

CMA-FINAL (PAPER-16)

STRATEGIC COST MANAGEMENT

MCQ (SYLLABUS-2022)

1. Which of the following is not a primary activity of Value Chain?
 - (a) Inbound
 - (b) Logistics Operations
 - (c) Service
 - (d) Infrastructure
2. Which of the following is not a secondary activity of Value Chain?
 - (a) Procurement
 - (b) Human Resource Development
 - (c) Service
 - (d) Technology Development
3. Which of the following is not a term normally used in value analysis?
 - (a) Resale value
 - (b) Use value
 - (c) Esteem value
 - (d) Cost value
4. A company has forecast sales and cost of goods sold for the coming year as ₹25 lakhs and ₹18 lakhs respectively. The inventory turnover has been taken as 9 times per year. In case the inventory turnover increases to 12 times and the short-term interest rate on working capital is taken as 10%, what will be the saving in cost?
 - (a) ₹ 10,000
 - (b) ₹ 20,000
 - (c) ₹ 15,000
 - (d) ₹ 5,000
5. Which of the following important pillars of Strategic Cost Management determines the company's comparative position in the industry in terms of performance?
 - (a) Cost Driver Analysis
 - (b) Value Chain Analysis
 - (c) Strategic Positioning Analysis
 - (d) Competitive Value Analysis



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6. _____ is defined as the real and permanent reduction in the unit costs of goods manufactured or services rendered without impairing their suitability for the use intended.
- (a) Cost control
 - (b) Cost reduction
 - (c) Cost measurement
 - (d) Cost strategy
7. There are three core areas to consider when developing the supply chain strategy and business case. These are:
- (a) People, Process & Systems
 - (b) Control, Process & Systems
 - (c) People, Planning & Systems
 - (d) Control, Money & Systems
8. TQM stands for:
- (a) Technical Quantitative Management
 - (b) Total Quality Management
 - (c) Theory of Queuing Management
 - (d) None of the Above
9. Four Ps of Total Quality Management:
- (a) Principles, Project, Problem, & Process
 - (b) People, Process, Problem & Preparation
 - (c) Product identification, Product quality, Product utility & Product expectation
 - (d) None of the Above
10. PRAISE stands for:
- (a) Appreciating someone
 - (b) Product, Recognition, Adoption, Invention, Solution & Evaporation
 - (c) Problem Identification, Ranking, Analysis, Innovation, Solution & Evaluation
 - (d) None of the Above
11. DMIADV is a methodology associated with:
- (a) Pareto Analysis
 - (b) PRAISE
 - (c) Six Sigma
 - (d) None of the Above



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12. Pareto analysis recognizes:
- (a) 80:20 Rule
 - (b) 50:50 Rule
 - (c) 20:80 Rule
 - (d) None of the Above
13. Cost of Rework is a cost related to:
- (a) Internal failure
 - (b) Appraisal
 - (c) Prevention
 - (d) None of the Above
14. The cost incurred to ensure that failures do not happen:
- (a) External failure cost
 - (b) Internal failure cost
 - (c) Prevention cost
 - (d) None of the Above
15. The break-even point of a manufacturing company is ₹1,60,000. Fixed cost is ₹48,000. Variable cost is ₹12 per unit. The PV ratio will be:
- (a) 20%
 - (b) 40%
 - (c) 30%
 - (d) 25%
16. The higher the actual hours worked:
- (a) The lower the capacity usage ratio
 - (b) The higher the capacity usage ratio
 - (c) The lower the capacity utilization ratio
 - (d) The higher the capacity utilization ratio
17. XYZ Ltd. has the following alternative planned activity levels: Total cost (₹): 1,00,000; (Level E) 1,50,000; (Level F) 2,00,000 (Level G). No. of units produced: 5,000 (Level E); 10,000 (Level F); 15,000 (Level G). If fixed overhead remains constant, then fixed overhead cost per unit at Level E is:
- (a) ₹20
 - (b) ₹15
 - (c) ₹13.33
 - (d) ₹10

18. T Ltd. produces and sells a product. The company expects the following revenues and costs in 2024: Revenues (400 sets sold @ ₹600 per product) = ₹ 2,40,000; Variable costs = ₹ 1,60,000; Fixed costs = ₹ 50,000; What amount of sales must T Ltd. have to earn a target net income of ₹63,000 if they have a tax rate of 30%?
- (a) ₹ 4,20,000
(b) ₹ 4,29,000
(c) ₹ 3,00,000
(d) ₹ 4,89,000
19. Excel Products Ltd. manufactures four products e.g. Product E, Product F, Product G and Product H using same raw materials. The input requirements for Products E, F, G and H are 1kg, 2kgs, 5kgs and 7kgs, respectively. Product-wise Selling Price and Variable Cost data are given here under: Selling Price of Products E, F, G & H are ₹100, ₹150, ₹200 & ₹300 respectively and variable costs are ₹ 50, ₹ 70, and ₹ 100 & ₹ 125 respectively. Assuming raw material availability is a limiting factor, the correct ranking of the products would be:
- (a) E, F, G & H
(b) E, F, H & G
(c) F, E, G & H
(d) F, E, H & G
20. A company has a breakeven point when sales are ₹ 3,20,000 and variable cost at that level of sales are ₹ 2,00,000. How much would p/v ratio increase or decrease if variable expenses are dropped by ₹30,000?
- (a) Increase by 27.5%
(b) Increase by 9.375%
(c) Decrease by 9.375%
(d) Increase by 37.5%
21. The Tech Company has fixed costs of ₹400,000 and variable costs are 75% of the selling price. To realize profits of ₹100,000 from sales of 5,00,000 units, the selling price per unit
- (a) must be ₹1.00
(b) must be ₹4.80
(c) must be ₹4.00
(d) cannot be determined

