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FOUNDATION OF INFORMATION TECHNOLOGY

CLASS 9

Includes the Latest CBSE Syllabus for Academic Year 2017-18 issued on 4th April, 2017

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CONTENTS

- Latest Syllabus issued by CBSE on 4th April 2017 for Academic Year 2017-18 7 - 12

UNIT I : Basics of Information Technology

1. **Convergence of Technologies** 13 - 28
   - **Topic 1.** Computer System
   - **Topic 2.** Computer Networking
   - **Topic 3.** Convergence of Technologies
2. **Memory and I/O Devices** 29 - 40
   - **Topic 1.** Memory and its units
   - **Topic 2.** Storage Devices
   - **Topic 3.** I/O Devices
3. **Types of Software** 41 - 48
   - **Topic 1.** Software Overview
   - **Topic 2.** General Purpose Application Software
   - **Topic 3.** Utility Software

UNIT II : Information Processing Tools

4. **Operating System** 49 - 57
   - **Topic 1.** Introduction with Operating Systems
   - **Topic 2.** Windows Operating Systems
5. **Word Processor** 58 - 64
6. **Presentation Tool** 65 - 73
7. **Spreadsheet** 74 - 82

UNIT III : Societal Impacts Of IT

8. **Societal Impacts of IT** 83 - 88

UNIT IV : IT Applications

9. **Domains** 89 - 103

OSWAAL BOOKS

A Student's Best Friend

Oswaal books are a must for any student who wishes to score good marks in their exams. I would like to thank the writers for making such awesome books from the depth of my heart. These books really help students to remain stress-free before board examination and attain the best score they can ! THANK YOU OSWAAL BOOKS ! :)

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PREFACE

CBSE always believes in Global Trends of Educational Transformation and Continual Improvement Process which means that the Board continually examines its processes and curriculum to evolve and find resonance amongst the educational fraternity. In this context, CBSE has yet proposed a remodeled assessment structure on 31st January 2017 notifying the restoration of Class X Board examination, thereby eliminating the semester system of evaluation (*popularly called CCE)* applicable from the academic year 2017-18 onwards.

We at Oswaal Books are always proactive to follow the changes proposed by the Board and implement the same as soon as possible to put the students, parents and teachers at ease. The Oswaal Question Banks have been modified and rewritten as per the latest Board guidelines in order to supplement the need of the students during the entire academic year.

As the CBSE remodeled assessment structure is divided in two major parts namely **Internal Assessment** and **Board Examinations**, Oswaal Question Banks have been designed to assist students to prepare for their periodic tests, internal assignments as well as the Board examinations with equal ease. Oswaal Question Banks will not only help students with regular studies but will also equip the teachers with the most updated study material for the class.

The Question Banks have been designed with a lot of care and attention to details. All chapters are arranged 'TOPICWISE' where each topic is explained in detail and covers all typologies of Questions specified by CBSE, with well labelled diagrams and high quality figures/diagrams for fast learning. Answers from CBSE Marking scheme are highlighted in order to specify the correct method of answering questions for attaining maximum marks. We hope to make Oswaal Question Banks a student's best companion to sail through the entire academic year smoothly.

Last but not the least, we would like to offer heartfelt gratitude to our authors, editors, reviewers and specially students who regularly send us suggestions which helps in continuous improvement of this book and makes it stand out as "One of the Best" in its category.

We, at Oswaal Books, wish you all a very Happy Learning and a successful 2017-18!!

-Team Oswaal

Why Topic Wise Question Banks Are A Better Choice than Previous Year's Papers ?

