CRASH COURSE · FIRST EDITION

DSSSB TGT Computer Science 2026

Section A + Section B, chapter by chapter, built from DSSSB's own past papers — with shortcuts, traps and how often every topic is asked.

WHAT DSSSB ASKS MOST IN COMPUTER SCIENCE



Questions per topic in 11 TGT Computer Science papers (2017–2024), 1,100 questions counted.

11	5	100	30
past papers counted	full mock tests	most expected questions	day study plan

MD ANISH AHAMAD

gateguide.co.in

English · Hindi section in Hindi

How to Use This Book

This book has one job: to get you past the qualifying line in the DSSSB TGT Computer Science exam (Post Code 41/26) with as many marks to spare as possible. Every chapter starts from what DSSSB has actually asked in six past TGT CS papers (2017, four shifts of June 2023, and February 2024). Topics that are asked often get many pages. Topics that are asked once in six papers get a table and move on.

The structure

Section A — the 100 general marks (no separate minimum, but they count in the total and in merit)

Chapter	Title	Questions in the exam
A1	General Awareness	20
A2	General Intelligence and Reasoning Ability	20
A3	Arithmetical and Numerical Ability	20
A4	हिंदी भाषा एवं बोध (Hindi Language and Comprehension)	20
A5	English Language and Comprehension	20

Section B — the 100 Computer Science marks (this section has its own qualifying minimum)

Chapter	Title	Avg. questions per past paper
B1	Computer Networks	9.7
B2	Operating Systems	9.3
B3	Internet and Web Technologies	7.2
B4	DBMS and SQL	6.3
B5	Programming in C, C++ and Java	7.5
B6	Python	3.7 (but 20 in the 2024 paper)
B7	Computer Fundamentals, Number Systems, Digital Logic, Organisation and Memory	13.0
B8	Data Structures, Algorithms and Theory of Computation	3.8
B9	Mathematics for Computer Science	5.7
B10	Software Engineering, Graphics, Cyber Security, Office and Emerging Technologies	11.7
B11	Surprise Questions (economics, accounting, management, MIS, .NET, physics)	14.5
B12	Teaching Methodology	7.7 (about 8–10 since 2023)

After the chapters

- **Five full-length mock tests** in the exam pattern (100 Section A + 100 Section B, 2 hours, −0.25 per wrong answer), each with an answer key and short reasons.
- **Top 100 Most Expected Questions** — the concepts DSSSB has repeated most, as 100 MCQs for the last two days before the exam.

How each chapter works

1. **"How much is asked" box.** A table of the chapter's topics against the six papers, with exact counts. Use it to decide where to spend time.
2. **Topics in order of frequency.** The most-asked topic comes first. Each topic says how many times it was asked and in which paper (for example *2023-24Jun-S3* = 24 June 2023, Shift 3).
3. **PYQ-style solved questions.** Every repeated concept is rewritten as a fresh MCQ with the answer and a short reason. These are not copies of the past questions; they test the same fact.
4. **Shortcut and Trap boxes.** Shortcuts save seconds. Traps show where DSSSB's options mislead.
5. **Practice set** with answer key.
6. **One-page revision.** The 25–40 facts most likely to be asked. Read these again in the last week.

How to read it

- **First pass (days 1–21 of the plan):** read each chapter once, solve its PYQ-style questions without looking at the answers, then do the practice set.
- **Keep an error log.** One line per mistake: the fact, the right answer, the chapter. This log is your most valuable revision sheet.
- **Second pass (days 23–29):** only the one-page revision pages, your error log, and the Top 100.
- **Where DSSSB's official key looked wrong,** the chapter teaches the correct concept and adds one line saying what the key said. In the exam, mark the textbook answer. If the draft key disagrees, use the online objection window.

> **Shortcut:** If you have less than 30 days, read in this order: B7, B1, B2, B10, B12, B3, B5, B4, then Section A. That covers about 75% of past Section B marks.

The Exam at a Glance

All facts below were checked on 11 October 2026 against the official DSSSB website and the PDFs saved with this book's research. Anything not confirmed officially is marked **[Not verified]**.

The post

Item	Detail	Source
Post	Trained Graduate Teacher (Computer Science), Directorate of Education (DoE), Govt. of NCT of Delhi	Advt. No. 03/2026, p.20
Post code	**41/26**	Advt. 03/2026
Advertisement	No. F.1(445)/P&P/DSSSB/2026/Advt./4829, dated **29/05/2026**	p.1
Applications	16/06/2026 to 15/07/2026 (closed)	p.1
Pay	₹44,900 – 1,42,400 (Pay Level 7), Group B, Non-Gazetted	Advt.
Age limit	Not more than 30 years on 15/07/2026 (SC/ST +5, OBC +3, PwBD +10, PwBD+SC/ST +15, PwBD+OBC +13)	Advt. para 7

Vacancies (Post Code 41/26)

UR	OBC	SC	ST	EWS	Total	PwBD (included)
416	0	104	39	116	**675**	22

675 vacancies is by far the largest TGT CS recruitment DSSSB has run. The earlier DoE posts had 364 (2020), 106 (2022) and 55 (2024). There are **no OBC vacancies** this time, and only OBC (Delhi) candidates get OBC benefits in any case.

Eligibility (any one)

1. BCA from a recognised university.
2. Graduation with Computer Science as a main subject in all years.
3. BE/B.Tech in Computer Science or Information Technology.
4. Graduation in any subject plus DOEACC (now NIELIT) 'A' level.

No B.Ed. and no CTET are required for 41/26. Experience: nil.

Scheme of examination (One-tier, Technical/Teaching, code I-T-T)

Section	Content	Questions	Marks
A	General Awareness	20	20
A	General Intelligence and Reasoning Ability	20	20
A	Arithmetical and Numerical Ability	20	20
A	Hindi Language and Comprehension	20	20
A	English Language and Comprehension	20	20
B	Computer Science, including questions on teaching methodology/B.Ed.	100	100
	Total	**200**	**200**

- **Duration:** 2 hours for all 200 questions. That is **36 seconds per question** on average.
- **Mode:** online Computer Based Test (CBT).
- **Language:** questions are bilingual (Hindi and English), except the Hindi and English language sub-sections.
- **Marking:** +1 for a correct answer, **−0.25 for a wrong answer**, 0 for a question left blank.
- **Normalisation:** applied if required, by DSSSB's notice of 11.07.2018. With 18 shifts this year, expect it to be applied **[Inference]**.
- **Answer keys:** draft keys are put up after the exam with an online objection window. There is no re-evaluation.