22. A company makes components and sells internally to its subsidiary and also to external market. The external market price is ₹ 24 per component, which gives a contribution of 40% of sales. For external sales, variable costs include ₹1.50 per unit for distribution costs. This is, however not incurred in internal sales. There are no capacity constraints. To maximize company profit, the transfer price to subsidiary should be:
- (a) ₹ 9.60
 - (b) ₹ 12.90
 - (c) ₹ 14.40
 - (d) None of these
23. H Group has two divisions, Division P and Division Q. Division P manufactures an item that is transferred to Division Q. The item has no external market and 6000 units produced are transferred internally each year. The costs of each division: Variable Cost: ₹100 per unit & ₹120 per unit for Division P & Q respectively. Fixed cost each year: ₹1,20,000 & ₹ 90,000 for Division P & Q respectively. Head Office management decided that a transfer price should be set that provides a profit of ₹ 30,000 to Division P. What should be the transfer price per unit?
- (a) ₹ 145
 - (b) ₹ 125
 - (c) ₹ 120
 - (d) ₹ 135
24. A particular job required 800 kgs of material – P. 500 kgs. of the particular material is currently in stock. The original price of the material – P was ₹300 but current resale value of the same has been determined as ₹200. If the current replacement price of the material – P is ₹0.80 per kg., the relevant cost of the material – P required for the job would be:
- (a) ₹ 640
 - (b) ₹ 440
 - (c) ₹ 300
 - (d) None of these
25. What is the opportunity cost of making a component part in a factory given no alternative use of the capacity?
- (a) The variable manufacturing cost of the component
 - (b) The total manufacturing cost of the component
 - (c) The total variable cost of the component
 - (d) Zero

26. If project A has a net present value (NPV) of ₹30, 00,000 and project B has an NPV of ₹50, 00,000, what is the opportunity cost if project B is selected?
- ₹ 23,00,000
 - ₹ 30,00,000
 - ₹ 20,00,000
 - ₹ 50,00,000
27. X Ltd. has 1000 units of an obsolete item which are carried in inventory at the original price of ₹50,000. If these items are reworked for ₹ 20,000, they can be sold for ₹ 36,000. Alternatively, they can be sold as a scrap for ₹ 6,000 in the market. In a decision model used to analyse the reworking proposal, the opportunity cost should be taken as:
- ₹ 16,000
 - ₹ 6,000
 - ₹ 30,000
 - ₹ 20,000
28. The shadow price of skilled labour for SD Ltd. is currently ₹10 per hour. What does this mean?
- The cost of obtaining additional skilled labour is ₹ 10 per hour
 - There is a hidden cost of ₹10 for each hour of skilled labour actively worked
 - Contribution will be increased by ₹10 per hour for each extra hour of skilled labour that can be obtained
 - The total costs will be reduced by ₹10 for each additional hour of skilled labour that can be obtained.
29. A factory can make only one of the three products X, Y or Z in a given production period. The selling price per unit of Product X, Y & Z is ₹1, 500, ₹1,800 & ₹2,000 respectively and variable cost per unit is ₹700, ₹950 & ₹1,000 respectively. Assume that there is no constraint on resource utilization or demand and similar resources are consumed by X, Y and Z. The opportunity cost of making one unit of Z is:
- ₹ 850
 - ₹ 800
 - ₹ 1,800
 - ₹ 1,500

30. A company has 2000 units of an obsolete item which are carried in inventory at the original purchase price of ₹ 30,000. If these items are reworked for ₹10,000, they can be sold for ₹ 18,000. Alternatively, they can be sold as scrap for ₹3,000 in the market. In a decision model used to analyse the reworking proposal, the opportunity cost should be taken as:
- ₹ 8,000
 - ₹ 12,000
 - ₹ 3,000
 - ₹ 10,000
31. TM Company can make 100 units of a necessary component part with the following costs:
 Direct Materials - ₹60,000
 Direct Labour - ₹10,000
 Variable Overhead - ₹30,000
 Fixed Overhead - ₹20,000
 TM Company can purchase the component externally for ₹1,10,000 and only ₹5,000 of the fixed costs can be avoided, what is the correct make-or buy decision?
- Make and save ₹5000
 - Buy and save ₹5,000
 - Make and save ₹15,000
 - Buy and save ₹15,000
32. AP Products sells product A at a selling price of ₹40 per unit. AP's cost per unit based on the full capacity of 5,00,000 units is as follows
 Direct Materials - ₹6
 Direct Labour - ₹3
 Indirect Manufacturing Expense 60% of which is fixed - ₹10
 A one-time only special order offering to buy 50,000 units was received from an overseas distributor. The only other costs that would be incurred on this order would be ₹ 4 per unit for shipping. AP has sufficient existing capacity to manufacture the additional units. In negotiating a price for the special order, AP should consider that the minimum selling price per unit should be:
- ₹ 17
 - ₹ 19
 - ₹ 21
 - ₹ 23



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33. In cost plus pricing, the markup consists of
- (a) Manufacturing cost
 - (b) Desired ROI
 - (c) Selling and administrative cost
 - (d) Total cost and desired ROI
34. MN paid ₹5,30,000 for a machine used to powder wheat. The machine can be sold for ₹1,30,000. The sale value of wheat is ₹ 8,00,000 and its variable cost is ₹4,00,000. The opportunity cost of producing wheat flour is
- (a) ₹5,30,000
 - (b) ₹1,30,000
 - (c) ₹3,50,000
 - (d) ₹ 8,00,000
35. A Ltd. Plans to introduce a new product and issuing the target cost approach. Projected sales revenue is ₹ 90,00,000 (₹45 per unit) and target costs are ₹ 64,00,000. What is the desired profit per unit?
- (a) ₹ 13
 - (b) ₹ 17
 - (c) ₹ 32
 - (d) ₹ 10
36. Target costing is the answer to:
- (a) Market driven prices
 - (b) Sellers' market
 - (c) No Profit situation
 - (d) None of the above
37. The product of XYZ Company is sold at a fixed price of ₹ 1,500 per unit. As per company's estimate, 500 units of the product are expected to be sold in the coming year. If the value of investments of the company is ₹ 15 lakhs and it has a target ROI of 15%, the target cost would be:
- (a) ₹ 930
 - (b) ₹ 950
 - (c) ₹ 1050
 - (d) ₹ 1130

38. A company has the capacity of producing 80000 units and presently sells 20000 units at ₹ 100 each. The demand is sensitive to selling price and it has been observed that with every reduction of ₹ 10 in selling price the demand is doubled. What should be the target cost if the demand is doubled at full capacity and profit margin on sale is taken at 25%?
- (a) ₹75
(b) ₹90
(c) ₹25
(d) ₹60
39. 120 units of semi-conductors are required to be sold to earn a profit of ₹1,00,000 in a monopoly market. The fixed cost for the period is ₹80,000. The contribution in the monopoly market is as high as 3/4th of its variable cost. Determine the target selling price per unit
- (a) ₹4500
(b) ₹3250
(c) ₹4000
(d) ₹3500
40. Cost Driver is:
- (a) Grouping of costs on a particular activity which drives them
(b) Item for which cost measurement is required.
(c) Elements that would cause a change in the cost activity
(d) All of the above
41. ABC Management:
- (a) Accurately identifies sources of profit and loss
(b) Assigns costs using measure of service consumed
(c) Recognizes the casual relationship of cost drivers to activities
(d) All of the above
42. Process of Cost allocation under Activity Based Costing is:
- (a) Cost of Activities → Activities → Cost Driver → Cost allocated to cost objects
(b) Cost Driver → Cost of Activities → Cost allocated to cost objects → Activities
(c) Activities → Cost of Activities → Cost Driver → Cost allocated to cost objects
(d) Activities → Cost Driver → Cost allocated to cost objects → Cost of Activities