Question Banks	Previous Years' Papers
1. Chapter-wise and Topic–wise presentation in Question Banks facilitates systematic study.	1. Year Wise presentation restricts methodical flow of learning.
2. Question Banks can be referred to by the students throughout the year as well as at the completion of each chapter in school.	2. These can be referred to only after the completion of the full syllabus in school.
3. Question Banks, take into account any changes in syllabus or layout and hence are fully updated and aligned as per the latest specifications by the Board.	3. Previous Years' questions cannot be changed and hence fail to be adept with the latest Board specifications

Narayan Murthy

20 August, 1946 Born
Indian IT industrialist

He studied electrical engineering at the National Institute of Engineering, Mysore and in 1969 completed his M. Tech at the Indian Institute of Technology, Kanpur. He started his career in IIM Ahmmedabad where he joined as the Chief Systems Programmer in 1976. He started an IT software consulting firm called Softronics in Pune. The company failed and he left it to join Patni Computer Systems, Pune. In 1981, a new chapter began in his life when he along with 6 other software professionals started Infosys. He has been described as Father of Indian IT sector by Time magazine due to his contribution to outsourcing in India. Murthy has also been honoured with the Padma Vibhushan and Padma Shri awards.

Murthy started Infosys with Rs 10,000 he borrowed from his wife, Sudha Murthy.

Infosys almost wound up in 1990. Murthy did not want to sell the company. He asked cofounders if they wanted out and offered to buy their shares. All of them stuck together.

He keeps his personal life simple. He lives in a simple, middle class house and flies economy till date.

Information in this section is sourced from various available sources. Though all efforts have been made to make sure it is trustworthy, Oswaal Books shall not be responsible for mistakes, if any.

SYLLABUS

Latest Syllabus issued by CBSE for Academic Year 2017-18

FOUNDATION OF INFORMATION TECHNOLOGY Class - IX (Code No. 165)

Theory: 40 Marks **Practical : 60 Marks**

Unit	Description	Marks	
		Theory	Practical
Unit I	Basics of Information Technology	10	-
Unit II	Information Processing Tools	25	30
Unit III	Societal Impacts of IT	05	-
Unit IV	IT Applications	-	30
	Total	**40**	**60**

CLASS - IX (THEORY)

Time : 2½ hours Marks : 40

UNIT I : BASICS OF INFORMATION TECHNOLOGY

Convergence of Technologies: Computer, Communication and Content Technologies.

Computer System: Characteristics of a computer, components of a computer system – CPU (CU & ALU), Memory, Storage Devices and I/O Devices

Memory: Primary (RAM & ROM) and Secondary Memory.

Units of Memory: Byte, Kilobyte, Megabyte, Gigabyte, Terabyte, I/O Devices - Keyboard, Mouse, Printer, Joystick, Scanner, Microphone, OCR, MICR, Light Pen, Barcode Reader, Digital Camera, Web Camera, Speaker, Plotter

Storage Devices: Hard Disk, CD ROM, DVD, Pen/Flash Drive, Memory Stick

Types of Software: System Software (Operating System), Application Software (General purpose application software - Word Processing, Spreadsheet, Presentation, Database Management; Specific purpose application software – (Accounting Management, Reservation System, HR Management, Attendance System, Payroll System, Inventory Control System, Billing System) and Utility Software (Disk/Folder/Files Management, Virus Scanner/Cleaner, Encryption/Decryption Tools)

Communication Technology :

Computer Networking - LAN, MAN, WAN, Internet, Interspace

Wired Networking Tools: Co-axial Cable, Ethernet Cable, Optical Fiber

Wireless Networking Tools: Bluetooth, Infrared and WiFi

Content Technology:

Data, Information and Multimedia (Picture/Image, Audio, Video, Animation)

UNIT II : INFORMATION PROCESSING TOOLS

Operating System - Basic concepts of Operating System, Operating System: Need for operating system, Functions of Operating System (Processor Management, Memory Management, File Management and Device Management), Types of operating system - Interactive (GUI based), Real Time and Distributed; Commonly used operating systems: UNIX, LINUX, Windows, Solaris, BOSS (Bharat Operating System Solutions); Mobile OS - Android, Symbian.

Basic components of a GUI Window: Desktop, Title Bar, Menu Bar, Status Bar, Scroll Bars (Horizontal and Vertical); Frame; Basic operations of left and right buttons of mouse, Creating Shortcut, Basic Tools: Text Editor,

Painting Tool, Calculator, using Mouse and moving icons on the screen, Task Bar, Different types of menu and menu selection, running an application, setting system date and time; viewing files, concept of folders and directories, creating/moving/ renaming/ deleting files and folders, opening and closing Windows, Minimise, Restore and Maximise forms of windows.

