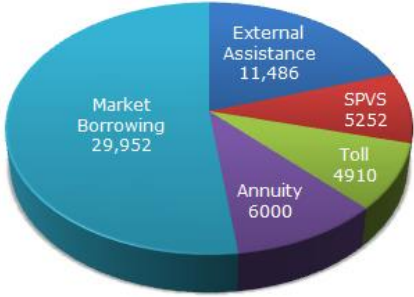
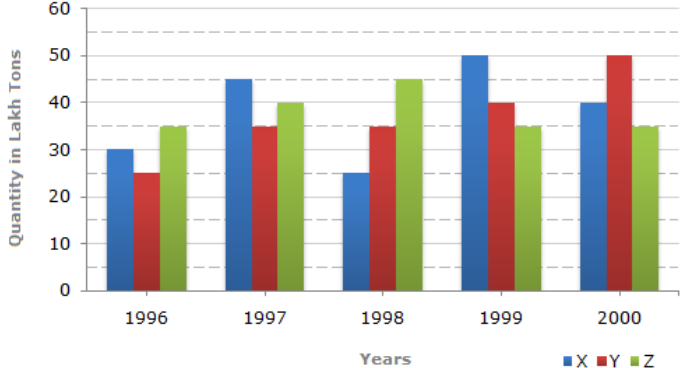


Advertisement No. CORP/GRP.A/03/2021

Recruitment Exam for post of TO and STO for C-DAC, Patna

Online Exam Date – 6th October 2021

Answer Key – Morning Slot

Question No.	Question	Correct Answer
Q.1	<p>The following pie-chart shows the sources of funds to be collected by the National Highways Authority of India (NHAI) for its Phase II projects (in crores Rs.). Study the pie-chart and answer the questions that follow.</p>  <p>Near about 20% of the funds are to be arranged through:</p> <p>A. SPVS B. External Assistance C. Annuity D. Market Borrowing</p>	B
Q.2	<p>The bar graph given below shows the data of the production of paper (in lakh tones) by three different companies X, Y and Z over the years.</p> <p>Production of Paper (in lakh tonnes) by Three Companies X, Y and Z over the Years.</p> 	A

For which of the following years, the percentage rise/fall in production from the previous year is the maximum for Company Y?

A. 1997
 B. 1998
 C. 1999
 D. 2000

Q.3 Study the following line graph and answer the questions. D

Exports from Three Companies Over the Years (in Rs. crore)

Year	Company X	Company Z	Company Y
1993	30	60	80
1994	60	90	40
1995	40	120	60
1996	70	90	60
1997	100	60	80
1998	50	80	100
1999	120	100	140

Average annual exports during the given period for Company Y is approximately what percent of the average annual exports for Company Z?

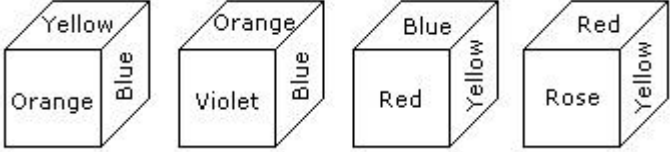
A. 87.12%
 B. 89.64%
 C. 91.21%
 D. 93.33%

Q.4 The area of a square is D and its diagonal is equal to the diameter of a circle. The area of the circle is C

A. πD^2
 B. $\frac{1}{2} \pi D^2$
 C. $\frac{1}{2} \pi D$
 D. πD

Q.5	<p>The price of a jewel, passing through three hands, rises on the whole by 65%. If the first and second sellers earned 20% and 25% profit respectively, find the percentage profit earned by the third seller.</p> <p>A. 10% B. 22% C. 18% D. 12%</p>	A
Q.6	<p>Find the missing number in the following</p> <p>2, 12, 60, 240, 720,, 1440, 0</p> <p>A. 1050 B. 1440 C. 1000 D. 1250</p>	B
Q.7	<p>Two buses A and B leave the same bus depot, A towards the North and B towards the East. The bus A travels at a speed of 5 km/hr more than that of the bus B. If after four hours the distance between the two buses is 100 km, find the speed of the bus A.</p> <p>A. 60 kmph B. 40 kmph C. 20 kmph D. 15 kmph</p>	C
Q.8	<p>If A and B together can complete a work in 18 days, A and C together in 12 days, and B and C together in 9 days, then B alone can do the work in:</p> <p>A. 18 days B. 24 days C. 30 days D. 40 days</p>	B
Q.9	<p>A batsman scored 110 runs which included 3 boundaries and 8 sixes. What percent of his total score did he make by running between the wickets?</p> <p>A. 45%</p>	B

	<p>B. $45\frac{5}{11}\%$</p> <p>C. $54\frac{6}{11}\%$</p> <p>D. 55%</p>	
Q.10	<p>If $\log_{10}5 + \log_{10}(5x + 1) = \log_{10}(x + 5) + 1$ then the value of x is:</p> <p>A. 1</p> <p>B. 2</p> <p>C. 3</p> <p>D. 4</p>	C
Q.11	<p>If $\log_2x + \log_4x + \log_{16}x = \frac{21}{4}$ then the value of x is</p> <p>A. 3</p> <p>B. 7</p> <p>C. 8</p> <p>D. 16</p>	C
Q.12	<p>After simplification the expression $\frac{x^{m+2n} x^{3m-8n}}{x^{5m-6n}}$ is</p> <p>A. x^n</p> <p>B. $\frac{1}{x^m}$</p> <p>C. $\frac{1}{x^n}$</p> <p>D. x^m</p>	B
Q.13	<p>If $pqr = 1$ then $\frac{1}{1+p+q^{-1}} + \frac{1}{1+q+r^{-1}} + \frac{1}{1+r+p^{-1}}$ is</p> <p>A. 0</p> <p>B. 1</p> <p>C. -1</p> <p>D. 2</p>	B
Q.14	<p>From the four positions of a dice given below, find the color which is opposite to yellow?</p>	A