43. P operates an activity-based costing (ABC) system to attribute its overhead costs to cost objects. In its budget for the year ending 31st March 2022, the company expected to place a total of 2,895 purchase orders at a total cost of ₹1,10,010. This activity and its related costs were budgeted to occur at a constant rate throughout the budget year, which is divided into 13 four week periods. During the four-week period ended 30 June 2021, a total of 210 purchase orders were placed at a cost of ₹ 7,650. The over- recovery of these costs for the four-week period was:
- ₹330
 - ₹350
 - ₹370
 - ₹390
44. At KL Company, cost of personnel department has always been charged to production department based upon number of employees. Recently, opinion gathered from the department managers indicate that number of new hires might be better predictor of personnel cost, Total personnel department cost are ₹2,00,000.
- | Department | A | B | C |
|-------------------------|----|-----|-----|
| Number of employees | 30 | 270 | 100 |
| The number of new hires | 8 | 12 | 5 |
- If number of new hires is considered the cost driver, what amount of cost will be allocated to Department A?
- ₹ 15,000
 - ₹ 64,000
 - ₹ 72,000
 - ₹ 40,000
45. Which of the following is not suitable for a JIT production system?
- Batch production
 - Jobbing production
 - Process production
 - Service production
46. JIT relates to:
- Time Management
 - Inventory and product handling
 - Delivery systems
 - None of the above

47. Glasco, a manufacturer of large windows, is experiencing a bottleneck in its plant. Setup time at one of its workstations has been identified as the culprit. A manager has proposed a plan to reduce setup time at a cost of ₹ 7,20,000. The change will result in 800 additional windows. The selling price per window is ₹ 18,000, direct labour costs are ₹ 3000 per window, and the cost of direct materials is ₹ 7,000 per window. Assume all units produced can be sold. The change will result in an increase in the throughput contribution of
- ₹ 64,00,000
 - ₹ 88,00,000
 - ₹ 56,80,000
 - ₹ 10,44,000
48. Cost per unit under throughput accounting and marginal costing are mainly different because:
- Labour is not considered in throughput accounting
 - Direct labour is considered fixed in throughput accounting
 - Total cost is considered in throughput accounting
 - Variable cost is considered in marginal costing
49. Ankit Ltd. operates throughput accounting system. The details of product A per unit are as under:
- | | |
|------------------------------|--------------|
| Selling Price | : ₹ 75 |
| Materials Cost | : ₹ 30 |
| Conversion Cost | : ₹ 20 |
| Time to bottleneck resources | : 10 minutes |
- What is the throughput contribution per bottleneck resource per hour?
- ₹ 270
 - ₹ 150
 - ₹ 120
 - ₹ 90
50. Producing more non-bottleneck output:
- Creates more inventory, but does not increase throughput contribution
 - Creates more inventory and increases throughput contribution
 - Creates less pressure for the bottleneck workstations
 - Allows for the maximization of overall contribution



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51. Twin Ltd. uses JIT and back flush accounting. It does not use a raw material stock control account. During September 2023, 10000 units were produced and sold. The standard cost per unit is ₹ 150 which includes materials of ₹ 60. During September 2023, ₹ 9,90,000 of conversion costs was incurred. The debit balance in cost of goods sold account for September 2023 is:
- (a) ₹ 14,00,000
 - (b) ₹ 14,80,000
 - (c) ₹ 15,90,000
 - (d) ₹ 16,20,000
52. The companies that would benefit from back-flush costing include companies:
- (a) Which have fast manufacturing lead time
 - (b) Whose inventory vary from period to period
 - (c) Companies that require audit trails
 - (d) None of these
53. Bench marking is:
- (a) A continuous process
 - (b) The practice of setting targets using external information
 - (c) Method to provide performance assessment
 - (d) All of the above
54. Kanban Japanese System under JIT approach ensures that:
- (a) Continuous supply of inventory or product
 - (b) Minimum & maximum level of stock to be maintained
 - (c) Inventory valuation
 - (d) All of the above
55. The information relating to the direct material cost of a company is as follows:
- | | |
|--|--------------|
| Standard price per unit | : ₹ 7.20 |
| Actual quantity purchased in units | : 1600 units |
| Standard quantity allowed for actual production in units | : 1450 units |
| Material price variance on purchase (Favourable) | : ₹ 480 |
- What is the actual purchase price per unit?
- (a) ₹ 7.50
 - (b) ₹ 6.40
 - (c) ₹ 6.5
 - (d) ₹ 6.90

56. In a factory where standard costing system is followed, the production department consumed 1100 kgs of a material @ ₹ 8 per kg for product X resulting in Material Price Variance of ₹ 2200 (Fav) and Material Usage Variance of ₹ 1000 (Adv). What is the standard material cost of actual production of product X?
- (a) 11,000
(b) 20,000
(c) 14,000
(d) 10,000
57. AB Ltd. uses standard cost system. The following information pertains to direct labour for Product X for the month of March, 2024: Standard rate per hour = ₹ 8, Actual rate per hour = ₹ 8.40, Standard hours allowed for actual production = 2000 hours, Labour Efficiency Variance = ₹ 1,600 (Adverse). What were the Actual Hours Worked?
- (a) 1,800
(b) 1,810
(c) 2,200
(d) 2,190
58. Aderholt uses activity-based costing to allocate its overheads. The budgeted cost/ expected for the Supervisor cost pool was: Budgeted units: 5,000, Number of employees: 75, Budgeted Cost: ₹ 7,500. The actual costs incurred were: Actual Units: 5,500, Actual Employees: 77, Actual costs: ₹ 8,085. What was the Total Variance for the Pool?
- (a) ₹ 585 Adverse
(b) ₹ 165 Favourable
(c) ₹ 5550 Favourable
(d) ₹ 385 Adverse
59. The following figures are extracted from the books of a company:
- | | |
|----------------|--|
| Budgeted O/H | ₹ 10,000 (Fixed ₹ 6,000, Variable ₹ 4,000) |
| Budgeted Hours | 2000 |
| Actual O/H | ₹ 10,400 (Fixed ₹ 6,100, Variable ₹ 4,300) |
| Actual Hours | 2100 |
- Variable O/H cost variance and Fixed O/H cost variance will be:
- (a) 100 (A) and 200 (A)
(b) 100 (F) and 200 (F)
(c) 100 (A) and 200 (F)
(d) 200 (A) and 100 (F)

