

Section	Question Type		Number of questions	Marks	Question numbers
A	I	MCQ/Choose the correct answer	05/05	05/05	01 to 05
	II	Fill in the blanks	05/05	05/05	06 to 10
	III	Match the following	05/05	05/05	11 to 15
	IV	VSA: Very Short Answer	05/05	05/05	16 to 20
B	V	SA : Short Answer	05/08	10/16	21 to 28
C	VI	LA : Long Answer	04/08	20/40	29 to 36
	VII	LA : Long Answer	02/04	10/20	37 to 40
D	VIII	ET : Essay Type	02/03	20/30	41 to 43
Total			33/43	80/126	

Unit/Chapter		No. of hours	Marks	Remember				Understand				Application				HOTS				Total			
				OA	SA	LA	ET	OA	SA	LA	ET	OA	SA	LA	ET	OA	SA	LA	ET	OA	SA	LA	ET
Revision		05	-	(1)	(2)	(5)	(10)	(1)	(2)	(5)	(10)	(1)	(2)	(5)	(10)	(1)	(2)	(5)	(10)	(1)	(2)	(5)	(10)
I	Vital Statistics	10	13	1	-	-	1	1	-	-	-	1	-	-	-	-	-	-	-	3	-	-	1
II	Index Numbers	15	18	1	-	1	1	1	-	-	-	1	-	-	-	-	-	-	-	3	-	1	1
III	Time Series	12	13	1	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	1	1	-	1
IV	Interpolation & Extrapolation	08	07	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	1	-
V	Theoretical Distributions	22	23	1	1	1	-	2	1	-	-	1	-	1	-	-	-	1	-	4	2	3	-
VI	Statistical Inference	20	23	1	1	-	-	1	1	1	-	1	-	1	-	1	-	1	-	4	2	3	-
VII	Statistical Quality Control	08	08	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1	1	-
VIII	Operations Research	20	21	2	1	1	-	1	-	1	-	1	-	-	-	-	--	1	-	4	1	3	-
Total		120	126	8	5	3	2	6	3	4	1	5	0	2	0	1	0	3	0	20	8	12	3
Total Marks				8	10	15	20	6	6	20	10	5	0	10	0	1	0	15	0	20	16	60	30
Grand Total Marks				53				42				15				16				126			
Percentage				42				33				12				13				100			

II PUC MODEL QUESTION PAPER 2023-24

STATISTICS (31)

Duration: 3 Hrs 15 Min.

Max. Marks: 80

- Instructions:**
1. Statistical table and graph sheets will be supplied on request.
 2. Scientific calculators are allowed.
 3. All working steps should be clearly shown.
 4. Only the first written answers will be considered for Section-A.

SECTION – A

I. Choose the correct answer from the choices given:

5 × 1 = 5

1. The expected number of years that a new born baby would live is called
a) Cohort b) Radix c) Longevity d) Survival ratio
2. The prices of items increased by 10% in 2012 as compared to 2010. Then the index number for the year 2010 is
a) 110 b) 10 c) 100 d) 0

3. Following is the probability distribution of a binomial variate:

X	0	1	2	3	4
P(X)	0.0625	0.25	0.375	0.25	0.0625

The mode of the distribution is

- a) 4 b) 2 c) 3 d) 1
4. There are four possible decisions under the testing of null hypothesis (H_0):
i) Accept H_0 when it is true
ii) Reject H_0 when it is not true
iii) Accept H_0 when it is not true
iv) Reject H_0 when it is true
The correct decisions are
a) i and ii b) iii and iv c) i and iii d) ii and iv
 5. The cost associated with the maintenance of an inventory until they are sold or used is called
a) Capital cost b) Setup cost c) Shortage cost d) Holding cost.

II. Fill in the blanks by choosing the appropriate word from those given in the brackets:

(Chance, Fisher's, Balanced, Parameter, Strategy, Bell)

5 × 1 = 5

6. Both time reversal test and factor reversal tests are satisfied by _____ index number.
7. The t-curve is _____ shaped.
8. A statistical constant of the population is called a _____.
9. A small amount of variation for which no specific cause can be attributed is termed as _____ cause of variation.
10. The _____ of a player is the pre-determined rule by which a player determines his course of action.

