**451 COMPUTER STUDIES FORM 4**

**MARKING SCHEME**

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| **QN** | **RESPONSES** | **MARKS** |
| 1. | i) Fifth Generation  ii) 1st and 2nd generation  iii) 4th generation  iv) 5th generation | 1  1  1  1 |
| 2. | Line spacing refers to the vertical distance between lines of text while character spacing refers to the fixing of characters too close/condense or far apart/expanding from each other  *Accept correct illustration*  (Award 2 or 0) | 2 |
| 3. | * Main frames are cheaper/affordable than super computers * Main frames support many peripheral devices * Mainframes have large storage capacities to support storage of the high volumes of data in those companies (First 2 × 1) | 3 |
| 4. | * Lack of or faulty PCMCIA card * Lack of or corrupted network card drivers/network software * Lack of login credentials * The laptop was not configured to access the AP (First 3 × 1) | 3 |
| 5. | * There will be no interruptions from adverts or network down times that can occur in live streaming * She can watch it at her own convenience i.e. even when there is no internet connection * She will save on internet connection costs required for live stream every time she wants to watch it. (First 3 × 1) | 3 |
| 6. | * When entering passwords /user authentication codes * When securing data that is on transit (First 2 × 1) | 2 |
| 7. | * Scan the memory card for viruses/install antivirus * Restricting the use of the memory card so as to minimize chances of virus attacks * Back up the data in another storage media * Avoid filling the memory card to full capacity * Use data recovery software to reconstruct lost data (First 3 × 1) | 3 |
| 8. | W – Cropping/trimming  X – Rotating/ Reflection  Y - Resizing | 1  1  1 |
| 9. | * Unsuccessful installation/loading of the flash disk drivers * Faulty USB port * The flash disk may contain malicious file (virus); therefore, the system cannot read it. * Corrupt/infected drivers (First 2 × 1) | 2 |
| 10. a) | * Place the mouse on a flat surface/mouse pad * Connect the mouse on another port * Restart/ warm boot the computer * Run a virus scan (First 2 × 1) | 2 |
| b) | * Use standard furniture * Take frequent breaks * Use of wrist pad * Use of ergonomic keyboards * Adopt a proper sitting posture (First 2 × 1) | 2 |
| 11. | * The need not to interrupt the normal running of the current system, document review is unobtrusive. * The need to get broad coverage; documents cover a long span of time, many events, and many settings * The need to reduce costs since many documents are in the public domain, especially with the advent of the Internet they are freely obtainable without the authors’ permission. * The need to save on time since document analysis is less time-consuming   (First 3 × 1) | 3 |
| 12. | * Internet has provided a platform where people can increase their skills in computers and also the related crimes * Growth of the internet has led to many organizations and individuals putting their data online which entices computer crimes such as hacking, tapping, fraud, etc. * Through the internet people commit crimes and clear all digital evidence making it difficult to prosecute them, this encourages more computer crimes. * Growth of internet has led to complex crimes which are difficult for law enforcement agencies to investigate, this encourages more crimes.   (First 2 × 1) | 2 |
| 13. | * Validation rule * Format * Field size * Decimal places * Required * Allow zero length   *(Do not accept input mask, validation text, caption, indexed )* (First 3 × 1) | 3 |
| 14. | * Errors make values deviate from the actual value thus affecting the accuracy and completeness of data * Errors make data become irrelevant e.g. errors in exam marks results make the results irrelevant since they will misrepresent the performance of the student. (First 2 × 1)   *Guide for marking: look out for whether a candidate relates errors to any of the measures of data integrity i.e. accuracy, completeness, relevance and timeliness.* | 2 |
| 15. | * Offers flexibility in connection * Covers wide geographical area * Easy to remove or add nodes * Enables communication in areas where laying cables is not feasible   (First 2 × 1) | 2 |
|  | **SECTION B (60 MARKS)** |  |
| 16.a) | * They are structured/procedural * They use control structures * Divide a large task into smaller sub programs/ they are modular   *(Do not accept characteristics that are generic to all high level programming languages such as portable, easy to debug, user friendly etc.)* (First 3 × 1) | 3 |
| b) | i) technical  ii) User oriented  iii) technical | 1  1  1 |
| c) i) | While Loop/Looping/repetition | 1 |
| ii) | **1st Iteration**  number = 5, product = 1, Value = 5  Is 5 = 0 ? No  Product = 5 \* 1 = 5  Value = 5 – 1 = 4  **2nd Iteration**  product = 5, Value = 4  Is 4 = 0 ? No  Product = 4 \* 5 = 20  Value = 4 – 1 = 3  **3rd Iteration**  product = 20, Value = 3  Is 3 = 0 ? No  Product = 20 \* 3 = 60  Value = 3– 1 = 2  **4th Iteration**  product = 60, Value = 2  Is 2 = 0 ? No  Product = 60 \* 2 = 120  Value = 2– 1 = 1  **5th Iteration**  product = 120, Value = 1  Is 1 = 0 ? No  Product = 120 \* 1 = 120  Value = 1– 1 = 0  **6th Iteration**  product = 120, Value = 0  Is 0 = 0 ? Yes Exit loop  **Product = 120**  **Number = 5**  6 correct iterations @ ½ marks = 3 marks | 3 |
|  |  |  |