60. A company uses standard absorbing costing. The following information is recorded by the company for October: Budgeted - Output and sales: 8,700; Selling Price per unit: ₹26; Variable Cost per unit: ₹10; Total Fixed Overheads: ₹ 34800; Actuals - Output and sales: 8,200; Selling Price per unit: ₹31; Variable Cost per unit: ₹10; Total Fixed Overheads: ₹37000; The sales price variance for October was:
- (a) 38,500 (A)
 - (b) 38,500 (F)
 - (c) 41,000 (A)
 - (d) 41,000 (F)
61. Which of the following may be the cause of Material Price Variance?
- (a) Change in quantity of purchase or uneconomical size of purchase order
 - (b) Failure to take advantage of offseason price or failure to purchase when price is cheaper
 - (c) Change in basic purchase price of material
 - (d) All of the above
62. Variance analysis involves breaking down and analysing the total variance to explain
- (a) How much of the variance is caused by using the resources that are different from the standards, i.e., the quantity variance
 - (b) How much of the variance is caused by using the cost of the resources being different from the standards, i.e., the rate variance
 - (c) All of the Above
 - (d) None of the above
63. standard costing system consists of the following key elements:
- (a) Setting standards for each of the operations
 - (b) Comparing the actual performance with the standard performance
 - (c) Analyzing and reporting variances arising from the difference between actual and standard performance
 - (d) All of the Above

64. Which of the following statements is correct?
- (a) Standard costing facilitates the integration of accounts so that reconciliation between cost accounts and financial accounts may be eliminated
 - (b) Standard costs are planned costs determined on a scientific basis and they are based upon certain assumed conditions of efficiency and other factors
 - (c) Standard costing is defined as the preparation and use of standard cost, their comparison with actual cost and the measurement and analysis of variances to their cause and points of incidence
 - (d) All of the Above
65. Which of the following statements is true?
- (a) If the actual cost is more than the standard, we call it adverse variance and if the difference is less than the standard, we call it favourable variance.
 - (b) In case of sales and profit, if the standard is more than actual, it is adverse variance and if the standard is less than the actual, it is favourable variance
 - (c) Both (1) and (2)
 - (d) None of these
66. Standard cost and budgeted cost are:
- (a) Interrelated but not interdependent
 - (b) Interdependent but not interrelated
 - (c) Interrelated and interdependent
 - (d) None of these
67. Efficiency Ratio is:
- (a) $\text{Available working days} \div \text{Budgeted working days} \times 100$
 - (b) $\text{Budgeted hours} \div \text{Maximum hours in budgeted period} \times 100$
 - (c) $\text{Standard hours} \div \text{Actual hours} \times 100$
 - (d) None of these
68. Uniform Costing may not be successfully applied in the following case:
- (a) In a single enterprise having a number of branches, each of which manufactures the same set of products with the same facilities
 - (b) In a number of entities in the same industry bound by a trade association
 - (c) In a number of units across different geographical locations manufacturing one or more of a given set of products
 - (d) In different branches of the same company, each branch making a different product using a unique process

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69. A constraint in an L.P. Model restricts:
- (a) Value of the Objective Function
 - (b) Values of the Decision Variables
 - (c) Use of the available resources
 - (d) All the above
70. A feasible solution of LPP –
- (a) Must satisfy all the constraints simultaneously
 - (b) Need not satisfy all the constraints, only some of them.
 - (c) Must be a corner point of the feasible region
 - (d) All the above.
71. The Objective Function of a LPP is $Z = 3x_1 + 2x_2$. If $x_1 = 10$ and $x_2 = 5$ then the value of Z is
- (a) 35
 - (b) 40
 - (c) 45
 - (d) 50
72. Multiple solution exists in a Linear Programming problem when –
- (a) One of the constraints is redundant
 - (b) Objective Function is parallel to one of the constraints
 - (c) Two constraints are parallel
 - (d) All of the above
73. The linear function of the variables which is to be optimized is called –
- (a) Constraints
 - (b) Objective Function
 - (c) Decision variables
 - (d) None of the above
74. If the value of the Objective Function can be increased or decreased indefinitely then the solution is called –
- (a) Unbounded
 - (b) Bounded
 - (c) Infeasible
 - (d) None of the above
75. The best use of Linear Programming is to find the optimal use of –
- (a) Manpower
 - (b) Material
 - (c) Money
 - (d) All of the above



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76. Which of the following is assumption of Linear Programming Model?
- (a) Divisibility
 - (b) Proportionality
 - (c) Additively
 - (d) All of the above
77. Which of the following considers difference between least cost and the cost just before least for each row and column while finding Basic Feasible Solution in Transportation?
- (a) North West Corner Method
 - (b) Least Cost Method
 - (c) Vogel's Approximation Method
 - (d) Both (b) and (c) above
78. When the total allocation of a Transportation Problem match with supply and demand values, the solution is –
- (a) Non-degenerate
 - (b) Feasible
 - (c) Degenerate
 - (d) None of the above
79. The solution to a Transportation Problem with 'm' sources and 'n' destinations is feasible if the number of cell allocations are –
- (a) $m + n$
 - (b) mn
 - (c) $m - n - 1$
 - (d) $m + n - 1$
80. To resolve Degeneracy in the solution of a Transportation Problem an infinitely small allocation is made to the solution already obtained. This allocation is known as –
- (a) Dummy
 - (b) Epsilon
 - (c) ϵ – the Greek letter
 - (d) All of the above except (a)

