) for the evaluation of Class XII answer Book with the 2026 Examination.
2	You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
3	“Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, evaluation done and several other aspects. Its leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in Newspaper/Website, etc. may invite action under various rules of the Board and IPC.”
4	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one’s own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In Class-XII, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.
5	The Marking scheme carries only suggested value points for the answers. These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
6	The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
7	Evaluators will mark (✓) wherever answer is correct. For wrong answer CROSS ‘X’ be marked. Evaluators will not put right (✓) while evaluating which gives an impression that answer is correct and no marks are awarded. This is most common mistake which evaluators are committing.
8	If a question has parts, please award marks on the right-hand side for each part in the OSM Portal. Marks awarded for different parts of the question will be totaled up by the OSM System.
9	If a question does not have any parts, marks must be awarded in the left-hand margin in the OSM Portal. This may also be followed strictly.

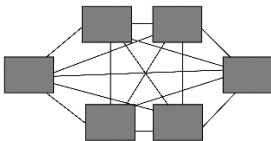
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks _____ (example 0 to 80/70/60/50/40/30 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in question paper.
13	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past :-</p> <ul style="list-style-type: none"> • Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.) • Half or a part of answer marked correct and the rest as wrong, but no marks awarded.
14	While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0) Marks.
15	The Examiners should acquaint themselves with the guidelines given in the “Guidelines for Spot Evaluation” before starting the actual evaluation.
16	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.
17	If a candidate attempts both alternatives/options in a question where only one option/ alternative is required to be attempted, the Evaluator shall award marks in both the options. The system will take the higher of two scores and disregard the other response.
18	In a question having two options/alternatives, if a candidate has attempted only one, then the evaluator shall mark “NA” (Not attempted) against the option that has not been attempted by the candidate.

MARKING SCHEME
Electronics & Hardware (Subject Code- 847)
(PAPER CODE: 371) (P3710847)

Q. No.	EXPECTED OUTCOMES/VALUE POINTS		Marks
	SECTION-A (Objective Type Questions)		
Q. 1	Answer any 4 out of the given 6 questions on Employability Skills.		4x1=4
I.	C. at	U-1, Pg-13	1
II.	Stress is a state of feeling upset, annoyed and hopeless. It also refers to a time period where one feels nothing is working right.	U-2, Pg-26	1
III.	A. Timely	U-2, Pg-33	1
IV.	A. 3	U-3, Pg-66	1
V.	C. Start up	U-4, Pg-88	1
VI.	A. Nitrogen	U-5, Pg-119	1
Q. 2	Answer any 5 out of the given 7 questions.		5X1=5
I.	C. UDP		1
II.	D. Tree		1
III.	B. Metropolitan Area Network		1
VI.	C. Router		1
V.	C. Local Area Network		1
VI.	A. RJ45		1
VII.	A. True		1
Q. 3	Answer any 6 out of the given 7 questions.		6X1=6
I.	A. Domains, trees and forest		1
II.	C. Active Directory Domain Services		1
III.	B. .NET Common Language Runtime (DOT NET CLR)		1
IV.	False		1
V.	A. Potential to be hacked		1
VI.	C. Both (A) & (B)		1
VII.	C. Active Directory		1

Q. 4	Answer any 5 out of the given 6 questions.		5X1=5
I.	B. Change file permissions		1
II.	C. -WX		1
III.	True		1
IV.	False		1
V.	D. forward slash (/)		1
VI.	A. Linux Terminal		1
Q. 5	Answer any 5 out of the given 6 questions.		5X1=5
I.	A. DoS Attack		1
II.	B. Application		1
III.	C. Stateful Inspection Firewall		1
IV.	D. Antivirus		1
V.	D. 22		1
VI.	C. It involves access control, activates antivirus software, application security etc.		1
Q. 6	Answer any 5 out of the given 6 questions.		5X1=5
I.	D. IT Services		1
II.	B. Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Management.		1
III.	A. (1) & (2) both correct.		1
IV.	A. Problem identification, Problem Control and Error Control		1
V.	B. Internal		1
VI.	True		1
	SECTION-B (Subjective Type Questions)		
	Answer any 3 out of the given 5 questions on Employability Skills. Answer each question in 20-30 words.		3x2=6
Q. 7	<ul style="list-style-type: none"> An individual's past experiences develops biases or prejudices which hinders the ability of the individual to become an active listener. In order to overcome this barrier the individual must try to have an open and objective approach while interacting with others. 	U-1, Pg-6	1+1=2
Q. 8	<ul style="list-style-type: none"> Self-awareness is about understanding one's own needs, desires, habits, traits, behaviours and feelings. Example is subjective and may vary from student to student. 	U-2, Pg-32	2 (1x2)
Q. 9	<p>(1) The 4 ways in which text can be aligned in a slide are : Left, right, centre, justified 'left or right aligned' means that text will be aligned to the left or right margin, respectively.</p> <p>(2) 'Centre' aligns the text to the center of the page. 'Justify' aligns the text to the right and left margins.</p>	U-3, Pg-71	2 (1x2)