| iii) | START  INPUT number ½  Product = 1 ½  Value = number ½  WHILE Value = 0 DO ½  Product = value \* product ½  Value = Value – 1 ½  ENDWHILE ½  OUTPUT number, product ½  STOP  **Logic flow = 1** | 5 |
| 17. a) | i) = PRODUCT (B3, C3) or = PRODUCT (B3:C3)  ii) = AVERAGE (D2:D4)  *For each case, award 1 mark for correct function name & 1 mark for correct range* | 2  2 |
| b) | Through social engineering computer criminals are able to solicit for private and confidential data such information system login details from unsuspecting persons which they use to get unauthorized access to data. | 2 |
| c) | i) Displays the content of the active cell/selected cells  ii) Displays the cell address of the active/ selected cell | 1  1 |
| d) | * To perform calculations on fields * To search and obtain records that meet a certain criteria (First 2 × 1) | 2 |
| e) | * They give the user better control over system resources * They offer better security of data since only those who know commands can use the computer * The commands are executed faster since they are easier for the CPU to process. (First 2 × 1) |  |
| f) | * Use of WIMP * Availability of help facility/user guide * It should have data recovery facilities such as undo & redo * It should have automated facilities such as auto save, autocorrect, autocomplete, word wrap etc. * Provide facilities to adjust the user interface settings (First 3 × 1) | 3 |
| 18. a) | * They exchange inputs and outputs with the environment * They get feedback from the environment which make them able to adapt to changes in their environment (First 2 × 1) | 2 |
| b) | i) For coding the system/creating a system’s program  ii) to test whether the program accepts data that is out of the expected range | 1  1 |
| c) | * New directives from the management * Change in user needs * Problems – undesirable situations that prevent the organization from meeting its goals * New opportunities - a chance to improve on internal processes * New technology   *Award 1 mark for stating and 1 mark for explanation*  (First 2 × 2) | 4 |
| d) | * There will be great administrative strains as the user will do most of the tasks twice * The benefits of the new system will not be fully realized immediately * There will incur higher costs for the changeover (First 3 × 1) | 3 |
| e) | * Every item on a page is contained in a frame and can be edited and formatted independently. * Stories can be contained in a single frame or threaded between several frames * Frames need to follow in a logical sequence. E.g. a story on pg 1. May be continued on pg 8. * Master pages are used to set a common layout which may be repeated on several pages, e.g. Logo, page numbers * Multiple stories from different authors can be handled with ease. * Wide range of templates is available e.g. brochures, booklets, posters business cards (First 2 × 1) | 2 |
| f) | * Increase piracy * Reduced creativity | 2 |
| 19. a) | i) Distributed data processing mode | 1 |
| ii) | * Enables faster processing since data processing is shared among computing nodes * In case of data loss only a small portion of data is lost * Failure at one point may not affect the entire system (First 2 × 1) | 2 |
| b) | * Dust may cause clogging of movable parts of a computer such as fans, keyboards * Dust may scratch storage devices leading to data loss * Dust increase friction in movable parts of a computer leading them to wear out. (First 2 × 1) | 2 |
| c) | i) instant messaging services/SMS/email/social media platforms  ii) Blog  iii) Video conferencing/teleconferencing | 1  1  1 |
| d) | Computer Network Topologies | IT For Everyone  Evidence of a backbone/bus cable - 1 mark  Two terminators on the ends of the backbone – 1 mark  Nodes connected to the bus – 1 mark | 3 |
| e) | * To extend a LAN beyond its length limit * To segment a LAN in order to reduce data traffic * To connect network segments (First 2 × 1) | 2 |
| f) | * The single mode has a smaller core that allows light to be transmitted in only one direction leading to faster data transmission. | 2 |
| 20. a) | * SSD consist of IC’s (millions of transistors). Each transistor can only represent two states i.e. ON and OFF. A high voltage in the circuit represents ON state interpreted as 1 while low voltage represents OFF state interpreted as 0. The sequence of ON’s and OFF’s forms electrical signals that the computer can understand | 2 |
| b) | |  |  | | --- | --- | | 2 | 17 | | 2 | 8R1 | | 2 | 4R0 | | 2 | 2R0 | | 2 | 1R0 | | 2 | 0R1 |     1710 = 100012  0.05 × 2 = 0.10  0.10 × 2 = 0.20  0.20 × 2 = 0.40  0.40 × 2 = 0.80  0.80 × 2 = 1.60  0.60 × 2 = 1.20  ~~0.20 × 2 = 0.40~~ 0.05 = 0. 0000112 so 17.05 = 10001.0000112 | 1  1  1 |
| c) | |  |  | | --- | --- | | 2 | 29 | | 2 | 14R1 | | 2 | 7R0 | | 2 | 3R1 | | 2 | 1R1 | | 2 | 0R1 |  |  |  | | --- | --- | | 2 | 15 | | 2 | 7R1 | | 2 | 3R1 | | 2 | 1R1 | | 2 | 0R1 |   2910 = 101112 1510 =11112  8bit notation 00010111 00001111  00010111 – 00001111  Twos complements 11110000 + 1 = 11110001  00010111 + 11110001 = (1) 00001000  Ignore the overflow bit; 00001000 |  |
| d) | 11101.011 – 100.110 = 11000.101  11000.101 + 10100.111 = 101101.100  (1 × 25) + (0 × 24) + (1 × 23) +(1 × 22) + (0 × 21) + (1 × 20) + (1 × 2-1) +  (0 × 2-2)+ (0 × 2-3)  32 + 8 + 4 + 1 + 0.5 = 45.5 | 1  1  1  1 |
| e) | * Data entry may be affected by background noise * It does not care Speech related problems such as change in tone, accent may affect data entry * Its complex to develop such systems |  |
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