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81. Which of the following is not correct with respect to Transportation as a tool of Quantitative Technique?
- (a) Transportation technique is a special case of LP.
 - (b) Transportation technique might give rise to solutions which are degenerate.
 - (c) No Transportation problem can be given with supply $\neq$ demand
 - (d) Using Transportation technique one can maximize an Objective Function.
82. Which of the following method is used to test optimality of a solution in Transportation?
- (a) Modified Distribution
 - (b) Simplex
 - (c) VAM
 - (d) LCM
83. In a solution of Transportation problem, empty cells are called –
- (a) Unoccupied cells
 - (b) Unallocated cells
 - (c) Empty cells
 - (d) All of the above
84. The Transportation Problem deals with the transportation of –
- (a) Single product from a source to several destinations
 - (b) Several products from a source to a destination.
 - (c) Single product from several sources to a destination.
 - (d) Single product from several sources to several destinations.
85. Which of the following methods is used to solve the Assignment problems?
- (a) Stepping Stone Method
 - (b) Hungarian Method
 - (c) North West Corner Method
 - (d) Vogel's Approximation Method
86. Assignment of work to men and machines is known as:
- (a) Scheduling
 - (b) Loading
 - (c) Balancing of Line
 - (d) None of these

-
87. In an Assignment matrix of size (5×5) , the total number of decision variables in the objective function is –
- (a) 10
 - (b) 5
 - (c) 25
 - (d) 15
88. An Assignment problem is solved to minimise the total time required to complete three jobs on three different machines such that each job is processed by exactly one machine and each machine processes exactly one job. The minimum total processing time is found to be 480 minutes. After a few days of operation, there has been a change in the design of the second job. Due to this, the processing time of the second job is increased by 15 minutes in either of the machines. The revised minimum total processing time will be –
- (a) 495 minutes
 - (b) 465 minutes
 - (c) 480 minutes
 - (d) None of these
89. Assignment problem can be considered as a particular case of -
- (a) Transportation problem
 - (b) Sequencing problem
 - (c) Queuing problem
 - (d) All of these
90. Dummy row or column is added in an assignment problem –
- (a) To prevent a solution to become degenerate
 - (b) To reduce the total cost of assignment
 - (c) To increase the profit function
 - (d) To balance total activities and total resources
91. While solving an assignment problem, an activity is assigned to a resource with zero opportunity cost because objective is to –
- (a) Reduce total cost of assignment to zero
 - (b) Reduce cost of that assignment to zero
 - (c) Minimise total cost of assignment
 - (d) Maximise total cost of assignment

92. In an assignment problem –
- (a) First activity is assigned to first resource
 - (b) Any number of activities can be assigned to each resource
 - (c) It depends on how many resources are available
 - (d) Only one activity be assigned to each resource
93. An assignment problem can be viewed as a special case of transportation problem in which the capacity from each source is ____ and the demand at each destination is ____.
- (a) Unlimited, unlimited
 - (b) One, unlimited
 - (c) One, one
 - (d) Unlimited, one
94. In marking assignments which of the following should be preferred?
- (a) Only row having single zero
 - (b) Only column having single zero
 - (c) Column having more than one zero
 - (d) Only row / column having single zero
95. The assignment matrix is always a ____
- (a) Rectangular matrix
 - (b) Identity matrix
 - (c) Square matrix
 - (d) None of these
96. Maximisation assignment problem is transformed into a minimisation problem by ____
- (a) Adding each entry of a column to the maximum value of that column
 - (b) Subtracting each entry in a column from maximum value in that column
 - (c) Subtracting each entry of the table from the maximum value of the table
 - (d) Adding each entry of the table to the maximum value in the table
97. In the Hungarian Method of solving Assignment problem, the row reduction is obtained by
- (a) Dividing each row by the elements of the row above it
 - (b) Subtracting the elements of the row from the elements of the row above it
 - (c) Subtracting the smallest element from all other elements of the row
 - (d) Subtracting all the elements of the row from the highest element in the matrix

-
98. The horizontal and vertical lines drawn to cover all zeros of the total opportunity matrix for an optimal solution must be –
- (a) Equal to $m \times n$, where m = No. of rows & n = No. of columns
 - (b) Equal to each other
 - (c) Equal to $m + n$, where m = No. of rows & n = No. of columns
 - (d) Equal to the Order of the matrix
99. The similarity between Assignment Problem and Transportation Problem is –
- (a) Both are rectangular matrices
 - (b) Both are square matrices
 - (c) Both can be solved by graphical method
 - (d) Both have objective function and non-negativity constraints
100. When we try to solve the Assignment problem by Transportation algorithm the following difficulty arises
- (a) There will be a tie while making allocations
 - (b) The problem will get alternate solution
 - (c) The problem degenerates and we have to use epsilon to solve degeneracy
 - (d) The Assignment problem cannot be solved by Transportation algorithm
101. The following character dictates that the Assignment matrix is a square one:
- (a) The allocations in Assignment problem are one to one
 - (b) Because we find row opportunity cost matrix
 - (c) Because we find column opportunity cost matrix
 - (d) Because after making allocations, horizontal and vertical lines are to be drawn
102. An Assignment problem can be solved by –
- (a) Simplex method
 - (b) Transportation method
 - (c) Both (1) and (2)
 - (d) None of the above
103. If there are n jobs and n workers, there would be –
- (a) $n!$ solutions
 - (b) $(n - 1)!$ solutions
 - (c) $(n!).n$ solutions
 - (d) n solutions

-
104. The Assignment problem:
- (a) Requires that only one activity be assigned to each resource
 - (b) Is a special case of Transportation problem
 - (c) Can be used to maximise the resources
 - (d) All of the above
105. To proceed with the MODI algorithm for solving an assignment problem, the number of dummy allocations need to be added are –
- (a) n
 - (b) $n - 1$
 - (c) $2n$
 - (d) $2n - 1$
106. The procedure used to solve Assignment problems wherein one reduces the original assignment costs to a table of opportunity costs is called _____
- (a) Stepping Stone Method
 - (b) Matrix Reduction
 - (c) MODI Method
 - (d) Northwest Reduction
107. When a maximisation assignment problem is converted to minimisation problem, the resultant matrix is called:
- (a) Cost matrix
 - (b) Profit matrix
 - (c) Regret matrix
 - (d) Dummy matrix
108. Two-person zero sum game means that:
- (a) The sum of losses of one player is equal to the sum of the gains of the other
 - (b) The sum of losses of one player may not be equal to the sum of the gains of the other
 - (c) No player gains or loses
 - (d) None of the above
109. Game theory models are classified by the:
- (a) Number of players
 - (b) Sum of all payoffs
 - (c) Number of strategies
 - (d) All of these