Qualifying marks

The minimum applies to **Section B on its own** and to **the total of A + B**. There is **no minimum in Section A** (Advt. 03/2026, note under Row 3). Merit is on the combined score.

Category	Minimum %	Section B (out of 100)	Total (out of 200)
UR / EWS	40%	40	80
OBC (Delhi)	35%	35	70
SC / ST / PwBD	30%	30	60
Ex-Servicemen	5% relaxation in own category (floor 30%)	—	—

The Board may fix a higher cut-off (para 5(vi)). Ties are broken by (1) higher Section B marks, (2) older candidate, (3) first name in alphabetical order.

> **Trap:** The 2017 scheme notice asked for a minimum in Section A as well. Advertisement 03/2026 removed it. Do not let old blog posts confuse you: only Section B and the total have a minimum now.

Dates and shifts

Exam schedule notice No. F.55(438)/Exam/DSSSB/2025/PF/C.N.359909/2902-2909, dated **07/10/2026**:

Date	Day	Shifts
27/11/2026	Friday	I, II, III
28/11/2026	Saturday	I
30/11/2026	Monday	I, II, III
01/12/2026	Tuesday	I, II, III
02/12/2026	Wednesday	I, II, III
03/12/2026	Thursday	II, III
04/12/2026	Friday	I, II, III

18 shifts in 7 days. Shift I: 9:00–11:00 am. Shift II: 1:00–3:00 pm. Shift III: 5:00–7:00 pm. Your own date and shift will be printed on the e-admit card.

Not verified as of 11 October 2026

Item	Status
Subject syllabus for 41/26	**Not published.** This book uses the DoE syllabus of Post Code 56/24 (same department, same recruitment rules) as the best guide, plus the NDMC 70/23 syllabus for school-level topics.
Split of Section B between Computer Science and teaching methodology	**Not stated** in any official document. Past papers since 2023 had 8–10 pedagogy questions.
Admit card	**Not released.** DSSSB says links will be given "shortly" on its website.
Your shift date	Known only from the admit card.
Cut-offs of earlier TGT CS recruitments	Not used in this book; not verified.

Check dsssb.delhi.gov.in for corrigenda before the exam. On 11 October 2026 there was none for 41/26.

What DSSSB Actually Asks

The six past papers analysed for this book are: **2017** (21 May 2017, Set D), **2023-24Jun-S2**, **2023-24Jun-S3**, **2023-25Jun-S1**, **2023-25Jun-S2** (the four June 2023 shifts, Post Code 39/22, DoE) and **2024-7Feb-S2** (7 February 2024, Post Code 70/23, NDMC). Every one of the 1,200 questions was labelled by topic. The counts below are exact.

All 11 TGT Computer Science papers (Section B, 1,100 questions)

Counted from 11 papers: 2017 (Set D), the five 2021 papers (Post Code 91/20), four 2023 shifts (39/22) and 2024 (70/23). The 2021 papers were labelled by keyword from the official answer sheets; the other six question by question. "Other" is the off-syllabus share taught in Chapter B11.

Topic	TGT CS 2017	TGT CS 2021	TGT CS 2023	TGT CS 2024	Total	Avg/paper	Share
Other		61	85	2	148	13.5	13.5%
Computer networks	14	48	37	7	106	9.6	9.6%
Pedagogy & teaching methodology		51	38	8	97	8.8	8.8%
Operating systems	17	35	29	10	91	8.3	8.3%
DBMS & SQL	12	45	11	15	83	7.5	7.5%
Boolean algebra & digital logic		55	11	3	69	6.3	6.3%
Mathematics (discrete/numerical)	1	19	33		53	4.8	4.8%
Internet & web (HTML/CSS/JS/XML)	7	10	30	6	53	4.8	4.8%
Software engineering	3	27	14		44	4.0	4.0%
Number systems & data representation	4	24	5	4	37	3.4	3.4%
C programming	10	18	8		36	3.3	3.3%
Algorithms & complexity	2	17	10		29	2.6	2.6%
Memory	9	10	9		28	2.5	2.5%
Fundamentals & history		9	16	3	28	2.5	2.5%
Data structures	3	17	6		26	2.4	2.4%
Java	2	13	11		26	2.4	2.4%
C++ & OOP	6	11	8		25	2.3	2.3%
Computer graphics	3	9	12		24	2.2	2.2%
Python		2	2	20	24	2.2	2.2%
Cyber security & ethics		1	9	10	20	1.8	1.8%
Computer organisation & architecture	2	4	6	6	18	1.6	1.6%
Emerging tech		1	6	5	12	1.1	1.1%

Topic	TGT CS 2017	TGT CS 2021	TGT CS 2023	TGT CS 2024	Total	Avg/paper	Share
Office & applications	5	3	3		11	1.0	1.0%
Unreadable		6			6	0.5	0.5%
Theory of computation & compilers		4	1	1	6	0.5	0.5%
All	100	500	400	100	1100		

Section B, chapter by chapter

Chapter	2017	23-24Jun-S2	23-24Jun-S3	23-25Jun-S1	23-25Jun-S2	2024-7Feb-S2	Total	Avg/paper
B1 Computer Networks	14	8	7	12	10	7	58	9.7
B2 Operating Systems	17	8	8	5	8	10	56	9.3
B3 Internet and Web	7	7	10	9	4	6	43	7.2
B4 DBMS and SQL	12	2	3	2	4	15	38	6.3
B5 C, C++, Java	18	6	5	9	7	0	45	7.5
B6 Python	0	2	0	0	0	20	22	3.7
B7 Fundamentals, Number Systems, Logic, Organisation, Memory	15	10	16	9	12	16	78	13.0
B8 Data Structures, Algorithms, TOC	5	1	4	6	6	1	23	3.8
B9 Mathematics	1	6	9	9	9	0	34	5.7
B10 SE, Graphics, Security, Office, Emerging Tech	11	15	7	9	13	15	70	11.7
B11 Surprise (non-CS)	0	25	21	22	17	2	87	14.5
B12 Teaching Methodology	0	10	10	8	10	8	46	7.7
Total	100	100	100	100	100	100	600	

What the numbers mean

1. The core is wide and shallow. B1, B2, B7 and B10 together give about 44 questions per paper. Almost all are one-line facts: a layer, a port, a full form, a Linux command, a definition. Very few need calculation. Breadth beats depth in this exam.