Office Tools

Word Processing Tools: Introduction to a Word Processor. Creating and Saving a document. Editing and Formatting a Document: Text Style (B, I, U), Font Type, Size, changing color, alignment of text. Formatting paragraphs with line and/or paragraph spacing. Adding headers and footers, numbering pages, using grammar and spell check utilities, using subscript and superscript, inserting symbols, Print Preview, Printing a document. Inserting Pictures, Page Setting, Bullets and Numbering, Borders and Shading, Format Painter/Paintbrush, Find and Replace, Inserting Tables: inserting, deleting rows and columns, merging cells, splitting cells.

Using auto-format, mail merge, track changes, review comments, usage of drawing tools, shapes and mathematical symbols.

Presentation Tool: Introduction to Presentation Graphics, Understanding the concept of Slide Shows, Basic elements of a slide, Different types of Slide Layouts, Creating and saving a Presentation, Different views of a slide: Normal view, Slide Sorter view and Slide Show, Editing and Formatting a slide: Adding Titles, Subtitles, Text, Background, Watermark; Headers and Footers, Numbering Slides; Printing Slides Handouts, Inserting pictures from files, Animating pictures and Text with Sound Effects, Timing Text box, Pictures and Slides, Rehearse Timings, Ungrouping and Grouping Objects (like text, picture).

Spreadsheet Tool: Introduction to Spreadsheet, Concept of Worksheet and Workbook, Creating and Saving a worksheet. Working with a spreadsheet: entering numbers, text, date/time, series using Auto Fill, Editing and formatting a worksheet including changing colour, size, font, alignment of text, Inserting or Deleting cells, rows and columns, Formula-Entering a formula in a cell, using operators(+,-,*,/) in formulae, Relative referencing, Absolute referencing and mixed referencing, Printing a worksheet. Use simple Statistical functions: SUM(), AVERAGE(), MAX(), MIN(), IF() (without compound statements); Embedding Charts of various types: Line, Pie, Scatter, Bar and Area in a worksheet; inserting tables in a worksheet.

UNIT III : SOCIETAL IMPACTS OF IT

Benefits of ICT in Education, Healthcare, Governance, Business, Plagiarism, Privacy, Security and Integrity of Information; Intellectual Property Rights, Careers in IT; Design and manufacturing.

UNIT IV : IT APPLICATIONS

Students are suggested to work on the following areas using Word Processing Tool, Spreadsheet Tool and Presentation Tool.

Domains :

Multi Lingual Documentation :

- Letter Writing - content, context, addressee, Mail-Merge Formal/Informal letter
- Report Writing - content, presentation, context
- Greeting Card - design, context, recipient
- Poster Making - design, context, target group

Presentation :

- School Presentation
- Environment (Save Energy) and Pollution (Global Warming)
- Product Advertisement
- Science and Social Science topic from the course
- Trends in Wireless Computing

Analysis Reporting :

- School/Class Result with student-wise and subject-wise marks
- Cricket Score Record
- Weather Forecasting Report

CLASS - IX (Practical)

Time : 4 hours **Marks : 60**

(A) HANDS ON EXPERIENCE **30 Marks**

1. Working on Operating System :

To test some of the following basic system operations on file / folder(s):

- Create
- Rename
- Copy / Cut / Paste
- Delete
- Commands related to Text Editor / Drawing Tool

2. Word Processing*

A document is required to be created for testing the following areas

- Editing and formatting text and paragraph
- Page and paragraph setup
- Inserting symbols and pictures

3. Presentation*

A presentation is required to be created with 4 slides for testing the following areas :

- Editing and formatting slides
- Inserting pictures and sounds
- Animating pictures and text with sound effects

4. Spreadsheet*

A spreadsheet is required to be created for testing the following areas:

- Formatting cells and data
- Functions & formulae (Relative, absolute and Mixed reference)
- Charts

*Printouts of the document(s) should be attached with the answer sheet.