	 <p>A. Violet B. Red C. Rose D. Blue</p>	
Q.15	<p>In how many ways can 10 examination papers be arranged so that the best and the worst papers never come together?</p> <p>A. $9 \times 8!$ B. $7 \times 9!$ C. $8 \times 8!$ D. $8 \times 9!$</p>	D
Q.16	<p>In a party every person shakes hands with every other person. If there are 105 hands shakes, find the number of person in the party.</p> <p>A. 15 B. 14 C. 21 D. 25</p>	A
Q.17	<p>In a hockey championship, there are 153 matches played. Every two team played one match with each other. The number of teams participating in the championship is:</p> <p>A. 18 B. 19 C. 17 D. 16</p>	A
Q.18	<p>How many different five-letter words can be formed using the letter from the word APPLE?</p> <p>A. 24 B. 60 C. 120 D. 240</p>	B
Q.19	<p>The length of a rectangular floor is more than its breadth by 200%. If Rs. 324 is required to paint the floor at the rate of Rs. 3 per sq m, then what would be the length of the floor?</p>	D

	<p>A. 26 B. 24 C. 21 D. 18</p>	
Q.20	<p>A cube of side one meter length is cut into small cubes of side 10 cm each. How many such small cubes can be obtained?</p> <p>A. 10 B. 100 C. 1000 D. 10000</p>	C
Q.21	<p>What is the probability of getting the sum as a prime number if two dice are thrown?</p> <p>A. 5/24 B. 5/12 C. 5/30 D. 1/4</p>	B
Q.22	<p>There are 3 blue socks, 5 brown socks, and 4 white socks in a drawer. If two socks are picked up randomly, what is the probability that the selected socks are of the same color?</p> <p>A. 1 B. 0 C. 19/66 D. 4/11</p>	C
Q.23	<p>A stock of pens consists of 144 ball pens in which 20 pens are defective, and others are good. A girl went to the shop to purchase a pen. The shopkeeper randomly draws one pen and gives it to her. What is the probability that a girl will buy the good pen?</p> <p>A. 5/26 B. 5/36 C. 31/36 D. None of the above</p>	C
Q.24	<p>The following question are given with some conclusions. Choose the options that logically follow the most.</p> <p>Statements: Some cats are rats. All rats are trees. Some trees are not cats.</p> <p>Conclusions:</p> <p>I. Some trees are cats.</p>	A

	<p>II. All cats are trees. III. All rats are cats. IV. No tree is cats.</p> <p>A. I is valid B. II is valid C. III is valid D. All are valid</p>	
Q.25	<p>The following question are given with some conclusions. Choose the options that logically follow the most.</p> <p>Statements: All mangoes are golden in color. No golden-colored things are cheap. Conclusions: I. All mangoes are cheap. II. Golden-colored mangoes are not cheap.</p> <p>A. Only conclusion I follows B. Only conclusion II follows C. Either I or II follows D. Neither I nor II follows</p>	B
Q.26	<p>Which of the following options is the closest in the meaning to the word given below?</p> <p>Nadir</p> <p>A. Highest B. Lowest C. Medium D. Integration</p>	A
Q.27	<p>In the following questions choose the word which is the exact OPPOSITE of the given words.</p> <p>Superiority</p> <p>A. Seniority B. Juniority C. Inferiority D. Urbanity</p>	C
Q.28	<p>Choose the pair of words which have a similar relationship to that between the given pair of words:</p> <p>MERGE : DISCONNECT</p> <p>A. Gratify : Delight B. Worship : Devotion</p>	C

	<p>C. Robust : Incapable D. Intense : Acute</p>	
Q.29	<p>Fill in the blanks with appropriate preposition</p> <p>He comes _____ a family which has a passion _____ playing cricket.</p> <p>A. from, in B. off, for C. of, in D. of, for</p>	D
Q.30	<p>In the question below, there is a sentence with jumbled up parts. Rearrange these parts, which are labelled 1, 2, 3 and 4 to produce the correct sentence. Choose the proper sequence.</p> <p>1.The managing director 2.in listening to her 3. was not interested 4.explanation about why profits were lessening.</p> <p>A. 1234 B. 1243 C. 1324 D. 2341</p>	C
Q.31	<p>Choose the correct statement for the below</p> <p>Kiran asked me, "Did you see the Cricket match on television last night?"</p> <p>A. Kiran asked me whether I saw the Cricket match on television the earlier night. B. Kiran asked me whether I had seen the Cricket match on television the earlier night. C. Kiran asked me did I see the Cricket match on television the last night. D. Kiran asked me whether I had seen the Cricket match on television the last night.</p>	D
Q.32	<p>Rajeev failed in the examination because none of his answers were _____ to the questions asked.</p> <p>A. allusive B. revealing C. pertinent D. referential</p>	C

Q.33	Find the correct spelt word. A. Affedevit B. Afidevit C. Affidavit D. Affidavit	D
Q.34	There are _____ views on the issue of giving bonus to the employees. A. independent B. divergent C. modest D. adverse	B
Q.35	A person who renounces the world and practices self-discipline in order to attain salvation: A. Sceptic B. Ascetic C. Devotee D. Antiquarian	B
Q.36	In the following questions, four alternatives are given for the Idiom/Phrase in bold in the sentence. Choose the alternative which best expresses the meaning of the Idiom/Phrase as your answer. Fish out of water A. dehydrated B. Comfortable position C. an uncomfortable position D. fish in an aquarium	C
Q.37	In the following questions, four alternatives are given for the Idiom/Phrase in bold in the sentence. Choose the alternative which best expresses the meaning of the Idiom/Phrase as your answer. Once in a blue moon A. Very rarely B. Common C. Predictable D. Ordinary	A
Q.38	In the following questions, four alternatives are given for the Idiom/Phrase in bold in the sentence. Choose the alternative which best expresses the meaning of the Idiom/Phrase as your answer. Keep body and soul together A. Maintain his health	C

	<p>B. Continue with his work C. to have just enough to sustain D. to physical and spiritual</p>	
Q.39	<p>In the following questions, four alternatives are given for the Idiom/Phrase in bold in the sentence. Choose the alternative which best expresses the meaning of the Idiom/Phrase as your answer.</p> <p>When he heard that he had once again not been selected he lost heart.</p> <p>A. became desperate B. felt sad C. became angry D. became discouraged</p>	D
Q.40	<p>In the following questions, four alternatives are given for the Idiom/Phrase in bold in the sentence. Choose the alternative which best expresses the meaning of the Idiom/Phrase as your answer.</p> <p>I met him after a long time, but he gave me the cold shoulder.</p> <p>A. ignored me B. abused me C. insulted me D. scolded me</p>	A
Q.41	<p>In the following questions, four alternatives are given for the Idiom/Phrase in bold in the sentence. Choose the alternative which best expresses the meaning of the Idiom/Phrase as your answer.</p> <p>I have clean hands, so why should I be afraid of any one</p> <p>A. faulty B. innocent C. hygienic D. beautiful</p>	B
Q.42	<p>DIRECTIONS:</p> <p>Read the following passages carefully and answer the questions given below them. Certain words are given in bold to help you to locate them while answering some of the questions.</p>	C