2. 14.5% of Section B was not Computer Science at all. In the four June 2023 shifts, 17 to 25 questions per shift came from business economics, management, accounting, knowledge management, management information systems, .NET, e-commerce and physics. Grouped:

Surprise theme	Questions (all papers)
Economics (elasticity, inflation, marginal revenue, demand forecasting)	14
Physics (elasticity moduli, optics, lasers, LEDs, fluid flow)	13

Surprise theme	Questions (all papers)
Business organisation and management	11
Knowledge management (tacit/explicit knowledge, KM processes)	11
MIS and information systems (TPS, DSS, office automation)	11
.NET framework (CLR, MSIL, ADO.NET, VB.NET)	9
Accounting and finance (drawings, double entry, final accounts)	8
E-commerce (models, NEFT, history)	6
Other general knowledge	4

This is less random than it looks. The official DoE syllabus of Post Code 56/24 — the best guide we have for 41/26 — lists Business Economics, Business Organisation and Management, Financial Accounting, Knowledge Management and New Economy, Management Information System, .net Programming, E-Commerce and "Basis of Physics". These are the papers of an old BCA course. So the "surprise" questions are off the core CS track but **on the official list**. Chapter B11 covers the facts that repeat; do not try to study full textbooks of economics or physics for them.

3. Teaching methodology is a fixed block of 8–10 marks. It was absent in 2017 but present in every paper since 2023 (10, 10, 8, 10, 8). Topics: Piaget's stages, assessment (formative, peer, closed-ended items), teaching approaches (project method, student-centred vs subject-centred), inclusive education (SSA, DPEP), language development and child development. These are easy marks for anyone who spends two days on Chapter B12. Since the official split is not published, plan for about 10.

4. Python jumped from 0–2 to 20 questions in the February 2024 paper. That paper was for the NDMC post (70/23), whose syllabus follows the CBSE Class XI–XII pattern (Python, Pandas, file handling, societal impacts, e-waste). The same paper also had 15 DBMS/SQL questions and 10 cyber-ethics questions, and almost no surprise questions. Post 41/26 is a **DoE** post, like the 2023 papers, so the 2023 pattern is the more likely model. But the 2025 paper (56/24) is not public, and DSSSB clearly can switch to the school-syllabus style. Chapter B6 is therefore short but must not be skipped: Python basics are cheap marks if they come.

5. DBMS swings from 2 to 15. In 2023 it was 2–4 per shift; in 2017 and 2024 it was 12–15. Learn the basics (keys, normal forms, SQL commands and functions, ER symbols) — they are fast to revise.

6. What you can safely skim. Theory of computation (2 questions in six papers), data structures (9 in six papers, all basic: stack, queue, sparse matrix), office applications (8, all in 2017 and 2023-24Jun-S2). Learn only the one-page revision sheets for these.

7. Repetition is by concept, not by question. DSSSB rarely repeats a question word for word. It repeats the *idea*: virtual memory (4 times in 3 papers), interpolation (3 papers), page fault, process states, system calls, Linux directories, XML parsers, register-indirect addressing, waterfall model, 1NF, inline functions, Java primitive types, polymorphism. The Top 100 at the end of the book is built on these.

8. DSSSB's keys are sometimes wrong. In the 2023-25Jun-S2 shift alone, nine keyed answers disagree with standard texts (for example, "the layer that sends a raw bit stream" keyed as data link instead of physical; the header for variable arguments keyed as stdio.h instead of stdarg.h). Answer with the textbook fact and use the objection window.

Section A in brief

Sub-section	What repeats most (six papers)
A1 General Awareness	History 3.3 per paper (Delhi Sultanate, Mughals, national movement), economy 2.8, current affairs 2.7 (government schemes), science 2.5, Census 2011, Constitution articles, dances and musicians, a Delhi question in most papers
A2 Reasoning	Odd number-pair (7 times in 4 papers), figure series, mirror images, embedded figures, approximation (4 papers each), number series, syllogism with three conclusions
A3 Arithmetic	Mensuration 2.5 per paper; average speed and pipes-and-cisterns (4 papers each); boats and streams, successive discounts, pie charts (3 papers each); SI/CI instalments; LCM with remainder
A4 Hindi	वाक्य शुद्धि 4.2 and अपठित गद्यांश 3.8 per paper; पर्यायवाची (7 times), विलोम (6), यमक अलंकार (3 papers), संधि-विच्छेद, तत्सम-तद्भव
A5 English	Comprehension 3.5 per paper; one-word substitution (8 times), idiom meaning (7), antonyms, homophones, collocations, para jumbles

Section A is the same paper pattern DSSSB uses for every I-T-T post, so its question types are highly predictable. Hindi and English are the fastest marks in the whole exam for most candidates.

Strategy to Qualify

The targets

The line you must cross (UR/EWS): **40 in Section B and 80 in total.** Crossing the line is not enough for selection — merit decides that — so aim well above it. A realistic target for a well-prepared candidate:

Section	Attempt	Correct	Wrong	Net marks
A1 General Awareness	12	9	3	8.25
A2 Reasoning	17	14	3	13.25
A3 Arithmetic	15	12	3	11.25
A4 Hindi	17	14	3	13.25
A5 English	17	14	3	13.25
Section A	**78**	**63**	**15**	**59.25**
Section B	**78**	**62**	**16**	**58.00**
Total	156	125	31	**117.25**

That leaves a margin of 18 marks over the Section B minimum and 37 over the total minimum.

Section B target by chapter

Chapter	Past avg/paper	Attempt	Aim to get right
B1 Computer Networks	9.7	8	7
B2 Operating Systems	9.3	8	7
B3 Internet and Web	7.2	6	5
B4 DBMS and SQL	6.3	5	4
B5 C, C++, Java	7.5	6	5
B6 Python	3.7	3	3
B7 Fundamentals to Memory	13.0	11	9
B8 DS, Algorithms, TOC	3.8	3	2
B9 Mathematics	5.7	3	2
B10 SE, Graphics, Security, Office, Emerging	11.7	9	7
B11 Surprise	14.5	7	4
B12 Teaching Methodology	7.7 (≈10)	9	7
Total	100	**78**	**62**

Look at where the 62 come from: B1, B2, B7, B10 and B12 alone give 37. Master those five chapters and the Section B minimum is safe. If your paper turns out Python-heavy (as in 2024), B6 and B4 take the place of B11.