Q. 10	Types of Entrepreneurs : (i) Service Entrepreneur - They create new market or provide service in an existing market. (ii) IT Entrepreneur - They take up Entrepreneurship in the field of information technology. (iii) Agricultural Entrepreneur - Agriculturists, who introduced innovative technology to maximise the yield. (iv) Women Entrepreneurs – Women, who take up Entrepreneurship.	U-4, Pg-82	2 (0.5x4)
Q. 11	(A) Solar and wind energy sector's jobs : (i) Solar panel installation technician (ii) Field technician (B) Agriculture sector's jobs : (i) Organic Farming (ii) Integrated pest management	U-5, Pg-115, 116	1+1=2
	Answer any 3 out of the given 5 questions in 20-30 words each.		(3x2=6)
Q. 12	Linux file system is a hierarchical file structure. It contains a root directory and its subdirectories. All other directories can be accessed from the root directory. A partition usually has only one file system, but it may have more than one file system.		2
Q. 13	Root cause analysis (RCA) : The root cause is the problem's underlying issue. RCA is the investigation techniques that help discover the root cause of a problem.		2
Q. 14	An information security policy (ISP) sets forth rules and processes for workforce members, creating a standard around the acceptable use of the organization's information technology, including networks and applications to protect data confidentiality, integrity and availability.		2
Q. 15	Limitations of Domain Controller : (1) Target for cyber attack (2) Potential to be hacked (3) Users and OS must be maintained to be stable, secure and up-to-date (4) Network is dependent on DC uptime (5) Hardware/software requirements		2
Q. 16	In star topology, each communicating device is connected to a central node, which is a networking device like a hub or a switch. Star topology is considered very effective, efficient and fast as each device is directly connected with the central device. 		2

	Answer any 2 out of the given 3 questions in 30-50 words each		(2x3=6)
Q. 17	<p>Here are the areas where ITIL plays an effective role- (any 6)</p> <ul style="list-style-type: none"> • IT and business strategic planning • Integrating and aligning IT and business goals • Implementing continuous improvement • Acquiring and retaining the right resources and skill sets • Reducing costs and the Total Cost of Ownership • Demonstrating the business value to IT • Achieving and demonstrating Value for Money and Return on Investment • Measuring IT organization effectiveness and efficiency • Developing business and IT partnership and relationships • Improving project delivery success • Managing constant business and IT change 		3
Q. 18	<p>Malware : Malware known as malicious software is a file or code, typically delivered over a network, that infects, explores, steals or conducts virtually any behaviour an attacker wants. And because malware comes in so many variants, there are numerous methods to infect computer systems. Types of Malware are :</p> <p>Spyware, Ransomware, Trojan Horse, Remote Access, Worm, Keylogger, Adware, Virus, Rootkit</p>		3
Q. 19	<p>In Mesh networking topology, each communicating device is connected with every other device in the network. Such a network can handle large amounts of traffic since multiple nodes can transmit data simultaneously. Also, such networks are more reliable in the sense that even if a node gets down, it does not cause any break in the transmission of data between other nodes.</p> 		3
	Answer any 3 out of the given 5 questions in 50-80 words each.		3x4=12
Q. 20	<p>(a) File and folder permission :</p> <p>Every file and every folder in Windows has its own set of permissions. Permissions can be broken down into Access Control Lists with users and their corresponding rights.</p> <p>Permissions are also either inherited or not. Normally in Windows, every file or folder gets their permissions from the parent folder. This hierarchy keeps going all the way upto the root of the hard drive. The simplest permissions have at least three users. SYSTEM, currently logged in user account and the Administrators group.</p> <p>(b) Encryption and group policy :</p> <p>Encryption policies define when encryption should or shouldn't be used and the encryption technologies or algorithms that are acceptable. For example, a policy might mandate that specific proven algorithm such as 3DES, RSA or IDEA be used and prohibit use of proprietary or nonstandard algorithms. Group Policy is a hierarchical infrastructure that allows a network administrator in charge of Microsoft's Active Directory to implement specific configurations for users and computers. Group Policy is primarily a security tool and can be used to apply security settings to users and computer.</p>		4