III. Match the following: **$5 \times 1 = 5$** **A**

11. N.R.R. per woman = 1.2
12. Index numbers
13. The range of Bernoulli distribution
14. $H_1: \mu > 50$
15. Shortages are allowed

B

- (a) Inventory Model II
- (b) $X = 0, 1$
- (c) Population increases
- (d) Economic barometers
- (e) $H_0: \mu = 50$
- (f) Histogram

IV. Answer the following questions: **$5 \times 1 = 5$**

16. Define fertility.
17. Which variation of time series is predictable?
18. Write the relation between mean and variance of a Bernoulli distribution.
19. Define null hypothesis.
20. When is a transportation problem balanced?

SECTION – B**V. Answer any FIVE of the following questions:** **$5 \times 2 = 10$**

21. Diagrammatically represent 'Business Cycle' with stages.
22. Write two assumptions of interpolation and extrapolation.
23. Find the mean of a Hyper geometric distribution whose parameters are $a = 4$, $b = 6$ & $n = 5$.
24. Find the standard deviation of a chi-square distribution with 8 d.f.
25. A random sample of size 36 is drawn from a population whose standard deviation is 4. Compute standard error of the sample mean.
26. Define 'point estimation' and 'interval estimation'.
27. If $P' = 0.02$ and $n = 25$, calculate upper control limit for np-chart.
28. Test whether solution for the following T.P. is non-degenerate?

	10		12	
2		3		
		15		20
		4		6
				14
				7

SECTION – C**VI. Answer any FOUR of the following questions:** **$4 \times 5 = 20$**

29. Calculate the cost of living index number for the following data. Comment on the result.

Items	Prices (Rs.)		Weights
	2012	2018	
Food	4000	6000	15
Clothing	2500	3500	08
Housing	6000	9000	12
Fuel	1000	1500	10
Others	1600	2000	15

30. Following is data regarding annual life insurance premium. Using binomial expansion method estimate the premium at the age 30 and 45 years.

Age (in Years)	20	25	30	35	40	45
Premium (in Rs.)	1426	1581	-	1996	2256	-

31. The probability that a team winning the game is $\frac{3}{5}$. If this team participates in 6 games, then find the probability that it wins in i) all the games ii) more than one game.
32. Fit a Poisson distribution for the following data.

Number of mistakes per page	0	1	2	3	4 and more
Number of pages	20	45	30	5	0

33. Test whether there is any significant difference in the population proportions at 5% level of significance, from the following data.

	Size	Proportion
Sample I	100	0.02
Sample II	200	0.01

34. From the following 2×2 contingency table test whether result depends on family condition of the students are independent. (Use 1% L.O.S.)

		Family condition	
		Good	Bad
Result	Pass	10	15
	Fail	15	10

35. Solve the following game using the principle of dominance. Is the game fair?

		Player – B		
		B ₁	B ₂	B ₃
Player – A	A ₁	4	-1	2
	A ₂	0	3	
	A ₃	-5	1	

36. The purchase price of a machine A is Rs. 5000. Its resale value and maintenance costs are as follows:

Year	1	2	3	4	5
Maintenance cost (Rs.)	100	200	330	510	860
Resale value (Rs.)	3000	2500	2000	1500	1000

What would be the optimum replacement period?

VII. Answer any TWO of the following questions:

2×5 = 10

37. Height of a group of candidates who attended the Agniveer army selection camp follows normal distribution with mean and S.D of height of candidates is 160cm and 3.9cm respectively. The minimum required height for Agniveer army selection is 165cm. Show that only 10% of the above group is eligible.
38. A machine is designed so as to fill the bottles with mean 1litre of cold pressed ground nut oil. A sample of 26 bottles when measured had a mean content of 998 ml. with S.D. of 5 ml. Test at 5% level of significance whether the machine is functioning properly.
39. Following table gives mean ($\bar{x}$) and Range (R) of samples of size 5 each.

Sub group number	1	2	3	4	5	6
Mean ($\bar{x}$)	52	49	53	48	51	47
Range (R)	9	11	10	12	8	10

Find the control limits for drawing $\bar{x}$ - chart.

40. F1 and F2 are two types of foods are used to get minimum supplements of vitamins B and C. Using graphical method for the following Linear Programming Problem model, find how much quantities of foods are needed to optimize the cost:

$$\text{Minimize } Z = 10x + 5y$$

$$\text{Subject to } 2x + 3y \geq 12$$

$$2x + y \geq 8$$

$$\text{and } x \geq 0, y \geq 0$$

OR

(For Visually challenged students only)

There are two types of foods F1 and F2 each containing different proportions of vitamins B and C. Food F1 contains 2 units of vitamin B and 2 units of vitamin C. Food F2 contains 3 units of vitamin B and 1 unit of vitamin C. The minimum daily requirement of vitamins B and C for a person is 12 and 8 units respectively. One unit of food F1 costs Rs.10 and one unit of food F2 costs Rs. 5. Formulate the L.P.P. to optimize the expenditure.