Negative marking: the maths

Each wrong answer costs 0.25. So four wrong answers cancel one right answer.

Your chance of being right	Expected marks from answering	Decision
Pure guess, 4 options (25%)	0.25 − 0.75 × 0.25 = **+0.06**	Tiny gain, high risk; skip in the first pass
One option ruled out (33%)	0.33 − 0.67 × 0.25 = **+0.17**	Answer
Two options ruled out (50%)	0.50 − 0.50 × 0.25 = **+0.38**	Always answer
Sure (90% or more)	about +0.9	Answer

Rule: if you can rule out even one option, answer. If you cannot rule out any, leave it in the first pass. In the last two minutes a blind guess still has a small positive average (+0.06), but only do this once your Section B score is safely above 40 on your own count.

How accuracy changes your score in Section B:

Attempted	Correct	Wrong	Net
60	50	10	47.5
65	52	13	48.75
70	58	12	55.0
75	60	15	56.25
80	60	20	55.0

Attempting 80 with 60 right scores *less* than attempting 75 with 60 right. Extra attempts only help if your accuracy on them is above 20%.

Attempt order and time

Do Section B first. It has the qualifying minimum, it is your subject, and your mind is freshest at the start. Then take the fast language marks, then the slow calculation sections.

Order	Part	Questions	Time	Per question
1	Section B (Computer Science + pedagogy)	100	55 min	33 s
2	A4 Hindi + A5 English	40	22 min	33 s
3	A1 General Awareness	20	6 min	18 s (you know it or you don't)
4	A2 Reasoning	20	16 min	48 s
5	A3 Arithmetic	20	16 min	48 s
6	Review marked questions	—	5 min	—
	Total	200	**120 min**	

Two-pass rule inside each part. First pass: answer everything you know in under 20 seconds and mark the rest for review. Second pass: return to the marked ones with the time left for that part. Never spend more than 90 seconds on one question.

Trap: A long arithmetic question is worth the same one mark as "Which port does IMAP use?" Take the one-line facts first.

Shortcut: In Section B, "Which is NOT…" and statement-based questions ("Only I", "Both I and II") take longer. Read every statement; DSSSB often makes one statement false by a single word.

30-Day Study Plan

The plan runs from **Wednesday 28 October to Thursday 26 November 2026**, the day before the first exam date (Friday 27 November). If your shift is later (up to 4 December), use the extra days to repeat your weakest chapters and one more mock. If you start before 28 October, spend the extra days on B7, B1 and B2 — the three biggest chapters.

Daily routine (about 6 hours):

Slot	Time	What
Morning	3 h	Section B chapter of the day: read, solve the PYQ-style questions, practice set
Afternoon	1.5 h	Section A chapter of the day
Evening	1 h	Error log + one-page revision of yesterday's chapter; 20 min GA (current affairs of 2025–26)

Chapter time follows the marks. "Marks" below is the average number of past questions per paper for that day's Section B work.

Day	Date	Section B (morning)	Marks	Section A (afternoon)
1	Wed 28 Oct	Read the front matter. **B7** part 1: computer fundamentals, generations, input/output devices, software types	13.0 (B7 total)	A3: percentage, profit and loss, successive discounts
2	Thu 29 Oct	**B7** part 2: number systems, codes (Unicode, Gray, BCD), binary arithmetic	—	A2: odd number-pair, number series
3	Fri 30 Oct	**B7** part 3: logic gates, Boolean algebra, K-maps, counters; organisation (registers, addressing modes, RISC/CISC, DMA); memory	—	A4: पर्यायवाची, विलोम
4	Sat 31 Oct	**B1** part 1: OSI and TCP/IP layers, PDUs, devices and their layers, TCP vs UDP, port numbers	9.7	A5: one-word substitution, idioms
5	Sun 1 Nov	**B1** part 2: IP addressing, classes, subnetting, DHCP/ARP, transmission media, topologies, mobile networks	—	A3: average speed, boats and streams
6	Mon 2 Nov	**B2** part 1: OS types, system calls, process states, scheduling, threads, deadlock, semaphores	9.3	A2: syllogism, statement–conclusion
7	Tue 3 Nov	**B2** part 2: memory management, paging, virtual memory, page faults, disk scheduling, file systems, Linux commands and directories	—	A1: history (medieval and modern)
8	Wed 4 Nov	**Revision day 1:** one-page sheets of B7, B1, B2; redo every question you got wrong	32	A3: pipes and cisterns, time and work
9	Thu 5 Nov	**B12** Teaching Methodology (whole chapter: Piaget, assessment, methods, inclusive education)	7.7 (≈10)	A4: संधि, अलंकार (यमक, उत्प्रेक्षा), तत्सम-तद्भव
10	Fri 6 Nov	**Mock Test 1** (2 hours, exam timing) + 2 hours of analysis; add every mistake to the error log	—	—
11	Sat 7 Nov	**B10** part 1: software engineering (SDLC models, testing, COCOMO, CMM, coupling/cohesion), computer graphics	11.7	A1: polity (articles, amendments), economy
12	Sun 8 Nov	**B10** part 2: cyber security, IPR, e-waste, IT/DPDP Acts, office applications, emerging technologies	—	A5: homophones, collocations, antonyms