PASSAGE

India is a country of villages. Rural population still dominates the urban population as far as the number is considered. This is despite the fact that there is **rampant** migration of rural families to urban centres. Generally, the gains of being a unit of the urban population are less than the disadvantages and risks that are in-built in the urban life. Crime, riots, etc are some of the examples of such risks of urban life. The forces that generate conditions **conducive** to crime and riots are stronger in urban communities than in rural areas. Urban living is more anonymous living. It often **releases** the individual from community restraints more common in tradition-oriented societies. But more freedom from constraints and controls also provides greater freedom to **deviate**. And living in the more impersonalized, formally controlled urban society means that regulatory orders of conduct are often directed by distant bureaucrats. The police are strangers executing these prescriptions on an anonymous set of **subjects**. Minor offences in small town or village are often **handled** without resort to official police action. As disputable as such action may seem to be, it results in fewer recorded violations of the law compared to those in the big cities. Although perhaps causing some decision difficulties for the police in small town, formal and objective law enforcement is not always acceptable to the villagers. Urban area with mass population, greater wealth, more commercial establishments and more products of our technology also provide more frequent

	<p>opportunities for theft. Victims are impersonalized, property is insured, consumer goods in more abundance are vividly displayed and are more portable. The crime rate increases despite formal moral education given in schools.</p> <p>Which of the following would be the best title for the above passage?</p> <ul style="list-style-type: none">A. Lure of Village LifeB. Rural-Urban RiftC. Hazards of Urban LifeD. Crime and Punishment	
Q.43	<p>DIRECTIONS:</p> <p>Read the following passages carefully and answer the questions given below them. Certain words are given in bold to help you to locate them while answering some of the questions.</p> <p>PASSAGE</p> <p>India is a country of villages. Rural population still dominates the urban population as far as the number is considered. This is despite the fact that there is rampant migration of rural families to urban centres. Generally, the gains of being a unit of the urban population are less than the disadvantages and risks that are in-built in the urban life. Crime, riots, etc are some of the examples of such risks of urban life. The forces that generate conditions conducive to crime and riots are stronger in urban communities than in rural areas. Urban living is more anonymous living. It often releases the individual from community restraints more common in tradition-oriented societies. But more freedom from constraints and controls also provides greater freedom to deviate. And living in the more impersonalized, formally controlled urban society means that regulatory orders of conduct are often directed by distant bureaucrats. The police are strangers executing</p>	B

	<p>these prescriptions on an anonymous set of subjects. Minor offences in small town or village are often handled without resort to official police action. As disputable as such action may seem to be, it results in fewer recorded violations of the law compared to those in the big cities. Although perhaps causing some decision difficulties for the police in small town, formal and objective law enforcement is not always acceptable to the villagers. Urban area with mass population, greater wealth, more commercial establishments and more products of our technology also provide more frequent opportunities for theft. Victims are impersonalized, property is insured, consumer goods in more abundance are vividly displayed and are more portable. The crime rate increases despite formal moral education given in schools.</p> <p>The above passage mainly emphasises the</p> <ul style="list-style-type: none"> A. need for formal moral education to be given in schools B. reasons for growing crime rate in urban centres as compared to that in rural areas C. increasing crime rate in rural areas D. comparative account of wealth in rural and urban areas 	
<p>Q.44</p>	<p>DIRECTIONS:</p> <p>Read the following passages carefully and answer the questions given below them. Certain words are given in bold to help you to locate them while answering some of the questions.</p> <p>PASSAGE</p> <p>India is a country of villages. Rural population still dominates the urban population as far as the number is considered. This is despite the fact that there is rampant migration of rural families to urban centres. Generally, the gains of being a unit of the urban population are less than the disadvantages and risks that are in-built in the urban life. Crime, riots, etc are some of the examples of such risks of urban life. The forces that generate conditions conducive to crime and</p>	<p>C</p>

riots are stronger in urban communities than in rural areas. Urban living is more anonymous living. It often **releases** the individual from community restraints more common in tradition-oriented societies. But more freedom from constraints and controls also provides greater freedom to **deviate**. And living in the more impersonalized, formally controlled urban society means that regulatory orders of conduct are often directed by distant bureaucrats. The police are strangers executing these prescriptions on an anonymous set of **subjects**. Minor offences in small town or village are often **handled** without resort to official police action. As disputable as such action may seem to be, it results in fewer recorded violations of the law compared to those in the big cities. Although perhaps causing some decision difficulties for the police in small town, formal and objective law enforcement is not always acceptable to the villagers. Urban area with mass population, greater wealth, more commercial establishments and more products of our technology also provide more frequent opportunities for theft. Victims are impersonalized, property is insured, consumer goods in more abundance are **vividly displayed** and are more portable. The crime rate increases despite formal moral education given in schools.

Which of the following statements is **TRUE** in the context of the passage?

- A. Small communities have more minor crimes than in urban centres.
- B. Urban crimes cannot be prevented.

	<p>C. Lack of personal contacts increases crimes in urban areas.</p> <p>D. The display of consumer goods is the main cause of crime.</p>	
<p>Q.45</p>	<p>DIRECTIONS:</p> <p>Read the following passages carefully and answer the questions given below them. Certain words are given in bold to help you to locate them while answering some of the questions.</p> <p>PASSAGE</p> <p>India is a country of villages. Rural population still dominates the urban population as far as the number is considered. This is despite the fact that there is rampant migration of rural families to urban centres. Generally, the gains of being a unit of the urban population are less than the disadvantages and risks that are in-built in the urban life. Crime, riots, etc are some of the examples of such risks of urban life. The forces that generate conditions conducive to crime and riots are stronger in urban communities than in rural areas. Urban living is more anonymous living. It often releases the individual from community restraints more common in tradition-oriented societies. But more freedom from constraints and controls also provides greater freedom to deviate. And living in the more impersonalized, formally controlled urban society means that regulatory orders of conduct are often directed by distant bureaucrats. The police are strangers executing these prescriptions on an anonymous set of subjects. Minor offences in small town or village are</p>	<p>D</p>