SECTION – D

VIII. Answer any TWO of the following questions:

2×10 = 20

41. Calculate the standardized death rates for both Localities A and B from the following data. State which locality is healthier?

Age-group (in years)	Locality - A		Locality - B		Standard Population
	Population	Deaths	Population	Deaths	
0 – 10	6,000	60	7,000	84	4,000
10 – 20	10,000	80	15,000	90	16,000
20 – 60	20,000	240	25,000	250	18,000
60 & above	4,000	120	3,000	120	2,000

42. Calculate the Laspeyre's, Paasche's and Dorbish- Bowley's price index numbers from the following data.

Items	Base Year		Current Year	
	Price (in Rs)	Quantity	Price (in Rs)	Quantity
Rice	50	10	60	08
Wheat	40	08	45	12
Dhal	100	03	160	02
Oil	80	02	120	03

43. a) Following data shows the sales figures of a company. Mention the trend by calculating three yearly moving averages.

Year	2010	2011	2012	2013	2014	2015	2016
Sales (in thousand Rs.)	120	104	130	126	145	131	132

- b) Following are the figures of production (in thousand quintals) of a sugar factory. Fit a straight line trend of the type $Y = a + b x$ to this data.

Year	2016	2017	2018	2019	2020	2021	2022
Production	80	90	92	83	94	99	92

- ಸೂಚನೆ: 1. ಸಾಂಖ್ಯಿಕ ಕೋಷ್ಟಕ ಮತ್ತು ಅಲೇಖ ಕಾಗದಗಳನ್ನು ಕೇಳಿದಾಗ ನೀಡಲಾಗುವುದು.
2. ವೈಜ್ಞಾನಿಕ ಕ್ಯಾಲ್ಕುಲೇಟರ್‌ಗಳನ್ನು ಬಳಸಬಹುದು.
3. ಕಾರ್ಯದ ಎಲ್ಲಾ ಹಂತಗಳನ್ನು ಸ್ಪಷ್ಟವಾಗಿ ತೋರಿಸಬೇಕು.
4. A - ವಿಭಾಗದಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳಿಗೆ ಪ್ರಥಮವಾಗಿ ಬರೆದ ಉತ್ತರಗಳನ್ನು ಮಾತ್ರ ಪರಿಗಣಿಸಲಾಗುವುದು.

ವಿಭಾಗ - A

I. ಸರಿಯಾದ ಉತ್ತರವನ್ನು ಆಯ್ಕೆಮಾಡಿ ಬರೆಯಿರಿ:

5 × 1 = 5

1. $E^a e^{\Delta v} 2^{\pm \Delta} \ll E \propto j^{\Delta} Qv f^{\Delta} \ll v^a \Phi Ai^{\Delta} E^{\Delta} \underline{\hspace{1cm}} JAz^{\Delta} PgAi^{\Delta \Delta} a^g \Delta$.
a) vAq b) $D\Phi, ^a \Delta E^{\circ}$ c) $\Phi \Delta W^{\Delta} \Delta Ai^{\Delta \Delta} \mu^{\Delta}$ d) $\S z^{\Delta} \Delta P^{\Delta} \Delta \frac{1}{2} Ai^{\Delta \Delta} a^{\Delta} \text{ ¥} \Delta i^{\Delta} t$
2. $2010P^{\Delta} \circ \Delta E^{\Delta} \circ 1z^{\Delta} U 2012g^{\circ} a^{\Delta} \Delta U^{\Delta} \frac{1}{4} \text{ --- } U^{\Delta} \frac{1}{4} \Delta \pm Rq^{\Delta} 10g\mu^{\Delta} \circ z^{\Delta} v^a. \circ \Delta U^{\Delta} z^g 2010g \Delta E z^{\Delta} \Delta Pz \text{ ---}$
a) 110 b) 10 c) 100 d) 0
3. $MAz^{\Delta} \Phi \text{ ¥ } z Z^{\Delta} Pz \Delta A^{\Delta} a^{\Delta} \ll vguAi^{\Delta \Delta}$