Day	Date	Section B (morning)	Marks	Section A (afternoon)
13	Mon 9 Nov	**B3** Internet and Web: HTML tags and attributes, CSS, JavaScript events, XML/DTD/parsers, ASP.NET, front-end tools	7.2	A2: mirror image, embedded figure, figure series
14	Tue 10 Nov	**B4** DBMS and SQL: keys, ER symbols, normal forms, SQL commands and functions, transactions, indexing	6.3	A3: SI/CI, instalments, mixtures
15	Wed 11 Nov	**B5** part 1: C (operators, storage classes, pointers, format specifiers, headers) and C++ (OOP, inline, constructors, access)	7.5	A4: मुहावरे, लोकोक्तियाँ, वाक्य शुद्धि
16	Thu 12 Nov	**Mock Test 2** + analysis	—	—
17	Fri 13 Nov	**B5** part 2: Java (primitive types, access modifiers, exceptions, final/abstract, packages); revise B3	—	A1: geography, Census 2011, science
18	Sat 14 Nov	**B6** Python: tokens, data types, strings, lists, tuples, dictionaries, files, Pandas basics	3.7 (20 in 2024)	A3: mensuration, data interpretation (pie, bar)
19	Sun 15 Nov	**B11** Surprise questions: economics, KM, MIS, accounting, .NET, e-commerce, physics facts	14.5	A5: para jumble, comprehension, spelling
20	Mon 16 Nov	**B8** data structures, algorithms (sorting complexity, divide and conquer), compilers/TOC	3.8	A2: coding-decoding, ranking, blood relations, direction
21	Tue 17 Nov	**B9** Mathematics for CS: interpolation, probability, statistics, graph theory, matrices	5.7	A4: अपठित गद्यांश, एक शब्द
22	Wed 18 Nov	**Mock Test 3** + analysis	—	—
23	Thu 19 Nov	**Revision day 2:** one-page sheets B1, B2, B7 + error log	32	A3: number system (LCM/HCF with remainders), simplification
24	Fri 20 Nov	**Revision day 3:** one-page sheets B3, B4, B5, B6	25	A1: current affairs 2025–26, Delhi GK
25	Sat 21 Nov	**Revision day 4:** one-page sheets B10, B11, B12, B8, B9	43	A4 + A5 mixed practice
26	Sun 22 Nov	**Mock Test 4** + analysis	—	—
27	Mon 23 Nov	Weakest two chapters from your mock results (re-read in full)	—	Weakest Section A sub-section
28	Tue 24 Nov	**Mock Test 5** + analysis	—	—
29	Wed 25 Nov	**Top 100 Most Expected Questions** (timed, 60 min) + all one-page sheets	—	A1 last-week current affairs
30	Thu 26 Nov	Light day: error log, Top 100 wrong ones, admit card and centre check, sleep early	—	—

Mock-test days (10, 16, 22, 26, 28). Sit the mock at the same clock time as your shift. Use the attempt order and the time table from "Strategy to Qualify". After each mock, write three numbers: Section B net, total net, and number of wrong answers. If wrong answers are above 20, you are guessing too much; if Section B net is below 50, go back to B7, B1, B2 and B10 first.

Trap: Do not spend Day 19 trying to learn economics or physics properly. Learn the repeated facts in B11 and stop. The same hours give more marks in B12 or B7.

Shortcut: The evening hour is not optional. Facts read once are forgotten in a week; facts read three times (day 1, day 2, revision day) stay until the exam.

Chapter B1 — Computer Networks

How much is asked

Computer Networks is the **largest single Computer Science topic** in the six past papers: 58 of 600 Section B questions (9.7%). The counts below come from `rows.py "Computer networks"`, grouped into this chapter's seven topics.

Topic	2017	2023-24Jun-S2	2023-24Jun-S3	2023-25Jun-S1	2023-25Jun-S2	2024-7Feb-S2	Total
Transport layer, ports and application protocols	2	2	3	3	1	0	11
Mobile computing and wireless networks	1	4	1	2	3	0	11
IP addressing, subnetting, ARP and DHCP	7	1	1	0	1	0	10
OSI and TCP/IP models (layers, PDUs, functions)	2	0	0	2	3	1	8
Physical layer: signals, media, multiple access	1	0	1	1	0	4	7
Network types, topologies and switching	0	0	1	4	1	1	7
Network devices	1	1	0	0	1	1	4
All networks	**14**	**8**	**7**	**12**	**10**	**7**	**58**

Average: 9.7 questions per paper (range 7–14). That is about one mark in every ten of Section B.

Trend. 2017 was an **IP-addressing paper** (7 of its 14: private IP, loopback, IPv4/IPv6 length, default mask, ARP, DHCP). The four 2023 shifts moved to **TCP/UDP, port numbers and mobile computing** (Mobile IP, HLR/VLR, MANET, handover), because "Mobile Computing" and "TCP/Protocols" are separate lines in the syllabus. The 2024 paper followed the CBSE-style NDMC syllabus and asked **physical-layer basics** (signals, wavelength, coaxial cable, unguided media, repeater).

Full count (all labelled papers): across **11 TGT Computer Science papers** (2017, 2021 ×5, 2023 ×4, 2024) this chapter's topics gave **106 questions — 9.6 per paper** (2017: 14, 2021: 48, 2023: 37, 2024: 7). The 2021 papers were labelled by keyword from the official answer sheets.

The syllabus (Post Code 56/24) lists *Computer Networks*, *Computer Network Security*, *Mobile Computing* and *TCP/Protocols* as separate items. Security is covered in the cyber-security chapter. This chapter covers the rest.

---

1. Transport layer, ports and application protocols

Asked: 11 times (2017 ×2, 2023-24Jun-S2 ×2, 2023-24Jun-S3 ×3, 2023-25Jun-S1 ×3, 2023-25Jun-S2 ×1).

1.1 What the transport layer does

The network layer (IP) delivers a packet from **host to host**. The transport layer delivers data from **process to process**, that is, from one program on one computer to the right program on another. It uses **port numbers** to find the program.

Job of the transport layer	Meaning
Process-to-process delivery	Uses port numbers (16-bit, 0–65535)
Segmentation and reassembly	Breaks a message into **segments**, numbers them, joins them back
Connection control	TCP sets up and tears down a connection; UDP does not
Flow control	Stops a fast sender from flooding a slow receiver, so data is not lost
Error control	Detects lost or damaged segments and resends them (TCP)
Congestion control	Slows the sender when the network itself is overloaded (TCP)

- The PDU (protocol data unit) of the transport layer is the **segment** (TCP). A UDP unit is often called a **user datagram**.
- Transport-layer protocols: **TCP, UDP and SCTP** (Stream Control Transmission Protocol). IP, ICMP and ARP are *not* transport protocols.

1.2 TCP vs UDP

Feature	TCP	UDP
Full form	Transmission Control Protocol	**User** Datagram Protocol
Connection	**Connection-oriented** (3-way handshake: SYN, SYN-ACK, ACK)	**Connectionless** (no setup)
Reliability	Reliable: ACKs, retransmission, sequence numbers	Unreliable: no ACK, no retransmission
Order	Delivers bytes in order	No ordering
Flow and congestion control	Yes (sliding window, slow start)	No
Data model	Byte stream	Separate messages (datagrams)
Header	20–60 bytes	**8 bytes** (fixed)
Speed	Slower, more overhead	Faster, less overhead
Used by	HTTP, HTTPS, FTP, SMTP, Telnet, SSH, POP3, IMAP	DNS (queries), DHCP, TFTP, SNMP, RIP, VoIP, video streaming, online games

- **Connectionless service** = each packet is sent on its own, with full destination address, no setup. Its packets are **datagrams**.
- **Connection-oriented service** = a connection is set up first, data flows, then the connection is released (like a phone call).
- UDP **sends IP datagrams without establishing a connection**. It adds only port numbers, a length field and a checksum to IP.