-
110. A game is said to be unfair if
- (a) Upper and lower values of the game are not equal
 - (b) Upper and lower values of the game are equal and the sum is zero
 - (c) of the game are equal and the sum is zero Both option (a) and option (b)
 - (d) None of the above
111. What happens when the maximin and minimax values of the game are equal?
- (a) No solution exists
 - (b) Solution is mixed
 - (c) Saddle point exists
 - (d) Saddle point exists
112. A mixed strategy game can be solved by:
- (a) Arithmetic method
 - (b) Graphical method
 - (c) Dominance method
 - (d) All of these
113. The size of the payoff matrix of a game can be reduced by using the principle of
- (a) Game inversion
 - (b) Rotation reduction
 - (c) Dominance
 - (d) Game transpose
114. The payoff value for which each player in a game always selects the same strategy is called the:
- (a) Saddle point
 - (b) Equilibrium point
 - (c) Both option (a) and option (b)
 - (d) None of the above
115. Games which involve more than two players are called
- (a) Conflicting games
 - (b) Negotiable games
 - (c) N person game
 - (d) All of these



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116. Which of the following is first step for performing Simulation analysis?
- (a) Choose input variables
 - (b) Create entities for the simulation process
 - (c) Prepare a problem statement
 - (d) Determine the output variables.
117. Which of the following are the advantages of using Modeling and Simulation?
- (a) Easy to understand.
 - (b) Easy to test
 - (c) Easy to upgrade
 - (d) All of the above.
118. Which one of the following is not an application area of Modeling and Simulation?
- (a) Military application
 - (b) Designing semiconductors
 - (c) Telecommunications
 - (d) Food industry
119. Which of the following is the first step for developing the Simulation Model?
- (a) Design the problem
 - (b) Identify the problem
 - (c) Collect and start processing the system data
 - (d) Develop the model using Network diagram.
120. Simulation is the process of using a model to study the performance of a system.
- (a) Agreeable
 - (b) Not agreeable
 - (c) Partly agreeable
 - (d) Cannot comment
121. Disadvantage of using Modelling and Simulation lies in the statement –
- (a) Simulation requires manpower and it is a time consuming process.
 - (b) Simulation results are difficult to translate and only experts can understand it.
 - (c) Simulation is an expensive process.
 - (d) All of the above

122. Monte Carlo Simulation gets its name from which of the following?
- Data collection
 - Model formulation
 - Random number assignment
 - Analysis
123. Select the valid reasons for using Simulation
- Relationship between the variables is nonlinear
 - Optimized solutions are obtained.
 - Conduct experiment without disrupting the real system
 - Both (a) and (c)
124. The drive-up window of a fast-food centre was being studied using simulation for a variety of operating characteristics. As part of the study data was collected on Customer Arrivals as given in the following table. Using expected value calculations determine the expected time between customer arrivals.
- | | | | | | | | |
|------------------------------|------|------|------|------|------|------|------|
| Inter arrival time (Minutes) | 0.5 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 |
| Probability | 0.10 | 0.25 | 0.20 | 0.30 | 0.05 | 0.05 | 0.05 |
- 2.35 minutes
 - 2.00 minutes
 - 2.70 minutes
 - 1.65 minutes
125. Critical Activities have:
- Maximum float
 - Minimum float
 - Zero float
 - Negative float
126. In PERT Chart, the Activity time distribution is -
- Normal
 - Binomial
 - Poisson
 - Beta
127. A PERT Network has nine activities on its Critical Path. The Standard Deviation of each activity on the Critical Path is 3. The S. D of the Critical Path is -
- 3
 - 9
 - 81
 - 27

128. For an activity the pessimistic, most likely and optimistic times are respectively 10, 6 and 2 days. The expected duration of the activity is –
- 6 days
 - 3 days
 - 2 days
 - 9 days
129. The time by which the activity completion time can be delayed without affecting the start of the succeeding activities is known as –
- Total float
 - Free float
 - Independent float
 - Head slack
130. Which of the following statement is not true?
- PERT is deterministic in nature
 - CPM is probabilistic in nature.
 - PERT Network cannot be crashed.
 - All of the above
131. Following data refers to a project Network. What will be the Critical Path?
- | | |
|----------|---|
| Activity | 1 – 2, 2 – 3, 3 – 4, 1 – 4, 2 – 5, 3 – 5, 4 – 5 |
| Duration | 2 Days, 1 Day, 3 Days, 3 Days, 3 Days, 2 Days, 4 Days |
- 1 – 2 – 3 – 5
 - 1 – 2 – 3 – 4 – 5
 - 1 – 4 – 5
 - 1 – 4 – 3 – 5
132. The amount of time by which an activity can be delayed without affecting the project completion is called –
- Free float
 - Total float
 - Interfering float
 - None of the above
133. Optimistic time and pessimistic time of an activity are respectively 4 days and 16 days. Variance of the duration of the activity will be –
- 4 days
 - 2 days
 - 3 days
 - None of the above

134. In a project planning free float can affect which of the following?
- (a) Succeeding activity
 - (b) Only that activity
 - (c) Preceding activity
 - (d) All of the above
135. Solution of problems of Crashing has to be started by applying the technique on –
- (a) Any activity of the Network
 - (b) Non critical activities
 - (c) Critical activities.
 - (d) None of the above.
136. A PERT activity has an optimistic time of 3 days, pessimistic time of 15 days and an expected time of 7 days. What is the most likely time of the activity?
- (a) 10 days
 - (b) 6 days
 - (c) 5 days
 - (d) None of the above
137. The reduction in project time normally results in –
- (a) Decrease in Direct Cost and increase in Indirect Cost
 - (b) Increase in Direct Cost and decrease in Indirect Cost
 - (c) Increase in both Direct and Indirect Costs.
 - (d) Decrease in both Direct and Indirect Costs.
138. The Normal duration and Normal cost of an activity are 10 days and ₹350 respectively. The cost slope is ₹75 per day. If the Crash duration is 8 days then what is the Crash cost of the activity?
- (a) ₹400/-
 - (b) ₹500/-
 - (c) ₹600/-
 - (d) ₹650/-
139. Which of the following is incorrect?
- (a) PERT is suitable for projects having probabilistic time estimates.
 - (b) CPM is suitable for projects having deterministic activities.
 - (c) Both PERT and CPM are event oriented.
 - (d) PERT is event oriented while CPM is activity oriented