	<p>often handled without resort to official police action. As disputable as such action may seem to be, it results in fewer recorded violations of the law compared to those in the big cities. Although perhaps causing some decision difficulties for the police in small town, formal and objective law enforcement is not always acceptable to the villagers. Urban area with mass population, greater wealth, more commercial establishments and more products of our technology also provide more frequent opportunities for theft. Victims are impersonalized, property is insured, consumer goods in more abundance are vividly displayed and are more portable. The crime rate increases despite formal moral education given in schools.</p> <p>The author thinks that risks and disadvantages are</p> <ul style="list-style-type: none"> A. outweigh the gains of rural life B. surpassed by the gains of urban life C. almost negligible in rural life D. more than the gains in urban life 	
Q.46	<p>Arrange the given words in a meaningful sequence and thus find the correct answer from alternatives.</p> <p>1. Nation 2. Village 3. City 4. District 5. State</p> <ul style="list-style-type: none"> A. 2,3,4,5,1 B. 2,3,4,1,5 C. 1,3,5,4,2 D. 1,2,3,4,5 	A
Q.47	<p>Arrange the given words in a meaningful sequence and thus find the correct answer from alternatives.</p> <p>1. Probation 2. Interview 3. Selection</p> <p>4. Appointment 5. Advertisement 6. Application</p> <ul style="list-style-type: none"> A. 5,6,3,2,4,1 B. 5,6,4,2,3,1 C. 5,6,2,3,4,1 D. 6,5,4,2,3,1 	C
Q.48	<p>Arrange the given words in a meaningful sequence and</p>	D

	<p>thus find the correct answer from alternatives.</p> <p>1. Police 2. Punishment 3. Crime 4. Judge</p> <p>5. Judgement</p> <p>A. 3,1,2,4,5 B. 1,2,4,3,5 C. 5,4,3,2,1 D. 3,1,4,5,2</p>	
Q.49	<p>In the question below, there is a sentence with jumbled up parts. Rearrange these parts, which are labelled 1, 2, 3 and 4 to produce the correct sentence. Choose the proper sequence.</p> <p>1. The managing director 2. in listening to her 3. was not interested 4. explanation about why profits were lessening.</p> <p>A. 1,2,3,4 B. 1,2,4,3 C. 1,3,2,4 D. 2,3,4,1</p>	C
Q.50	<p>Fill in the blanks with appropriate preposition</p> <p>He comes _____ a family which has a passion _____ playing cricket.</p> <p>A. from, in B. off, for C. of, in D. of, for</p>	D
Q.51	<p>A basic S-R flip-flop can be constructed by cross-coupling which basic logic gates?</p> <p>A. AND or OR gates B. NOR or NAND gates C. AND or NOR gates D. XOR or XNOR gates</p>	B
Q.52	<p>Half-adder is also known as:</p> <p>A. AND circuit B. NOR circuit C. NAND circuit D. EX-OR circuit</p>	D

Q.53	<p>The characteristic equation for J-K flip flop is</p> <p>A. $Q_{n+1} = JQ_n + K$</p> <p>B. $Q_{n+1} = J\bar{Q}_n + \bar{K}Q_n$</p> <p>C. $Q_{n+1} = J\bar{Q}_n \oplus \bar{K}Q_n$</p> <p>D. $Q_{n+1} = J\bar{K} + Q_n$</p>	B
Q.54	<p>Exclusive-OR (XOR) logic gates can be constructed fromlogic gates.</p> <p>A. OR gates only</p> <p>B. AND gates and NOT gates only</p> <p>C. AND gates, OR gates, and NOT gates.</p> <p>D. OR gates and NOT gates only</p>	C
Q.55	<p>To construct a MOD 15 counters, the number of flip flops needed are</p> <p>A. 15</p> <p>B. 10</p> <p>C. 2^{15}</p> <p>D. 4</p>	D
Q.56	<p>Number of the times the instruction sequence below will loop before coming out of loop is</p> <p>MOV AL,00h</p> <p>A1: INC AL</p> <p>A. 00</p> <p>B. 01</p> <p>C. 255</p> <p>D. 256</p>	D
Q.57	<p>How does the microcontroller communicate with the external peripherals/memory?</p> <p>A. via I/O ports</p> <p>B. via register arrays</p> <p>C. via memory</p> <p>D. all of the above</p>	A
Q.58	<p>Which microcontrollers offer the provisional and salient software features of fault handling capability, interrupt vector efficiency and versatile addressing?</p> <p>A. TMS 1000 (4 bit)</p> <p>B. TMS 7500 (8 bit)</p>	D

	<p>C. Intel 8096 (16 bit) D. Intel 80960 (32 bit)</p>	
Q.59	<p>How many bytes of bit addressable memory is present in 8051 based microcontrollers?</p> <p>A. 8 bytes B. 32 bytes C. 16 bytes D. 128 bytes</p>	C
Q.60	<p>Consider 8051 microcontroller, how are the status of the carry, auxiliary carry and parity flag affected if the write instruction:</p> <p>MOV A,#9C ADD A,#64H</p> <p>A. CY=0,AC=0,P=0 B. CY=1,AC=1,P=0 C. CY=0,AC=1,P=0 D. CY=1,AC=1,P=1</p>	B
Q.61	<p>Which of the following register in ARM7 is used to point to the location of currently executing instruction in a program?</p> <p>A. R1 B. R5 C. R15 D. R8</p>	C
Q.62	<p>In the ARM Nomenclature <i>ARMxTDMI</i>, D and M stand for</p> <p>A. Debug and Fast Multiplier units are present B. Division and Multiplier units are present C. Debugger and Multiplier units are not present D. Division and Multiplier units are not present</p>	A
Q.63	<p>Which of the following is TRUE about ARM?</p> <p>I. R13 is traditionally used as the stack pointer and stores the head of the stack in the current processor mode</p> <p>II. R14 is the link register where the core puts the return address on executing a subroutine</p> <p>III. R15 is the program counter and contains the address of the next instruction to be fetched</p>	D