Trap: In 2023-25Jun-S1 the keyed option was printed as "Unit Datagram Protocol". The correct full form is **User Datagram Protocol**. Pick the option that names UDP, whatever its spelling, if no other option fits.
Trap: "TCP is connectionless" is the classic **false** statement. TCP is connection-oriented, reliable and full-duplex.

1.3 TCP congestion control: slow start

Phase	What happens to the congestion window (cwnd)
Slow start	cwnd starts at 1 MSS (maximum segment size). It grows by 1 MSS for each ACK, so it **doubles every RTT** (round-trip time): exponential growth.
Threshold reached	When cwnd reaches **ssthresh** (slow-start threshold), slow start stops
Congestion avoidance	cwnd grows by about 1 MSS **per RTT**: additive (linear) increase
Timeout (loss)	ssthresh = cwnd/2; cwnd goes back to 1 MSS; slow start again (TCP Tahoe)
3 duplicate ACKs	**Fast retransmit**; in TCP Reno, **fast recovery** sets cwnd = ssthresh (multiplicative decrease)

Shortcut: Slow start is not slow. It is **exponential** (1, 2, 4, 8 ...). Congestion avoidance is **linear**. Remember AIMD: Additive Increase, Multiplicative Decrease.

Congestion is the state where too many packets are in the network (or part of it), so performance falls: packets are delayed and lost. Flow control protects the **receiver**; congestion control protects the **network**.

1.4 Port numbers

Ports 0–1023 are **well-known**, 1024–49151 are **registered**, 49152–65535 are **dynamic/private**.

Port	Service	Port	Service
7	**Echo**	53	DNS
9	**Discard**	67 / 68	DHCP / BOOTP (server / client), UDP
11	**Systat** (active users)	69	TFTP (UDP)
13	**Daytime**	80	HTTP
17	Quote of the Day	110	POP3
19	Chargen (character generator)	119	NNTP (Usenet news)
20 / 21	FTP data / FTP control	123	NTP (time sync)
22	SSH	**143**	**IMAP**
23	Telnet	161 / 162	SNMP / SNMP trap
25	SMTP	443	HTTPS
465 / 587	SMTP over SSL / mail submission	993 / 995	IMAPS / POP3S
3306	MySQL	3389	RDP (Remote Desktop)

Shortcut: The odd ports 7, 9, 11, 13 are **E**cho, **D**iscard, **S**ystat, **D**aytime: "**E**very **D**og **S**leeps **D**aily".

1.5 Email and other application protocols

Protocol	Job	Port
SMTP (Simple Mail Transfer Protocol)	**Sends** mail: client → server and server → server ("push")	25
POP3 (Post Office Protocol v3)	**Retrieves** mail; usually downloads and deletes from server	110
IMAP (Internet Message Access Protocol)	**Retrieves** mail; keeps it on server, syncs folders across devices	143
MIME	Lets email carry non-ASCII data: images, audio, attachments	—
HTTP	Web pages	80
FTP	File transfer (two connections: 20 data, 21 control)	20, 21
Telnet / SSH	Remote login (Telnet plain text, SSH encrypted)	23 / 22
DNS	Domain name → IP address	53

> **Trap:** If a question says "protocol for sending **and receiving** email" and only SMTP appears among email protocols, choose SMTP (it transfers mail both from the sender and between servers). If POP3 or IMAP is an option and the question says "retrieving/downloading", choose them.

1.6 Sockets

A **socket** is one end of a two-way communication link: **IP address + port number** (for example 192.168.1.5:80). The **socket interface** (Berkeley sockets on Unix, **Winsock** on Windows) is an **Application Programming Interface (API)**: library functions a program calls to use TCP/IP, such as `socket()`, `bind()`, `listen()`, `accept()`, `connect()`, `send()`, `recv()`, `close()`.

PYQ-style solved questions

Q1. Socket and Winsock are best described as examples of (a) network operating systems (b) application programming interfaces (c) routing protocols (d) device drivers **Answer: (b).** Both are APIs that let programs open TCP/IP connections. *(asked: 2017)*

Q2. Which protocol is used to transfer outgoing email from a mail client to a mail server? (a) POP3 (b) IMAP (c) SMTP (d) SNMP **Answer: (c).** SMTP pushes mail; POP3 and IMAP pull it; SNMP manages network devices. *(asked: 2017)*

Q3. Match the TCP ports with services: 7, 9, 11, 13. (a) Echo, Discard, Systat, Daytime (b) Discard, Echo, Daytime, Systat (c) Daytime, Echo, Discard, Systat (d) Echo, Daytime, Systat, Discard **Answer: (a).** 7 Echo, 9 Discard, 11 Systat, 13 Daytime. *(asked: 2023-24Jun-S2)*

Q4. Consider: (i) a connectionless service sends each packet independently; (ii) a connection-oriented service sets up a connection before data transfer; (iii) UDP is a connectionless transport protocol. Which are true? (a) Only (i) (b) (i) and (ii) only (c) (ii) and (iii) only (d) (i), (ii) and (iii) **Answer: (d).** All three are standard facts. *(asked: 2023-24Jun-S2)*

Q5. Which transport-layer mechanism prevents a fast sender from overrunning a slow receiver, so data is not lost? (a) Multiplexing (b) Flow control (c) Routing (d) Encapsulation **Answer: (b).** Flow control (sliding window) matches the sending rate to the receiver's buffer. *(asked: 2023-24Jun-S3)*

Q6. Which statement about TCP is FALSE? (a) It is connection-oriented (b) It guarantees in-order delivery (c) It is a connectionless protocol (d) It uses acknowledgements **Answer: (c).** UDP is connectionless; TCP is not.