(B) IT APPLICATION REPORT FILE **15 Marks**

Students are supposed to make an IT Application Report File containing real life assignments using Word Processing, Presentation and Spreadsheet Tools on at least 15 topics from the domain mentioned in Unit IV :

- At least 5 documents of Word Processing tools along with mail merge feature
- At least 5 presentations of Presentation tools
- At least 5 spreadsheets with graphs

(C) IT APPLICATION PROJECT using word processing, spreadsheet and presentation tools **10 Marks**

(D) VIVA VOCE **05 Marks**

Viva based on IT applications report file.

Circular No.: Acad – 14/2017 (Date : 31/01/2017)

CBSE/CM/2017

Subject : Restoring of class X Board examination with effect from the Academic Year 2017-18.

Consequent upon the decision taken by the Governing Body of the Board, the duel scheme of examination for Class-X known hitherto as Scheme-I and Scheme-II shall stand discontinued for the students appearing in Class-X from the Academic Year 2017-18 and onwards. The examination from Academic Year 2017-18 and onwards would be conducted as per the remodeled assessment structure explained below. However, for Class-X students appearing in Academic Year 2016-17 examination, the existing scheme of assessment would apply.

A. Remodeled assessment structure effective from the Academic Year 2017-18 for Class-X

1. Scholastic Area

<table>
<tr><td></td><td colspan="4">Total 100 marks
(Syllabus for assessment will be only Class-X)</td></tr>
<tr><td rowspan="2">Subject</td><td rowspan="2">80 Marks
(Board Examination)
Student has to secure 33% marks out of 80 marks in each subject</td><td colspan="3">20 Marks (Internal Assessment)
Student has to secure 33% marks out of overall 20 marks earmarked in each subject</td></tr>
<tr><td>Periodic Test
(10 marks)</td><td>Notebook Submission
(5 Marks)</td><td>Subject Enrichment Activity
(5 Marks)</td></tr>
<tr><td></td><td></td><td>(i)</td><td>(ii)</td><td>(iii)</td></tr>
<tr><td>Language 1</td><td rowspan="5">Board will conduct Class-X Examination for 80 marks in each subject covering 100% syllabus of the subject of Class-X only.
Marks and Grades both will be awarded for Individual subjects.
9- point grading will be same as followed by the Board in Class XII</td><td rowspan="5">Periodic written Test, restricted to three in each subject in an Academic Year.
Average of the best two tests to be taken for final marks submission</td><td rowspan="5">This will cover :
● Regularity
● Assignment completion
● Neatness & upkeep of notebook</td><td>Speaking and listening skills</td></tr>
<tr><td>Language 2</td><td>Speaking and listening skills</td></tr>
<tr><td>Science</td><td>Practical Lab Work</td></tr>
<tr><td>Mathematics</td><td>Maths Lab Practical</td></tr>
<tr><td>Social Science</td><td>Map work and project work</td></tr>
<tr><td>6th Additional Subject</td><td colspan="4">Scheme of studies for 6th additional subject is detailed in Annexure – I
Note : In case student opts a language as 6th additional subject the modalities defined for Languages I and II shall be followed.</td></tr>
</table>

(i) Periodic Test (10 marks) :

The school should conduct three periodic written tests in the entire academic year and the average of the best two will be taken. The schools have the autonomy to make its own schedule. However, for the purpose of gradient learning, three tests may be held as one being the mid-term test and other the two being pre-mid and post mid-term with portion of syllabus cumulatively covered. The gradually increasing portion of contents would prepare students acquire confidence for appearing in the Board examination with 100% syllabus. The school will take the average of the best two tests for final marks submission.

(ii) Notebook Submission (5 marks) :

Notebook submission as a part of internal assessment is aimed at enhancing seriousness of students towards preparing notes for the topics being taught in the classroom as well as assignments. This also addresses the critical aspect of regularity, punctuality, neatness and notebook upkeep.