	<p>A. Only I and II are true</p> <p>B. Only II and III are true</p> <p>C. Only I and III are true</p> <p>D. All I, II and III are true</p>	
Q.64	<p>An instruction that is used to move data from an ARM Register to a Status Register (CPSR or SPSR) is called _____.</p> <p>A. MRC</p> <p>B. MRS</p> <p>C. MSR</p> <p>D. MCS</p>	C
Q.65	<p>What are the contents of R1 and R2 after MVNR1 R2 are executed, assume R2 is 0x01010101</p> <p>A. R2 = 0x01010101 and R1 = 0x01010101</p> <p>B. R2 = 0x01010101 and R1 = 0x10101010</p> <p>C. R2 = 0x10101010 and R1 = 0x01011101</p> <p>D. R2 = 0x01100110 and R1 = 0x01010101</p>	B
Q.66	<p>The five items: A, B, C, D, and E are pushed in a stack, one after other starting from A. The stack is popped four items and each element is inserted in a queue. The two elements are deleted from the queue and pushed back on the stack. Now one item is popped from the stack. The popped item is:</p> <p>A. A</p> <p>B. B</p> <p>C. C</p> <p>D. D</p>	D
Q.67	<p>The following three are known to be the preorder, inorder and postorder sequences of a binary tree. But it is not known which is which.</p> <p>MBCAFHPYK</p>	D

	<p>KAMCBYPFH MABCKYFPH Pick the true statement from the following.</p> <p>A. I and II are preorder and inorder sequences, respectively</p> <p>B. I and III are preorder and postorder sequences, respectively</p> <p>C. II is the inorder sequence, but nothing more can be said about the other two sequences</p> <p>D. II and III are the preorder and inorder sequences, respectively</p>											
<p>Q.68</p>	<p>Consider a list of Recursive algorithms and a list of recurrence relations as shown below. Match the following:</p> <table border="1" data-bbox="467 783 1300 1073"> <thead> <tr> <th>List-I (recursive Algorithm)</th> <th>List-II (Recurrence Relation)</th> </tr> </thead> <tbody> <tr> <td>P: Binary Search</td> <td>I: $T(n) = T(n - 1) + T(0) + cn$</td> </tr> <tr> <td>Q: Merge Sort</td> <td>II: $T(n) = 2T(n - 1) + 1$</td> </tr> <tr> <td>R: Quick Sort</td> <td>III: $T(n) = 2T\left(\frac{n}{2}\right) + cn$</td> </tr> <tr> <td>S: Tower of Hanoi</td> <td>IV: $T(n) = T\left(\frac{n}{2}\right) + O(1)$</td> </tr> </tbody> </table> <p>A. P-II, Q-III, R-IV, S-I B. P-IV, Q-III, R-I, S-II C. P-III, Q-II, R-IV, S-I D. P-IV, Q-II, R-I, S-III</p>	List-I (recursive Algorithm)	List-II (Recurrence Relation)	P: Binary Search	I: $T(n) = T(n - 1) + T(0) + cn$	Q: Merge Sort	II: $T(n) = 2T(n - 1) + 1$	R: Quick Sort	III: $T(n) = 2T\left(\frac{n}{2}\right) + cn$	S: Tower of Hanoi	IV: $T(n) = T\left(\frac{n}{2}\right) + O(1)$	<p>B</p>
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<p>Q.69</p>	<p>Suppose we are sorting an array of eight integers using quicksort, and we have just finished the first partitioning with the array looking like this:</p> <p>2 5 1 7 9 12 11 10</p> <p>A. The pivot could be either the 7 or the 9 B. The pivot could be the 7, but it is not the 9 C. The pivot is not the 7, but it could be the 9 D. Neither the 7 nor the 9 is the pivot</p>	<p>A</p>										
<p>Q.70</p>	<p>Which of the sorting algorithm have same best, average and worst-case time complexity?</p> <p>A. Insertion sort B. Bubble sort C. Quick sort D. Merge sort</p>	<p>D</p>										
<p>Q.71</p>	<p>Let $w(n)$ and $A(n)$ denote respectively, the worst case and average case running time of an algorithm executed on an input of size n. which of the following is ALWAYS</p>	<p>C</p>										

	<p>TRUE?</p> <p>A. $A(n) = \Omega(w(n))$ B. $A(n) = \Theta(w(n))$ C. $A(n) = O(w(n))$ D. $A(n) = o(w(n))$</p>	
Q.72	<p>Find the output of the following Python program?</p> <pre>dictionary = {} dictionary[1] = 1 dictionary['1'] = 2 dictionary[1] += 1 sum = 0 for k in dictionary: sum += dictionary[k] print (sum)</pre> <p>A. 1 B. 2 C. 3 D. 4</p>	D
Q.73	<p>Find the output of the following Python program?</p> <pre>i = 0 while i < 3: print(i) i += 1 else: print(0)</pre> <p>A. 0 1 2 3 0 B. 0 1 2 0 C. 0 1 2 D. Error</p>	B
Q.74	<p>What is the main purpose of WoT (Web of Things) in the IoT?</p> <p>A. Improve the usability and interoperability B. Reduce the security C. Complex the development D. Increase the cost</p>	A
Q.75	<p>What is the full form of the MQTT?</p> <p>A. Multi-Queue Telemetry Things B. Multiple Queue Telemetry Things C. Message Queue Telemetry Things D. Message Queue Telemetry Transport</p>	D

Q.76	<p>Which of the following is correct sequence of Cyber Security process cycle?</p> <p>A. Identify Threats, Minimize Risk, identify risks, Identify vulnerabilities.</p> <p>B. Identify Threats, identify risks, identify vulnerabilities, Minimize Risk.</p> <p>C. Minimize Risk, Identify Threats, identify vulnerabilities, identify risks.</p> <p>D. Identify risks, Identify Threats, identify vulnerabilities, Minimize Risk.</p>	D
Q.77	<p>In public key cryptosystem which is kept as public?</p> <p>A. Decryption keys</p> <p>B. Encryption keys</p> <p>C. Both Encryption & Decryption keys</p> <p>D. None of the above</p>	B
Q.78	<p>Which of the following are used to generate a message digest by the network security protocols?</p> <p>P: RSA Q: SHA-1 R: DES S: MD5</p> <p>A. P and R only</p> <p>B. Q and R only</p> <p>C. Q and S only</p> <p>D. R and S Only</p>	C
Q.79	<p>Anarkali digitally signs a message and sends it to Salim. Verification of the signature by Salim requires:</p> <p>A. Anarkali's public key</p> <p>B. Salim's public key</p> <p>C. Salim's private key</p> <p>D. Anarkali's private key</p>	A
Q.80	<p>In a RSA cryptosystem, a participant A uses two prime numbers $p=13$ and $q=11$ to generate his public and private keys. If the public key of A is 37, then the private key of A is _____.</p> <p>A. 18</p> <p>B. 23</p> <p>C. 11</p> <p>D. 13</p>	D