(asked: 2023-24Jun-S3)

Q7. During TCP slow start, the congestion window (a) grows by one segment per RTT (b) roughly doubles every RTT (c) stays constant (d) halves every RTT **Answer: (b).** +1 MSS per ACK means doubling each round trip. Linear growth is congestion avoidance. *(asked: 2023-24Jun-S3)*

Q8. When too many packets are present in a subnet and performance degrades through delay and loss, the situation is called (a) collision (b) congestion (c) attenuation (d) jitter **Answer: (b).** Congestion is network overload; collision is two signals on a shared medium at once. *(asked: 2023-25Jun-S1)*

Q9. An IMAP server listens on port (a) 110 (b) 25 (c) 143 (d) 993 **Answer: (c).** 110 is POP3, 25 is SMTP, 993 is IMAP over SSL. *(asked: 2023-25Jun-S1)*

Q10. Which protocol sends IP datagrams without first establishing a connection? (a) TCP (b) UDP (c) FTP (d) Telnet **Answer: (b).** UDP is connectionless. *(asked: 2023-25Jun-S1)*

Q11. Which group contains only transport-layer protocols? (a) IP, ICMP, ARP (b) TCP, UDP, SCTP (c) HTTP, FTP, SMTP (d) TCP, IP, UDP **Answer: (b).** IP, ICMP and ARP work at the network layer; HTTP, FTP and SMTP at the application layer. *(asked: 2023-25Jun-S2)*

---

2. Mobile computing and wireless networks

Asked: 11 times (2017 ×1, 2023-24Jun-S2 ×4, 2023-24Jun-S3 ×1, 2023-25Jun-S1 ×2, 2023-25Jun-S2 ×3).

These questions come from the syllabus item "Mobile Computing". They are fact-based; learn the tables.

2.1 GSM (cellular) architecture

Part	Full form	Job
MS	Mobile Station	The handset + SIM
BTS	**Base Transceiver Station**	Radio tower; talks to phones in one cell
BSC	Base Station Controller	Controls many BTSs; handles handover between them
MSC	Mobile Switching Centre	Switches calls; connects to other networks
HLR	**Home Location Register**	**Permanent** database of every subscriber of the operator, with current location (which VLR/MSC area)
VLR	**Visitor Location Register**	**Temporary** database of subscribers now in this MSC area
AuC	Authentication Centre	Keys for SIM authentication
EIR	Equipment Identity Register	List of valid/stolen handsets (IMEI)

- When a phone moves into a new area, the **new VLR registers it and informs the HLR** of the new location. The HLR then tells the old VLR to delete the record.
- To route an incoming call, the network asks the **HLR**, which points to the current **VLR**.

2.2 Multiple access (sharing one channel)

Method	Full form	Divides the channel by
FDMA	Frequency Division Multiple Access	Frequency bands (1G analogue)
TDMA	**Time Division Multiple Access**	**Time slots**: each user transmits in its own slot (GSM, 2G)
CDMA	Code Division Multiple Access	Unique codes; all send at the same time on the same band (3G)
SDMA	Space Division Multiple Access	Space, using directional antennas
OFDMA	Orthogonal Frequency Division Multiple Access	Many narrow sub-carriers (4G LTE, 5G, Wi-Fi 6)

2.3 Mobile IP

Mobile IP lets a device keep its **home IP address** while it moves to other networks.

Term	Meaning
Mobile Node (MN)	The moving device
Home network / Home Agent (HA)	Router in the MN's home network; intercepts packets for the MN and **tunnels** them on
Foreign network / **Foreign Agent (FA)**	**Router in the visited network** that serves the MN, de-tunnels packets and delivers them
Care-of Address (COA)	The MN's current address in the foreign network; it is the **tunnel endpoint**
Foreign-agent COA	The COA is the FA's IP address
Co-located COA	The MN itself gets a temporary address, typically **via DHCP**; the tunnel ends at the MN
Correspondent Node (CN)	The node talking to the MN

Steps: agent discovery (agent advertisement / solicitation) → registration (MN tells HA its COA) → tunnelling (HA → COA, IP-in-IP encapsulation). **Triangular routing**: CN → HA → MN, but MN → CN directly.

> **Trap:** The question "address that marks the tunnel endpoint and can be obtained via DHCP" has answer **COA (co-located care-of address)**. DSSSB's key said FA (2023-25Jun-S2); standard texts (Schiller, *Mobile Communications*) say the **care-of address** is the tunnel endpoint, and a co-located COA is acquired via DHCP.

2.4 Handover and mobility types

Term	Meaning
Handover (handoff)	Moving an ongoing call/session from one cell or network to another
Hard handover	Break the old link, then make the new one (GSM)
Soft handover	Make the new link before breaking the old one (CDMA)
Intra-cell / inter-cell / inter-BSC / inter-MSC	Handover inside one cell, between cells, between BSCs, between MSCs
Inter-system (vertical) handover	Between **different systems or technologies**, for example **satellite ↔ terrestrial cellular**, or Wi-Fi ↔ 4G

Term	Meaning
Horizontal handover	Between cells of the **same** technology

Mobility type	Meaning
Macro mobility	Movement **between different networks/domains** (global, inter-domain); handled by Mobile IP
Micro mobility	Movement **within one domain**, between nearby cells/subnets (local); handled by Cellular IP, HAWAII
Ad hoc mobility	Movement of nodes in a network **with no fixed infrastructure** (MANET)

2.5 Device categories in mobile computing

Category	Example
Fixed and wired	Desktop PC on a LAN cable
Mobile and wired	Laptop plugged into a network socket
Fixed and wireless	**Wi-Fi router / access point**, wireless LAN in a building that never moves
Mobile and wireless	Smartphone, tablet on the move

2.6 MANET (Mobile Ad hoc NETwork)

A MANET is a self-configuring network of mobile nodes with **no base station or router**. Every node is also a router.

Routing protocol	Type
AODV — Ad hoc On-demand Distance Vector	**Reactive** (finds a route only when needed: RREQ / RREP / RERR messages)
DSR — Dynamic Source Routing	Reactive; whole route carried in the packet header
DSDV — Destination-Sequenced Distance Vector	**Proactive** (table-driven, routes kept always)
OLSR — Optimized Link State Routing	Proactive
ZRP — Zone Routing Protocol	Hybrid

MANET attack	What it does
Byzantine attack	A compromised node (or group) creates **routing loops**, sends packets on non-optimal paths or drops them selectively, using false routing information
Black hole	Node claims the shortest route, then **drops all** packets
Grey hole	Drops packets **selectively**
Wormhole	Two colluding nodes tunnel packets between distant points to fake a short route
Sybil	One node pretends to be many identities
Rushing	Forwards route requests very fast to get on the route

2.7 Mobile agents and Wi-Fi SSID

- A **mobile agent** is a program that moves itself, with its code and state, from one computer to another and continues running there. Other names: **transportable agent**, itinerant agent. Example systems: IBM Aglets.