(iii) Subject Enrichment Activities (5 marks) :

These are subjest specific application activities aimed at enrichment of the understanding and skill development. These activities are to be recorded internally by respective subject teachers.

For Languages : Activities conducted for subject enrichment in languages should aim at equipping the learner to develop effective speaking and listening skills.

For Mathematics : The listed laboratory activities and projects as given in the prescribed publication of CBSE/NCERT may be followed.

For Science : The listed practical works/activities may be carried out as prescribed by the CBSE in the Curriculum.

For Social Science : Map and project work may be undertaken as prescribed by the CBSE in the Curriculum.

2. Co-Scholastic Activities :

Schools should promote co-curricular activites for the holistic development of the student. These activities will be graded on a 5-point grading scale (A to E) and will have no descriptive indicators. No upscaling of grades will be done.

Activities	To be graded on a 5- point scale (A-E) in school	Areas and Objectives (as prescribed in the Scheme of Studies for Subjects of Internal Assessment
Work Education or Pre-Vocational Education	By the Concerned Teacher	Work Education is a distinct curricular area for student for participation in social, economic and welfare activities. Student gets a sense of community service and develops self-reliance. (for Pre-Vocational Education as per Scheme of Studies)
Art Education	By the VA/PA or the Concerned Teacher	Art Education constitutes an important area of curricular activity for development of wholesome personality of the students. Students will select one or more forms of creative arts.
Health & Physical Education (Sports/ Martial Arts/Yoga/ NCC etc.)	By the PE Teacher	Health & Physical Activity preferably sports must be given a regular period. Students should be provided opportunities to get professionally trained in the area of their interest. Indigenous sports, yoga and NCC must be encouraged in the the schools creating a sense of physical fitness, discipline, sportsmanship, patriotism, self-sacrifice and health care.

3. Discipline (Attendance, Sincerity, Behaviour, Values) :

Discipline significantly impacts career shaping and it helps build character. Sincerity, good behavior and values develop strength and foster unity and co-operation. Therefore, the element of discipline has been introduced. Class teacher will be responsible for grading the students on a Five-point scale (A to E).

The Internal assessment comprising 20 marks (10+5+5) entails objectivity and a structured approach.For a holistic assessment, the teachers are expected to make it an effective tool.

B. Documentation :

Records pertaining to the internal assessment of the students done by the schools will be maintained for a period of three months from the date of declaration of result for verification at the discretion of the Board. Subjudiced cases, if any or those involving RTI/Grievances may however be retained beyond three months.

C. Assessment Scheme for Class-VI to IX in the CBSE affiliated schools :

The CBSE affiliated schools, for the purpose of uniformity in classes VI to IX may, replicate the same assessment model as described above for Class-X for Academic Year 2017-18.

The above scheme must be implemented in letter and spirit.

Additional Subject **Annexure–I**

Excerpt only

Subject : FIT/ICT	Board Class-X Examination for 40 marks	Practical Examination 60 marks

Circular No.: Acad – 14/2017 (Date : 21/03/2017)

(Excerpt only, for the full circular, *Log on to www.cbse.nic.in*)

As the assessment structure and examination pattern for class IX will be similar to that of class X, the report card for class IX issued by the schools should also be similar to that of class X.

Academic Session : 2017–18
Report Card for Class IX

Roll No. :
Student's Name :
Mother's/Father's/Guardian's Name :
Date of Birth :
Class/Section :

Scholastic Areas :	**Academic Year (100 marks)**					
Sub Name	**Periodic Test (10)**	**Note Book (5)**	**Subject Enrichment (5)**	**Annual Examination (80)**	**Marks Obtained (100)**	**Grade**
Language 1						
Language 2						
Subject 1						
Subject 2						
Subject 3						
Additional or NSQF Sub						

Co-Scholastic Areas [on a 5-point (A-E) grading scale]	**Grade**
Work Education (or Pre-vocational Education)	
Art Education	
Health & Physical Education	

	Grade
Discipline [on a 5-point (A-E) grading scale]	

Class Teacher's Remarks ..... Result .....