Q.81	CCFP stands for? A. Cyber Certified Forensics Professional B. Certified Cyber Forensics Professional C. Certified Cyber Forensics Program D. Certified Cyber Forensics Product	B
Q.82	Which of the following is a class of computer threat A. Phishing B. Soliciting C. DoS attacks D. Stalking	C
Q.83	A digital signature needs a(n) _____ system A. Symmetric key B. Asymmetric key C. Either A or B D. Neither A nor B	B
Q.84	Netsparker and Burp Suite Professional are examples of: A. Web-focused vulnerability detection tools B. Antimalware C. Web application firewalls D. VPNs	A
Q.85	Web application firewalls (WAFs) help prevent which application layer attack? A. XSS B. SQL injection C. DDoS D. All of the above	D
Q.86	Which application security testing method is considered most costly? A. Static application security testing (SAST) B. Dynamic application security testing (DAST) C. Mobile application security testing (MAST) D. All of the above	B
Q.87	What is the most common buffer overflow attack? A. Heap-based buffer overflow attack B. Stack-based buffer overflow attack C. Integer buffer overflow attack D. Unicode buffer overflow attack	B






Q.88	<p>This is the forging of an e-mail header so that the message appears to have originated from someone or somewhere other than the actual source.</p> <p>A. <u>footprinting</u> B. nonrepudiation C. e-mail spoofing D. finger</p>	C
Q.89	<p>This is a compromised Web site that is being used as an attack launch point in a denial-of-service attack.</p> <p>A. bastion host B. packet monkey C. dongle D. Zombie</p>	D
Q.90	<p>_____ is a special type of vulnerability that doesn't possess risk.</p> <p>A. Vulnerabilities without risk B. Vulnerabilities without attacker C. Vulnerabilities without action D. Vulnerabilities no one knows</p>	A
Q.91	<p>_____ is the timeframe from when the loophole in security was introduced till the time when the bug was fixed.</p> <p>A. Time-frame of vulnerability B. Window of vulnerability C. Time-lap of vulnerability D. Entry-door of vulnerability</p>	B
Q.92	<p>Which of the following are the Cyber crimes?</p> <p>1. Cyber crimes against persons. 2. Cyber crimes against property. 3. Cyber crimes against government. 4. Cyber crimes against animal?</p> <p>A. 1, 2, 3 only B. 2, 3, 4 only C. 1, 3, 4 only D. 2, 3 only</p>	A
Q.93	<p>Information Technology Act in India was amended in _____</p> <p>A. 2000 B. 2004 C. 2008 D. 2010</p>	C

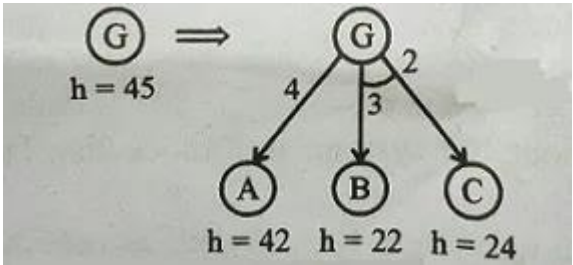
Q.94	Which of the following should be included in the scope of penetration testing? A. DNS server B. Mail server C. Communication links D. All of the above	D
Q.95	Which of the following most closely simulates the actions of a real world attacker/hacker? A. Vulnerability assessment B. Security audit C. Penetration testing D. None of the above	C
Q.96	Which of the following is one of the important documents to be signed before the penetration test to safeguard interest of the concerned parties? A. Legal agreement B. Service level agreement C. Non-disclosure agreement (NDA) D. All of the above	C
Q.97	Which of the following malware types makes kernel-level changes to hide its presence? A. Spyware B. Worm C. Keylogger D. Rootkit	D
Q.98	Which of the following is a small piece of information that is sent from a website to the client system and is retained for further tracking? A. HTTP B. Cookie C. XML D. None of the above	B
Q.99	Audit is a fact-finding process that compare actual results with	A
Q.100	Who among the following can be appointed as auditor of a company? A. A partner or a director of the company	D

	<p>B. A person of unsound mind C. Mr Y who owes Rs 500 to the company D. Mr Z the holder of C.A. certificate</p>	
Q.101	<p>Machine learning is a subset of _____ .</p> <p>A. Deep learning B. Artificial Intelligence C. Data learning D. None of these</p>	B
Q.102	<p>Which of the following is a widely used and effective machine learning algorithm based on the idea of bagging?</p> <p>A. Decision Tree B. Regression C. Classification D. Random Forest</p>	D
Q.103	<p>How do you handle missing or corrupted data in a dataset?</p> <p>A. Drop missing rows or columns B. Replace missing values with mean/median/mode C. Assign a unique category to missing values D. All of the above</p>	D
Q.104	<p>When performing regression or classification, which of the following is the correct way to pre-process the data?</p> <p>A. Normalize the data -> PCA -> training B. PCA -> normalize PCA output -> training C. Normalize the data -> PCA -> normalize PCA output -> training D. None of the above</p>	A
Q.105	<p>Which of the following is NOT supervised learning?</p> <p>A. Naive Bayesian B. Linear Regression C. Decision Tree D. PCA</p>	C
Q.106	<p>Which machine learning models are trained to make a series of decisions based on the rewards and feedback they receive for their actions?</p> <p>A. Supervised learning B. Unsupervised learning C. Reinforcement learning D. All of the above</p>	C
Q.107	<p>Which Language is Best for Machine Learning?</p> <p>A. C</p>	C