Q. 21	<p>Software Firewalls : Software firewalls are installed separately on individual devices. They provide more granular control to allow access to one application or feature while blocking others. But they can be expensive in terms of resources since they utilize the CPU and RAM of the devices they are installed on and administrators must configure and manage them individually for each device. Additionally, all devices within an intranet may not be compatible with a single software firewall and several different firewalls may be required.</p> <p>Hardware Firewalls On the other hand, hardware firewalls are physical devices each with its computing resources. They act as gateways between internal networks and the internet, keeping data packets and traffic requests from untrusted sources outside the private network. Physical firewalls are convenient for organizations with many devices on the same network. While they block malicious traffic well before it reaches any endpoints, they do not provide security against insider attacks. Therefore, a combination of software and hardware firewalls can provide optimal protection to your organization's network.</p>		4
Q. 22	<p>PowerShell is a cross-platform task automation solution made up of a command-line shell, a scripting language and a configuration management framework. PowerShell runs on Windows, Linux and macOS.</p> <p>(a) Command-line Shell :</p> <p>PowerShell is a modern command shell that includes the best features of other popular shells. Unlike most shells that only accept and return text, PowerShell accepts and returns .NET objects. The shell includes the following features : Robust command-line history Tab completion and command prediction Supports command and parameter aliases Pipeline for chaining commands In-console help system, similar to Unix man pages.</p> <p>(b) Scripting language :</p> <p>As a scripting language, PowerShell is commonly used for automating the management of systems. It is also used to build, test and deploy solutions, often in CI/CD environments. PowerShell is built on the .NET Common Language Runtime (CLR). All inputs and outputs are .NET objects. No need to parse text output to extract information from output. The PowerShell scripting language includes the following features :</p> <ul style="list-style-type: none"> • Extensible through functions, classes, scripts and modules • Extensible formatting system for easy output • Extensible type system for creating dynamic types • Built-in support for common data formats like CSV, JSON and XML <p>(c) Automation platform :</p> <p>The extensible nature of PowerShell has enabled an ecosystem of PowerShell modules to deploy and manage almost any technology you work with.</p>		4

Q. 23	<p>Linux server management is an integration of cyber security and business objectives. Linux server management at scale is a vastly different activity from interacting with a terminal on one machine. The best Linux server management tools universally offer a server management GUI within a web browser. Implementation details matter, especially in a pay-for-compute world. System admin tools that don't have a lightweight footprint increase overall compute costs.</p> <p>In short, the two most desirable attributes for your Linux server management tools are :</p> <ol style="list-style-type: none"> (1) Lightweight : the Linux Server management software should not compete with your workload for memory, disk and processor resources (2) Scalable : the server dashboard should allow you to manage a large fleet as easily as one machine <p>Linux terminal : The Linux terminal is a text-based interface used to control a Linux computer. It's just one of the many tools provided to Linux users for accomplishing any given task but it's widely considered the most efficient method available.</p> <p>Superuser : In Linux and Unix-like systems, the superuser account, called 'root', is virtually omnipotent, with unrestricted access to all commands, files, directories and resources. Root can also grant and remove any permissions for other users. Mac OS X, is Unix-like but unlike Unix and Linux, is rarely deployed as a server.</p>		4
Q. 24	<p>OSI Model There are n numbers of users who use computer network and are located over the world. Therefore national and worldwide data communication systems must be developed which are compatible to communicate with each other. ISO has developed a standard Model of Network Data Communication. ISO stands for International organization of Standardization. This is called a model for Open System Interconnection (OSI) and is commonly known as OSI model.</p> <p>The ISO-OSI model is a seven layer architecture. It defines seven layers or levels in a complete communication system.</p> <p>They are :</p> <ol style="list-style-type: none"> (1) Application Layer (2) Presentation Layer (3) Session Layer (4) Transport Layer (5) Network Layer (6) Data link Layer (7) Physical Layer <p>The working principle of different layer in OSI model with their protocol used is shown below :</p>		4

