

1.3 EXCHANGING DATA · 1.3.4

Search indexing, PageRank & server/client-side — Mark scheme

33 marks · spec 1.3.4(b)(c)(d)

AO key: AO1 = knowledge & understanding · AO2 = application · AO3 = reasoned judgements. Accept any valid alternative; do not award the same point twice.

Q	ANSWER	AO	MARKS
1(a)	It automatically browses the web following links (1); recording each page's details (URL/content/relevance) to add to the index (1). (2)	AO1	2
1(b)	Indexing builds a database/index of pages and the words they contain (1); from the information collected by the crawler (1); a query searches this pre-built index, not the live web (1); so results are returned much faster (1). (4)	AO1 ×2 AO2 ×2	4
1(c)	A (hidden) keyword in the page's HTML describing its content, used to help indexing. (1)	AO1	1

Q	ANSWER	AO	MARKS
2(a)	It counts the incoming links to a page as votes (1); a link from a more highly ranked page counts for more (1); a page's vote is shared/diluted across its outbound links (1). (3)	AO1	3
2(b)	The probability that a user keeps following links (rather than stopping). (1)	AO1	1
2(c)	1 mark each, max 2: keywords in content/domain · page age · load speed · mobile-friendliness · quality of content. (2)	AO1	2

Q	ANSWER	AO	MARKS
3(a)	Processing carried out in the user's browser (e.g. by JavaScript). (1)	AO1	1
3(b)	It is fast / gives instant response without a round-trip to the server (1); and reduces load on the server (1). (2)	AO2	2
3(c)	Any one: database query/update · processing a payment · checking a login/authentication · recalculating a price. (1)	AO1	1

Q	ANSWER	AO	MARKS
4	Max 4: client-side code can be seen and changed by the user (1); so the displayed price/discount could be tampered with (1); the server re-checks the code is valid/exists in the database (1); and recalculates the total itself so only a trusted value is charged (1); this is secure because the user cannot alter server-side processing (1). (4)	AO2	4

Q	LEVELS-OF-RESPONSE MARK SCHEME	AO	MARKS										
5	Mark using the levels descriptors below. AO1 (knowledge of crawling/indexing/ PageRank), AO2 (application to the business), AO3 (judgement on importance). <table><tr><th>LEVEL</th><th>DESCRIPTOR</th></tr><tr><td>Level 3 (9–12)</td><td>Accurately explains crawling, indexing and PageRank and how the order is decided, clearly applied to the business, with a reasoned judgement on why ranking matters. Well structured.</td></tr><tr><td>Level 2 (5–8)</td><td>Covers most of crawling/indexing/PageRank with some application and partial judgement.</td></tr><tr><td>Level 1 (1–4)</td><td>Basic points about search engines with little application or development.</td></tr><tr><td>0</td><td>Nothing creditworthy.</td></tr></table> Indicative content (credit any valid point): • Crawlers follow links to discover the business's pages and record their content. • Indexing adds the pages to a searchable index so they can be returned quickly for relevant queries. • PageRank orders results by importance — more and higher-quality incoming links raise the page. • Importance to the business: most users only look at the first few results, so a high rank means more visitors/customers. • Good practice: relevant content, useful metatags, quality links — though ranking depends on many factors.	LEVEL	DESCRIPTOR	Level 3 (9–12)	Accurately explains crawling, indexing and PageRank and how the order is decided, clearly applied to the business, with a reasoned judgement on why ranking matters. Well structured.	Level 2 (5–8)	Covers most of crawling/indexing/PageRank with some application and partial judgement.	Level 1 (1–4)	Basic points about search engines with little application or development.	0	Nothing creditworthy.	AO1 ×4 AO2 ×4 AO3 ×4	12
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Level 1 (1–4)	Basic points about search engines with little application or development.												
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Total for paper: 33 marks