	<p>B. JAVA C. Python D. HTML</p>	
Q.108	<p>Data mining is -----</p> <p>A. an extraction of explicit, known and potentially useful knowledge from information. B. a non-trivial extraction of implicit, previously unknown and potentially useful information from data. C. an essential process where intelligent methods are applied to extract data patterns that is also referred to database. D. is an essential process where intelligent methods are applied to extract data that is also referred to data sets.</p>	B
Q.109	<p>The analysis performed to uncover interesting statistical correlations between associated-attribute-value pairs is called?</p> <p>A. Mining of Association B. Mining of Clusters C. Mining of Correlations D. None of the above</p>	C
Q.110	<p>Two fundamental goals of Data Mining are ____</p> <p>A. Analysis and Description B. Data cleaning and organizing the data C. Prediction and Description D. Data cleaning and organizing the data</p>	C
Q.111	<p>The various aspects of data mining methodologies is/are</p> <p>i) Mining various and new kinds of knowledge ii) Mining knowledge in multidimensional space iii) Pattern evaluation and pattern or constraint-guided mining. iv) Handling uncertainty, noise, or incompleteness of data</p> <p>A. i, ii and iv only B. ii, iii and iv only C. i, ii and iii only D. All i, ii, iii and iv</p>	D
Q.112	<p>_____ is the application of data mining techniques to discover patterns from the Web.</p> <p>A. Text Mining. B. Multimedia Mining.</p>	C

	<p>C. Web Mining. D. Link Mining.</p>	
Q.113	<p>Data mining can also applied to other forms such as</p> <p>i) Data streams ii) Sequence data iii) Networked data iv) Text data v) Spatial data</p> <p>A. i, ii, iii and v only B. ii, iii, iv and v only C. i, iii, iv and v only D. All i, ii, iii, iv and v</p>	D
Q.114	<p>KDD (Knowledge Discovery Database) process in data mining is consists of _____ steps.</p> <p>A. 4 B. 5 C. 7 D. 9</p>	D
Q.115	<p>Facebook Tackles Big Data With _____</p> <p>A. Prism B. Prism Data C. Project Prism D. ProjectBid</p>	C
Q.116	<p>_____ has the world's largest Hadoop cluster.</p> <p>A. Google B. LinkedIn C. Facebook D. IBM</p>	C
Q.117	<p>_____ phase sorts the data & _____ creates logical clusters.</p> <p>A. Reduce, YARN B. MAP, YARN C. REDUCE, MAP</p>	D

	D. MAP, REDUCE	
Q.118	<p>___ provides performance through distribution of data and fault tolerance through replication</p> <p>A. HDFS B. PIG C. HIVE D. HADOOP</p>	A
Q.119	<p>Sentiment Analysis is an example of</p> <p>1. Regression 2. Classification 3. clustering 4. Reinforcement Learning</p> <p>A. 1, 2 and 4 B. 1, 2 and 3 C. 1 and 3 D. 1 and 2</p>	A
Q.120	<p>HDFS Stores how much data in each cluster that can be scaled at any time?</p> <p>A. 32 B. 64 C. 128 D. 256</p>	C
Q.121	<p>Consider a 3-puzzle where, like in the usual 8-puzzle game, a tile can only move to an adjacent empty space. Given the initial state as below, which of the following state cannot be reached?</p> <div style="text-align: center;">  </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>(A) </p> </div> <div style="text-align: center;"> <p>(B) </p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>(C) </p> </div> <div style="text-align: center;"> <p>(D) </p> </div> </div> <p>A. A B. B</p>	C

	C. C D. D	
Q.122	The number of nodes in the input layer is 10 and the hidden layer is 5. The maximum number of connections from the input layer to the hidden layer are A. 50 B. Less than 50 C. More than 50 D. It is an arbitrary value	A
Q.123	In a simple MLP model with 8 neurons in the input layer, 5 neurons in the hidden layer and 1 neuron in the output layer. What is the size of the weight matrices between hidden output layer and input hidden layer? A. [1 X 5],[5 X 8] B. [5 x 1],[8 X 5] C. [8 X 5],[5 X 1] D. [8 X 5],[1 X 5]	B
Q.124	Consider the following AO graph. Which is the best node to expand next by AO* algorithm?  <p>The diagram shows an AO* search tree. The root node is G, with a heuristic value $h = 45$. It has three children: A, B, and C. The edge costs are 4 from G to A, 3 from G to B, and 2 from G to C. The heuristic values for the children are $h = 42$ for A, $h = 22$ for B, and $h = 24$ for C.</p>	A
Q.125	What is back propagation? A. It is another name given to the curvy function in the perceptron B. It is the transmission of error back through the network to adjust the inputs C. It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn D. None of the Above	C
Q.126	A software agent is defined as I. A software developed for accomplishing a given task. II. A computer program which is capable of acting on behalf of the user in order to accomplish a given	B

	<p>computational task. III. An open-source software for accomplishing a given task.</p> <p>A. I B. II C. III D. All of the above</p>	
Q.127	<p>Software Configuration Management is the discipline for systematically controlling</p> <p>A. the changes due to the evolution of work products as the project proceeds B. the changes due to defects (bugs) being found and then fixed C. the changes due to requirement changes D. all of the above</p>	D
Q.128	<p>Which of the following is not project management goal?</p> <p>A. Keeping overall costs within budget B. Delivering the software to the customer at the agreed time C. Maintaining a happy and well-functioning development team D. Avoiding customer complaints</p>	D
Q.129	<p>While estimating the cost of software, Lines of code (LOC) and Function points (FP) are used to measure which of the following?</p> <p>A. Length of code B. Size of software C. Functionality of software D. None of the above</p>	B
Q.130	<p>The factors that determine the quality of a software system are</p> <p>A. correctness, reliability B. efficiency, usability, maintainability C. testability, portability, accuracy, error tolerances, expandability, access control, audit D. All of the above</p>	D
Q.131	<p>Foreign key is the one in which the _____ of one relation is referenced in another relation.</p> <p>A. Foreign key B. Primary key C. References</p>	B

	D. Check constraint	
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Q.132	Match the following for methods of MIS development:	B										
<table border="1"> <thead> <tr> <th>Column1</th> <th>Column2</th> </tr> </thead> <tbody> <tr> <td>1. Joint Application Design</td> <td>a. Delivers functionality in rapid iteration measured in weeks and needs frequent communication, development, testing and delivery</td> </tr> <tr> <td>2. Computer Aided Software Engg</td> <td>b. Reusable applications generally with one specific function. It is closely linked with idea of web services and service oriented architecture.</td> </tr> <tr> <td>3. Agile development</td> <td>c. Tools to automate many tasks of SDLC</td> </tr> <tr> <td>4. Component based technology</td> <td>d. A group-based tool for collecting user requirements and creating system design. Mostly used in analysis and design stages of SDLC</td> </tr> </tbody> </table>			Column1	Column2	1. Joint Application Design	a. Delivers functionality in rapid iteration measured in weeks and needs frequent communication, development, testing and delivery	2. Computer Aided Software Engg	b. Reusable applications generally with one specific function. It is closely linked with idea of web services and service oriented architecture.	3. Agile development	c. Tools to automate many tasks of SDLC	4. Component based technology	d. A group-based tool for collecting user requirements and creating system design. Mostly used in analysis and design stages of SDLC
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Q.133	The relationship of data elements in a module is called	c
<p>A. Coupling B. Modularity C. Cohesion D. Granularity</p>		