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140. The activity that must be completed prior to the start of an activity is called
- (a) Dummy activity
 - (b) Successor activity
 - (c) Concurrent activity
 - (d) Predecessor activity
141. The slack times of Tail and Head events of Activity P are 10 days and 4 days respectively. If the Free float of the Activity P is 12 days, then the Total Float would be –
- (a) 8 days
 - (b) 16 days
 - (c) 22 days
 - (d) none of the above
142. Which of the following represents reduction in project duration?
- (a) Crashing
 - (b) Negative slack
 - (c) Variance
 - (d) All of the above
143. Critical Path Method is good for –
- (a) Small projects only
 - (b) Large projects only
 - (c) Both small and large projects equally
 - (d) Neither small nor large projects
144. The optimum duration is the –
- (a) Summation of normal durations of each activity of the project
 - (b) Summation of normal durations of activities in the Critical Path
 - (c) One which gives the minimum Total Cost for the completion of the project.
 - (d) Summation of crash durations of activities in the Critical Path.
145. Which of the following is not a notable challenge while scheduling a project?
- (a) Deadlines exist
 - (b) Independent activities
 - (c) Too many workers may be required
 - (d) Costly delay

-
146. A critical path is –
- (a) The shortest path
 - (b) The longest path
 - (c) The path that begins from the start node and ends at the last node
 - (d) All of the above
147. Activities A, D and F merge at the event 6. If the earliest finish times of A, D and F are respectively 13, 17 and 8 then the earliest time of Event 6 is –
- (a) 8
 - (b) 13
 - (c) 17
 - (d) Cannot be determined from the given information.
148. A Learning Curve describes:
- (a) The increase in number of units produced per unit time as the total number of units produced increases
 - (b) The rate at which an organisation acquires new information.
 - (c) The amount of production time per unit as the total number of units produced increases.
 - (d) The increase in production time as the total number of units produced increases.
149. Limitations of the Learning Curve approach include –
- (a) Learning Curves must be redeveloped whenever the product or the production process is modified
 - (b) Learning Curves are applicable when considering a highly automated process
 - (c) Learning Curves are only valid when considering simple production process.
 - (d) Learning Curves are only valid when the total number of units produced is relatively small.
150. Which of the following statements about Learning Curve is incorrect?
- (a) A change in the process disrupts the Learning Curve.
 - (b) The rate of learning varies depending on the quality of management
 - (c) The Learning Curve can be disrupted by the change in personnel.
 - (d) Learning Curves show that the time saved in completing each subsequent unit increases

151. Which of the following is not an application of Learning Curve?
- Learning Curves allow a manager to predict the time required for new employee orientation on company policies and procedures.
 - Learning Curves permit a manager to prepare a work schedule.
 - Learning Curves allow a manager to forecast the labour requirements while preparing a departmental employee budget
 - Learning Curves can be employed in supply chain negotiations.
152. Bimal and Kamal are the two industrial workers engaged in doing a similar job. They have different learning rates of 80% and 90% respectively. Times taken to complete their first jobs are respectively 12 and 8 hour If both continue with the same learning rate then after how many units Bimal will be faster than Kamal?
- 5th unit
 - 7th unit
 - 11th unit
 - 19th unit
153. How long will it take to produce the fifth unit with 85% learning rate, if the third unit took 13 hours?
- 10.3 hours
 - 10.0 hours
 - 11.4 hours
 - 11.5 hours
154. When 24 hours is required to produce a condenser of a particular type then the time required to produce the 16th unit with 85% Learning Curve is –
- Between 9 and 10 hours
 - s Between 12 and 14 hours
 - Between 15 and 17 hours
 - Between 18 and 20 hours
155. A diesel engine manufacturing company has an order of 4 large engines. A crew of 16 members took 4000 hours to assemble the first engine. If 80% Learning Curve is used then what will be the labour cost of the fourth engine, assuming average labour rate to be ₹180 per hour?
- Between ₹4 to 4.5 Lakhs
 - Between ₹3.5 to 4 Lakhs
 - Between ₹3 to 3.5 Lakhs
 - Between ₹4.5 to 5 Lakhs

-
156. Optimization is the method of finding:
- (a) The maximum point
 - (b) The minimum point
 - (c) The critical point
 - (d) All of the above
157. Choose the correct answer:
- (a) Optimization problems should have only one objective function
 - (b) Constraint functions are compulsory for any optimization problem
 - (c) Objective function must be a continuous function
 - (d) None of the above
158. The process of finding relative maximum or minimum of a function is known as:
- (a) Optimization
 - (b) Maximization
 - (c) Minimization
 - (d) Any of these
159. For a Cost Function $TC = 3Q^2 + 7Q + 12$, MC is –
- (a) $6Q$
 - (b) $6Q + 7$
 - (c) $3Q + 12$
 - (d) None of the above
160. MR is
- (a) First order derivative of TC
 - (b) Second order derivative of TR
 - (c) First order derivative of TR
 - (d) Second order derivative of TC
161. In the expression $D = AC - B^2$ used for describing the sufficient conditions for unconstrained optimization involving two variables (x and t), the meaning of A and C are –
- (a) 2nd order partial derivative of the objective function (f) with respect to x and y respectively.
 - (b) 2nd order partial derivative of $\partial f / \partial x$ with respect to y
 - (c) Both (a) and (b)
 - (d) none of the above

162. A price discriminating Monopolist Firm operates in –
 (a) Such a Market where it is the sole supplier.
 (b) More than one Market
 (c) Markets where it sells same product but in different prices.
 (d) All of the above.
163. For a dual plant Monopolist Firm with respective production costs C_1 & C_2 in the two plants, the necessary condition of equilibrium is:
 (a) $MC_1 = MC_2 \neq MR$
 (b) $MC = MR$
 (c) $MC_1 = MC_2 = MR$
 (d) $MC_1 = MR_1$ & $MC_2 = MR_2$
164. In Exponential Smoothing Method which one of the following is true?
 (a) $0 \leq \alpha \leq 1$ and high value of α is used for stable demand.
 (b) $0 \leq \alpha \leq 1$ and high value of α is used for unstable demand.
 (c) $\alpha \geq 1$ and high value of α is used for stable demand.
 (d) $\alpha \leq 0$ and high value of α is used for unstable demand.
165. Which of the following is not a Casual Forecasting Method?
 (a) Trend adjusted Exponential Smoothing
 (b) Econometric models
 (c) Linear Regression
 (d) Multiple Regression
166. In a Time Series forecasting model, the demands for five time periods are 10, 13, 15, 18 and 22. A linear regression fit resulted in the equation $y = 6.9 + 2.9t$, where y is the forecast for the period t . The sum of the absolute deviations for the five data with respect to their corresponding forecasts (taking $t = 1$ for the first one) is;
 (a) 2.3
 (b) 0.2
 (c) 1
 (d) 2.2
167. Which of the following is not a Forecasting Technique?
 (a) Trend line estimate
 (b) Delphi Method
 (c) Hungarian Method
 (d) Judgmental technique