Date ..... Signature of Class Teacher Signature of Principal

Instructions

Grading scale for scholastic areas : Grades are awarded on a 8-point grading scale as follows :

MARKS RANGE	**GRADE**
91 – 100	A 1
81 – 90	A 2
71 – 80	B 1
61 – 70	B 2
51 – 60	C 1
41 – 50	C 2
33 – 40	D
32 & Below	E (Failed)

UNIT – I

Basics of Information Technology

CHAPTER 1

CONVERGENCE OF TECHNOLOGIES

Syllabus

- *Characteristics of a computer, components of a computer system—CPU (CU & ALU), Memory, Storage devices, I/O devices.*
- *Networking—LAN, WAN, MAN Internet, Interspace, Wired Networking*
  Technology examples co-axial cable, Ethernet cable, Optical Fiber Cable, Wireless Networking Technology examples Bluetooth, Infrared and WiFi.
- *Convergence of Technology. Content Technologies-Data, Information and Multimedia (Picture/Image, Audio, Video, Animation)*

TOPIC-1
Computer System

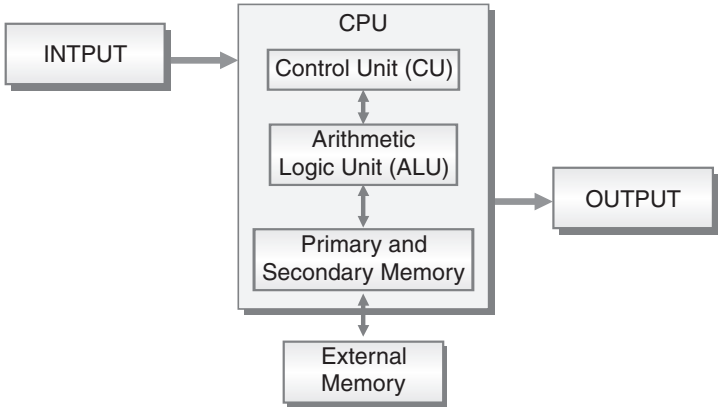
Quick Review

- **Computer System :** A computer is an electronic device which processes data based upon the instructions provided and generate the desired output.
- **IPO Cycle :** The basic principle on which the computer works.
- **Computing Process:** Input -> Process -> Output
- The characteristics of computer are Speed, Accuracy, Automatic, Endurance, Versatility, Storage, Reduction of Cost, and Intelligence Quotient.
- CPU and processing system of computer:

TOPIC - 1
Computer System P. ..13

TOPIC - 2
Computer Networking P. ..19

TOPIC - 3
Convergence of Technologies P. ..24



- Control unit is a link between memory unit and ALU (Arithmetic Logic Unit).
- **Control Unit :** The control unit controls and co-ordinates all the CPUs activities.
- **Arithmetic / Logic Unit :** This unit performs all the arithmetic and logical operations.
- **Memory :** This unit stroes the data and instructions.
- RAM stands for ''Random Access Memory''. Every time you open a program, it gets loaded from the hard drive into the RAM. RAM is a very high-speed type of memory.
- ROM stands for ''Read-Only Memory''. ROM is a memory containing hardware instructions that the computer uses when it boots up, before the system software loads.

- **External memory or storage device :** These are portable devices to store data for future use.
- The hard disk is a spindle of magnetic disks, called plotters, that record and store information.
- Tape Drive is a removable storage device mainly used for backing up data. It is similar to a Zip Drive, but instead of Zip disks, it uses small tapes.
- **I/O devices :** The input and output devices attached to the computer.

Multiple Choice Questions **(1 mark each)**

1. Control unit is called ……. of the computer. **[CBSE 2016]**
(a) Heart.
(b) Never center of Brain.
(c) Primary memory.
(d) All of the above.

2. CPU is the—
(a) Heart of computer system
(b) Brain of a computer system
(c) Nervous system of a computer
(d) None of these.

3. In digital computer, data is represented in—
(a) Decimal form **(b)** Binary form
(c) Octal form **(d)** Hexadecimal form.