- **SSID (Service Set Identifier)** is the **name of a wireless LAN**. It is **up to 32 characters (bytes)**, case-sensitive, and is broadcast in beacon frames so devices can find and join the network. Hiding the SSID is not real security.

Wi-Fi term	Meaning
IEEE 802.11	Wi-Fi standard family (802.11a/b/g/n/ac/ax)
IEEE 802.15 / 802.15.1	WPAN / Bluetooth
IEEE 802.3	Ethernet; 802.5 Token Ring; 802.16 WiMAX
BSS / ESS	Basic Service Set (one AP) / Extended Service Set (many APs, same SSID)
BSSID	MAC address of the access point
CSMA/CA	Wi-Fi's medium-access method (collision **avoidance**); Ethernet uses CSMA/CD (collision **detection**)
WEP < WPA < WPA2 < WPA3	Wi-Fi security, weakest to strongest

PYQ-style solved questions

Q12. Which routing protocol is designed for mobile ad hoc networks? (a) OSPF (b) BGP (c) AODV (d) RIP **Answer: (c).** AODV is an on-demand MANET protocol; the others are for fixed networks. *(asked: 2017)*

Q13. Mobile agents are also known as (a) static agents (b) transportable agents (c) proxy servers (d) daemons **Answer: (b).** They carry code and state from host to host. *(asked: 2023-24Jun-S2)*

Q14. In a MANET, compromised nodes inject false routing information so that packets loop or take non-optimal paths. This is a (a) Byzantine attack (b) black hole attack (c) replay attack (d) phishing attack **Answer: (a).** A black hole simply swallows packets; looping and misrouting is the Byzantine attack. *(asked: 2023-24Jun-S2)*

Q15. Which statement about an SSID is correct? (a) It can be up to 256 characters long (b) It identifies a wireless LAN and lets devices join it (c) It is the MAC address of the client (d) It encrypts Wi-Fi traffic **Answer: (b).** SSID = network name, max 32 characters; it does no encryption. *(asked: 2023-24Jun-S2)*

Q16. Match: macro mobility, micro mobility, ad hoc mobility. (a) between domains; within a domain; without infrastructure (b) within a domain; between domains; without infrastructure (c) without infrastructure; within a domain; between domains (d) between domains; without infrastructure; within a domain **Answer: (a).** Macro = global, micro = local, ad hoc = no base station. *(asked: 2023-24Jun-S2)*

Q17. Which is true about HLR and VLR? (a) The HLR stores only visitors (b) The VLR informs the HLR when a subscriber's location changes (c) The VLR is a permanent subscriber database (d) The HLR is part of the BTS **Answer: (b).** VLR is temporary and local; it updates the HLR, the permanent home database. *(asked: 2023-24Jun-S3)*

Q18. In Mobile IP, the router in the visited network that serves the mobile node is the (a) home agent (b) foreign agent (c) correspondent node (d) gateway **Answer: (b).** The foreign agent de-tunnels and delivers packets in the foreign network. *(asked: 2023-25Jun-S1)*

Q19. Sharing a channel by giving each user its own time slot is (a) FDMA (b) CDMA (c) TDMA (d) SDMA **Answer: (c).** TDMA = time slots; FDMA = frequency bands; CDMA = codes. *(asked: 2023-25Jun-S1)*

Q20. In the "fixed and wireless" category of mobile computing devices, which device fits? (a) Smartphone (b) Desktop on Ethernet (c) Wi-Fi router (d) Laptop on a LAN cable **Answer: (c).** It stays in one place but serves clients over radio. *(asked: 2023-25Jun-S1)*

Q21. Handover of a call from a satellite network to a terrestrial cellular network is (a) intra-cell handover (b) inter-cell handover (c) inter-system handover (d) soft handover **Answer: (c).** Two different systems are involved. *(asked: 2023-25Jun-S2)*

Q22. BTS in a cellular network stands for (a) Base Transfer System (b) Base Transceiver Station (c) Broadband Transmission Station (d) Basic Telephone Switch **Answer: (b).** *(asked: 2023-25Jun-S2)*

Q23. In Mobile IP, the address that marks the tunnel endpoint, and which the mobile node may obtain through DHCP, is the (a) home address (b) foreign agent (c) care-of address (d) MAC address **Answer: (c).** A co-located COA comes from DHCP. DSSSB's key said FA; standard texts say COA. *(asked: 2023-25Jun-S2)*

---

3. IP addressing, subnetting, ARP and DHCP

Asked: 10 times (2017 ×7, 2023-24Jun-S2 ×1, 2023-24Jun-S3 ×1, 2023-25Jun-S2 ×1).

3.1 Address sizes

Address	Size	Written as	Example
IPv4	**32 bits** (4 bytes)	4 decimal octets, dot-separated	192.168.1.10
IPv6	**128 bits** (16 bytes)	8 groups of 4 hex digits, colon-separated	2001:0db8:0000:0000:0000:0000:0000:0001 = 2001:db8::1
MAC (physical)	48 bits (6 bytes)	6 hex pairs	3C-52-82-1A-7F-09
Port number	16 bits	decimal	443

- An IPv4 address has two parts: **network address (net ID)** and **host address (host ID)**. Routers look only at the network part.
- IPv4 gives 2^32 ≈ 4.3 billion addresses; IPv6 gives 2^128 ≈ 3.4 × 10^38.
- IPv6 facts: fixed **40-byte** base header, **no broadcast** (unicast, multicast, **anycast**), no header checksum, built-in IPsec support, loopback **::1**, "::" replaces one run of zero groups.

3.2 Classful addressing

Class	First octet	Leading bits	Default mask	Usable hosts per network	Use
A	1–126	0	**255.0.0.0** (/8)	2^24 − 2 = 16,777,214	Very large networks
B	128–191	10	**255.255.0.0** (/16)	2^16 − 2 = 65,534	Medium networks
C	192–223	110	**255.255.255.0** (/24)	2^8 − 2 = 254	Small networks
D	224–239	1110	none	—	**Multicast**
E	240–255	1111	none	—	Reserved / experimental

127 is not in class A's usable range: it is reserved for loopback.