168. In Simple Exponential Smoothing forecast, to give higher weightage to recent demand information, the smoothing constant must be close to –
- (a) -1
 - (b) 0
 - (c) 0.5
 - (d) 1
169. A linear Trend equation has the form –
- (a) $F = a - bt$
 - (b) $F = a + bt$
 - (c) $F = 2a - b$
 - (d) $F = 2a + bt$
170. The actual demand for a period is 100 units. But forecast demand was 90 units. The forecast error is –
- (a) - 10
 - (b) 10
 - (c) ₹ 5
 - (d) None of the above
171. If the estimate of the Trend Component is 158.2, the estimate of Seasonal Component is 94%, the estimate of the Cyclical Component is 105% and the estimate of the Irregular Component is 98%, then the multiplicative model will produce a forecast of –
- (a) 1.53
 - (b) 1.53%
 - (c) 153.02
 - (d) 15,30,20,532
172. Which of the following is not true for forecasting?
- (a) Forecasts are rarely perfect
 - (b) The underlying casual system will remain same in the future.
 - (c) Forecast for group of items is accurate than individual item
 - (d) Short range forecasts are less accurate than long range forecasts
173. Delphi Method is used for –
- (a) Judgmental forecast
 - (b) Time Series forecast
 - (c) Associative model
 - (d) All of the above

-
174. Tableau is a –
- (a) Business Intelligence Tool
 - (b) Visualisation Tool
 - (c) Both (a) and (b)
 - (d) None of the above
175. Which of the following statement is correct?
- (a) Functioning of ETL Tool is same as that of ELT Tool.
 - (b) For Data Analytics the purpose of ETL Tool is same as that of ELT Tool
 - (c) Both (a) and (b)
 - (d) None of the above
176. Which of the following statement is incorrect?
- (a) Microsoft Excel is most popular among all the available spreadsheets.
 - (b) Zoho Analytics is a tool used for Financial Data analysis.
 - (c) Visualisation Tools are the Reporting Tools.
 - (d) None of the above
177. Prescriptive Analytics is very important because –
- (a) It tells about the action to be taken.
 - (b) It tells about what is likely to happen
 - (c) It tells about how something has happened
 - (d) It tells about what has happened.
178. Which of the following has no relation to Business Intelligence?
- (a) A set of business analytics solutions to retrieve, analyse and transform data into useful business sights
 - (b) Visualisation Tools are primarily BI Tools.
 - (c) ABS Glue is a tool used for the purpose of Business Intelligence.
 - (d) Embedded Analytics is an important part of any Business Intelligence tool.
179. Which of the following is related to Financial Data Analytics?
- (a) Value driver analytics
 - (b) Financial ratio analytics
 - (c) Predictive sales analysis
 - (d) All the above
180. Analysis of a dataset has revealed the fact that profit of a business has reduced for the financial year 2021-22. What category of data analytics it comes under?
- (a) Descriptive Analytics
 - (b) Predictive Analytics
 - (c) Diagnostic Analytics
 - (d) Prescriptive Analytics



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181. #Script Ends – is related to which type of programming language?
- (a) R Programming
 - (b) SAS
 - (c) Python
 - (d) SPSS
182. Which one of the following is a Key feature of SAS language?
- (a) Capability of handling data analysis related to Operations Research and Project Management.
 - (b) Capability of report formation with perfect graphs.
 - (c) Capability to interact with multiple host systems
 - (d) All the above
183. Which one of the following is not a spreadsheet?
- (a) Google Sheets
 - (b) MS Excel
 - (c) E-views
 - (d) Quip

ANSWERS

1	(D)	48	(B)	95	(C)	142	(A)
2	(C)	49	(A)	96	(C)	143	(B)
3	(A)	50	(A)	97	(C)	144	(C)
4	(D)	51	(C)	98	(D)	145	(B)
5	(C)	52	(A)	99	(D)	146	(B)
6	(C)	53	(D)	100	(C)	147	(C)
7	(A)	54	(A)	101	(A)	148	(C)
8	(B)	55	(D)	102	(C)	149	(B)
9	(B)	56	(D)	103	(A)	150	(D)
10	(C)	57	(C)	104	(D)	151	(D)
11	(C)	58	(B)	105	(B)	152	(C)
12	(A)	59	(B)	106	(B)	153	(D)
13	(A)	60	(D)	107	(B)	154	(B)
14	(C)	61	(D)	108	(A)	155	(D)
15	(C)	62	(C)	109	(D)	156	(D)
16	(D)	63	(D)	110	(A)	157	(A)
17	(D)	64	(D)	111	(C)	158	(A)
18	(A)	65	(C)	112	(D)	159	(B)
19	(B)	66	(A)	113	(C)	160	(C)
20	(B)	67	(C)	114	(A)	161	(A)
21	(C)	68	(D)	115	(C)	162	(D)
22	(B)	69	(D)	116	(C)	163	(D)
23	(B)	70	(A)	117	(D)	164	(B)
24	(B)	71	(B)	118	(D)	165	(B)
25	(D)	72	(B)	119	(B)	166	(A)
26	(B)	73	(B)	120	(A)	167	(D)
27	(B)	74	(A)	121	(D)	168	(D)
28	(C)	75	(D)	122	(C)	169	(B)
29	(A)	76	(D)	123	(D)	170	(B)
30	(C)	77	(C)	124	(A)	171	(C)
31	(A)	78	(D)	125	(C)	172	(D)
32	(A)	79	(D)	126	(D)	173	(A)
33	(B)	80	(C)	127	(B)	174	(C)
34	(B)	81	(A)	128	(A)	175	(B)
35	(A)	82	(D)	129	(B)	176	(D)
36	(A)	83	(D)	130	(D)	177	(A)
37	(C)	84	(B)	131	(B)	178	(C)
38	(D)	85	(B)	132	(B)	179	(D)
39	(D)	86	(C)	133	(A)	180	(A)
40	(C)	87	(A)	134	(C)	181	(C)
41	(D)	88	(A)	135	(C)	182	(D)
42	(C)	89	(D)	136	(B)	183	(C)
43	(A)	90	(C)	137	(B)		
44	(B)	91	(C)	138	(B)		
45	(A)	92	(D)	139	(C)		
46	(B)	93	(B)	140	(D)		
47	(B)	94	(D)	141	(B)		