Q.134	<p>Match the following:</p> <table border="1" data-bbox="443 583 1304 1052"> <thead> <tr> <th>Column1</th> <th>Column2</th> </tr> </thead> <tbody> <tr> <td>1. Good quality</td> <td>i. Program does not fail for a specified time in a given environment'</td> </tr> <tr> <td>2. Correctness</td> <td>ii. Meets the functional requirements</td> </tr> <tr> <td>3. Predictable</td> <td>iii. Meets both functional and non-functional requirements</td> </tr> <tr> <td>4. Reliable</td> <td>iv. Process is under statistical control</td> </tr> </tbody> </table> <p>A. 1-iii, 2-ii, 3-iv, 4-i B. 1-ii, 2-iii, 3-iv, 4-i C. 1-i, 2-ii, 3-iv, 4-iii D. 1-i, 2-ii, 3-iii, 4-iv</p>	Column1	Column2	1. Good quality	i. Program does not fail for a specified time in a given environment'	2. Correctness	ii. Meets the functional requirements	3. Predictable	iii. Meets both functional and non-functional requirements	4. Reliable	iv. Process is under statistical control	B
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Q.135	<p>Which process model is also called as classic life cycle model?</p> <p>A. Waterfall model B. RAD model C. Prototyping model D. Incremental model</p>	A										
Q.136	<p>The Prototyping model of software development is:</p> <p>A. a reasonable approach when requirements are well-defined B. a useful approach when a customer cannot define requirements clearly C. the best approach to use for projects with large</p>	B										

	<p>development teams</p> <p>D. a risky model that rarely produces a meaningful product</p>											
Q.137	<p>Complete each of the following sentences in List-I on the left hand side by filling in the word or phrase from the List-II on the right hand side that best completes the sentence:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">List-I</th> <th style="width: 50%;">List-II</th> </tr> </thead> <tbody> <tr> <td>1. Determining whether you have built the right system is called</td> <td>i. Software testing</td> </tr> <tr> <td>2. Determining whether you have built the system right is called</td> <td>ii. Software verification</td> </tr> <tr> <td>3. is the process of demonstrating the existence of defects or providing confidence that they do not appear to be present.</td> <td>iii. Software debugging</td> </tr> <tr> <td>4. is the process of discovering the cause of a defect and fixing it.</td> <td>iv. Software validation</td> </tr> </tbody> </table> <p>A. 1-ii, 2-iv, 3-I, 4-iii B. 1-ii, 2-iv, 3-iii, 4-i C. 1-iv, 2-ii, 3-iii, 4-i D. 1-iv, 2-ii, 3-I, 4-iii</p>	List-I	List-II	1. Determining whether you have built the right system is called	i. Software testing	2. Determining whether you have built the system right is called	ii. Software verification	3. is the process of demonstrating the existence of defects or providing confidence that they do not appear to be present.	iii. Software debugging	4. is the process of discovering the cause of a defect and fixing it.	iv. Software validation	D
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Q.138	<p>Agile Software Development is based on</p> <p>A. Incremental Development B. Iterative Development C. Waterfall Model D. Both A and B</p>	D										
Q.139	<p>Amongst which of the following is/are the type of agile methodologies,</p> <p>A. Scrum B. FDD C. DSDM D. All of the above</p>	D										
Q.140	<p>Agile software engineering refers,</p> <p>A. A philosophy and a set of development guidelines B. An active and continuous communication between developers and customers</p>	D										

	<p>C. Encourages customer satisfaction D. All of these</p>	
Q.141	<p>The ISO quality assurance standard that applies to software Engineering is</p> <p>A. ISO 9000 : 2004 B. ISO 9001 : 2000 C. ISO 9002 : 2001 D. ISO 9003 : 2004</p>	B
Q.142	<p>Which of the following sets represent five stages defined by Capability Maturity Model (CMM) in increasing order of maturity?</p> <p>A. Initial, Defined, Repeatable, Managed, Optimized B. Initial, Repeatable, Defined, Managed, Optimized C. Initial, Defined, Managed, Repeatable, Optimized D. Initial, Repeatable, Managed, Defined, Optimized</p>	B
Q.143	<p>In case of CRM, what does RF stand for in RFM model?</p> <p>A. Recency Frequency B. Right Field C. Radio Frequency D. Recent Financials</p>	A
Q.144	<p>Which of the following is a correct sequence of steps in CRM process?</p> <p>1. Developing CRM programs 2. Collection of customer data 3. Analyzing customer data 4. Identify the target customers 5. Implementing programs</p> <p>A. 1,2,3,5,4 B. 2,3,4,1,5 C. 2,3,1,5,4 D. 3,4,5,1,2</p>	B
Q.145	<p>Which of the following is NOT a main stage in a customer relationship life cycle?</p> <p>A. Customer acquisition B. Customer development C. Customer satisfaction</p>	D

	D. Customer annoyance	
Q.146	<p>The assessment of the external and internal environments is called _____ analysis</p> <p>A. SWOT analysis B. Competitive C. Industry D. Market</p>	A
Q.147	<p>Which of the following is true for quality Work Breakdown Structures?</p> <p>A. Program/Project Management can occur at any level of the WBS B. Contain at least three levels of decomposition C. Clearly communicates project scope to all stakeholders D. Does not include a WBS Dictionary Correct Answer</p>	C
Q.148	<p>Which foundational project management document includes information on how the final products, services or outcomes of the project will be measured?</p> <p>A. Project Charter B. Preliminary Project Scope Statement C. Product Scope Description D. Work Breakdown Structure</p>	B
Q.149	<p>The serves as the foundation for establishing entrance and exit criteria for the various stages of the project.</p> <p>A. Work Breakdown Structure B. Project Schedule C. Project Charter D. Scope Statement</p>	A
Q.150	<p>According to current PMI standards, Work Breakdown Structures are:</p> <p>A. Task-oriented B. Process-oriented C. Deliverable-oriented D. Time-oriented</p>	C