4. The processing speed of a computer is measured in—
(a) Mega byte **(b)** 16 bit, 32 bit
(c) Mega hertz **(d)** None of these.

5. Computer's speed is measured in—
(a) Clock cycle **(b)** Second
(c) Minute **(d)** None of these.

6. Lowest unit of speed is—
(a) Milli second **(b)** Micro second
(c) Nano second **(d)** Pico second.

7. Microprocessor was invented in—
(a) 1970 **(b)** 1971
(c) 1972 **(d)** 1973.

8. Microprocessor contains—
(a) ALU **(b)** CU
(c) Memory **(d)** Both **(a)** and **(b)**.

9. The first microprocessor was—
(a) Intel 4004 **(b)** IBM 360
(c) Motorola **(d)** AMD.

10. Add, Subtract, Multiple and Logic operations are performed by—
(a) Registers **(b)** Control unit
(c) ALU **(d)** None of these.

11. A CPU consists of—
(a) ALU
(b) ALU and control unit
(c) ALU, CU and memory
(d) None of these.

12. The memory can be divided into—
(a) Primary memory **(b)** Secondary memory
(c) Both **(a)** and **(b)** **(d)** None of these.

13. The data processing consists—
(a) Capturing the input data
(b) Manipulating the data
(c) Handling the output
(d) All of these.

14. The control unit controls all—
(a) Hardware operations
(b) Software operations
(c) Both **(a)** and **(b)**
(d) None of these.

15. The rate of speed at which processor executes commands is measured by—
(a) Seconds **(b)** Minutes
(c) Pico second **(d)** Clock speed.

16. VDU is used as an—
(a) Input unit **(b)** Output unit
(c) Boss **(d)** None of these.

17. Storage capacity of a DVD is—
(a) 600 MB **(b)** 4·7 GB
(c) 5 GB **(d)** None of these.

18. Hard disk is made up of—
(a) Iron **(b)** Copper
(c) Aluminum **(d)** Bismuth.

Answer Key
1. (a) **2.** (b) **3.** (b) **4.** (c) **5.** (a) **6.** (d) **7.** (b) **8.** (d) **9.** (a) **10.** (c) **11.** (c) **12.** (c) **13.** (d) **14.** (c) **15.** (d) **16.** (b) **17.** (b) **18.** (d)

Very Short Answer Type Questions **(1 mark each)**

Q. 1. Computer is a dump machine with …… IQ. **[CBSE 2016]**
Ans. Zero(0). **[1 mark for correct answer]**

Q. 2. What is the computing process ?
Ans. The computing process can be described as :

Input ⟶ Process ⟶ Output

[1 mark for correct answer]

Q. 3. What is the basic language of a computer ?
Ans. The basic language of a computer is machine language, *i.e.* strings of 0 & 1. **[1 mark for correct answer]**

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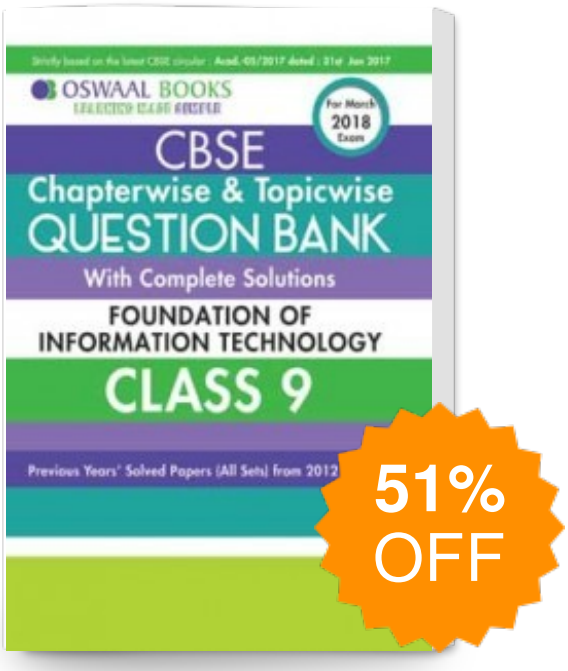

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