

ESE-2019 PRELIMS TEST SERIES

Date: 20th October, 2018

GS PAPER-I (TEST-03) OBJECTIVE SOLUTION... 

ANSWERS

1. (d)	18. (d)	35. (c)	52. (d)	69. (d)	86. (a)
2. (a)	19. (d)	36. (d)	53. (d)	70. (d)	87. (b)
3. (d)	20. (d)	37. (d)	54. (a)	71. (d)	88. (a)
4. (b)	21. (d)	38. (c)	55. (c)	72. (b)	89. (d)
5. (d)	22. (c)	39. (c)	56. (a)	73. (c)	90. (d)
6. (d)	23. (d)	40. (c)	57. (c)	74. (c)	91. (b)
7. (c)	24. (c)	41. (b)	58. (d)	75. (b)	92. (a)
8. (b)	25. (b)	42. (b)	59. (a)	76. (d)	93. (a)
9. (b)	26. (d)	43. (d)	60. (a)	77. (a)	94. (d)
10. (c)	27. (b)	44. (c)	61. (a)	78. (b)	95. (a)
11. (b)	28. (d)	45. (c)	62. (b)	79. (b)	96. (b)
12. (b)	29. (c)	46. (c)	63. (d)	80. (a)	97. (d)
13. (a)	30. (d)	47. (b)	64. (c)	81. (a)	98. (a)
14. (d)	31. (c)	48. (d)	65. (b)	82. (c)	99. (d)
15. (a)	32. (d)	49. (b)	66. (d)	83. (b)	100. (c)
16. (c)	33. (d)	50. (c)	67. (b)	84. (a)	
17. (c)	34. (a)	51. (b)	68. (d)	85. (a)	

2. (a)
FSSAI works under ministry of nearest & family welfare.

3. (d)
Quality is not absolute, it is a relative term.

4. (b)
Quality is conformance to specification limits.

7. (c)
Quality assurance is proactive.

16. (c)

$$\text{value} = \frac{\text{function}}{\text{cost}} = \frac{F}{c}$$

$$\text{New value} = \frac{F}{0.8c} = 1.25 \frac{F}{c}$$

53. (d)

Reliability of the system

$$\begin{aligned} &= 1 - (1 - R_B R_C) (1 - R_A) \\ &= 1 - (1 - 0.8 \times 0.7) (1 - 0.9) \\ &= 1 - 0.44 \times 0.1 = 0.956 \end{aligned}$$

54. (a)

$$\begin{aligned} \text{Labour productivity} &= \frac{90,000}{15} \\ &= \text{Rs } 6000 \text{ per hour of work} \end{aligned}$$

55. (c)

$$\begin{aligned} \text{EOQ} &= \sqrt{\frac{2DC_0}{C_c}} \\ &= \sqrt{\frac{2 \times 8000 \times 40}{4}} = 400 \end{aligned}$$

57. (c)

$$\begin{aligned} \text{Fine efficiency} &= \frac{T_{wc}}{n \times T_c} \times 100 \\ &= \frac{48}{6 \times 10} \times 100 = 80\% \end{aligned}$$

59. (a)

$$\text{EOQ} = \sqrt{\frac{2 \times 8000 \times 40}{1}} = 800$$

$$\therefore \text{Optimum no. of orders} = \frac{D}{\text{EOQ}} = \frac{8000}{800} = 10$$

60. (a)

$$\text{EOQ} = \sqrt{\frac{2DC_0}{C_c}}$$

$$\begin{aligned} \text{EOQ}' &= \sqrt{\frac{2D \times 8C_0}{2C_c}} = \sqrt{\frac{2DC_0}{C_c} \times 4} \\ &= \text{EOQ} \times 2 \end{aligned}$$

69. (d)

Assuming $N \gg n$,

$$\text{AOQ} = p_0 \times p_a = 0.008 \times 0.6 = 0.0072$$

70. (d)

To ensure no production of scrap

$$\text{LCL} = 52.5\text{mm} = \mu - 3\sigma$$

$$\Rightarrow \mu = 52.5 + 3\sigma = 52.5 + 3 \times 1 = 55.5\text{mm}$$

72. (b)

Reliability of the system = $0.9 \times 0.9 \times 0.9$

$$= 0.729$$

74. (c)

$$L(x) = 8500 (X - T)^2$$

Here, $T = 5.00\text{cm}$, $X = 5.40\text{cm}$

$$\begin{aligned} \therefore L(x) &= 8500 \times (5.4 - 5)^2 \\ &= 8500 \times 0.4^2 = 1360 \end{aligned}$$

75. (b)

The system capacity will be determined by the machine having least capacity.

So, the system capacity = 100

\therefore Expected output = 92% \times system capacity

$$= 0.92 \times 100 = 92$$

77. (a)

Overall equipment effectiveness

OEE = Availability \times performance \times Quality

$$= 0.75 \times 0.8 \times 0.7$$

$$= 0.42$$

83. (b)

\bar{X} - chart

$$\text{UCL} = \bar{\bar{X}} + \frac{3\sigma}{\sqrt{n}}$$

$$\bar{X} = \frac{\sum \bar{X}}{N} = \frac{300}{15} = 20$$

$$\therefore \text{UCL} = 20 + \frac{3 \times 0.08}{\sqrt{4}} = 20.12$$

R-Chart

$$\text{UCL} = D_u \bar{R} \text{ and } \bar{R} = \frac{\sum R}{N} = \frac{6}{15} = 0.4$$

$$\therefore \text{UCL} = 2.25 \times 0.4 = 0.9$$

84. (a)

At EOQ, annual carrying cost = annual ordering cost

$$\Rightarrow 3000 = 1500 \times n$$

where n = no. of orders

$$\Rightarrow n = 2 \text{ i.e. annually there will be two orders.}$$

So, EOQ will be equal to six months of sales.

85. (a)

At EOQ, annual ordering cost = annual holding cost

So,

$$\frac{\text{annual ordering cost}}{\text{annual ordering cost} + \text{annual holding cost}} = \frac{1}{2}$$

88. (*)

$$\begin{aligned} \text{Balance delay} &= 100 \text{ since efficiency} \\ &= 100 - 84 = 16\% \end{aligned}$$