X	0	1	2	3	4
P(X)	0.0625	0.25	0.375	0.25	0.0625

 $Dz^{\Delta} U, F \ll vguAi^{\Delta} \S^{\circ} \Delta \Delta Pz \text{ ---}$
a) 4 b) 2 c) 3 d) 1
4. $\pm \Delta E^{\Delta} \text{ ¥ } jP^{\Delta} \Delta E (H_0) C^{\Delta} E^{\Delta} \text{ ¥ } j^{\Delta} Q, \Delta^a \Delta U \Delta z^{\Delta} \ll g^{\Delta} a^{\Delta} E^{\Delta} \Delta \Delta w^{\Delta} a^{\Delta} i^{\Delta} \Delta \Delta E U^{\Delta} \frac{1}{4} \Delta$:
i) $\pm \Delta E^{\Delta} \text{ ¥ } jP^{\Delta} \Delta E (H_0) \Delta v^{\Delta} \ll z^{\Delta} \Delta U Cz^{\Delta} E^{\Delta} \Delta 1^{\Delta} Pj \Delta \Delta^a \Delta z^{\Delta} \Delta$.
ii) $\pm \Delta E^{\Delta} \text{ ¥ } jP^{\Delta} \Delta E (H_0) \Delta v^{\Delta} \ll \Delta z^{\Delta} \Delta U Cz^{\Delta} E^{\Delta} \Delta wg \Delta j \Delta \Delta^a \Delta z^{\Delta} \Delta$.
iii) $\pm \Delta E^{\Delta} \text{ ¥ } jP^{\Delta} \Delta E (H_0) \Delta v^{\Delta} \ll \Delta z^{\Delta} \Delta U Cz^{\Delta} E^{\Delta} \Delta 1^{\Delta} Pj \Delta \Delta^a \Delta z^{\Delta} \Delta$.
iv) $\pm \Delta E^{\Delta} \text{ ¥ } jP^{\Delta} \Delta E (H_0) \Delta v^{\Delta} \ll z^{\Delta} \Delta U Cz^{\Delta} E^{\Delta} \Delta wg \Delta j \Delta \Delta^a \Delta z^{\Delta} \Delta$.
 $E^a \Delta U^{\Delta} \frac{1}{4} \Delta j Ai^{\Delta} \Delta z w^{\Delta} a^{\Delta} i^{\Delta} \Delta \Delta E U^{\Delta} \frac{1}{4} \Delta$:
a) i $\Delta^a \Delta v^{\Delta} \Delta ii$ b) iii $\Delta^a \Delta v^{\Delta} \Delta iv$ c) i $\Delta^a \Delta v^{\Delta} \Delta iii$ d) ii $\Delta^a \Delta v^{\Delta} \Delta iv$
5. $\Delta gp^{\Delta} z^{\Delta} \Delta z^{\Delta} \Delta E^{\Delta} G \text{ ¥ } Ai^{\Delta} \Delta E^{\Delta} U Cx^a \Delta a^{\Delta} i^{\Delta} g^{\Delta} \Delta I DU^{\Delta} a^a gU C^a \Delta U^{\Delta} \frac{1}{4} \Delta a^{\Delta} \Delta^{\circ} uU \Delta \S A \Phi^{\Delta} z^{\Delta} \text{ ---}$
a) $C \Delta \Delta^{\Delta} \Delta \text{ ---}$ b) $C t U^{\Delta} E^{\Delta} \frac{1}{2} \Delta \Delta^a \Delta z$ c) $P^{\Delta} Egv^{\Delta} a^{\Delta} z$ d) $\gg q^{\Delta} a^{\Delta} \frac{1}{2} a^{\Delta} z$

II. ಅವರಣದಲ್ಲಿರುವ ಸರಿಯಾದ ಉತ್ತರವನ್ನು ಆರಿಸಿ, ಬಿಟ್ಟು ಸ್ಥಳ ತುಂಬಿರಿ:

5 × 1 = 5

(ಆಕಸ್ಮಿಕ, ಫಿಶರನ, ಸಮತೋಲನ, ಪ್ರಾಚಲ/ನಿಯತಾಂಕ, ತಂತ್ರ, ಗಂಟೆ)

6. $\Delta^a \Delta Ai^{\Delta} \circ \Delta U^{\Delta} E CA^{\pm} a^{\Delta} wjP \text{ ¥ } j^{\Delta} P U^{\Delta} \frac{1}{4} gq^{\Delta} E^{\Delta} v^{\Delta} \Delta \text{ ¥ } r \Delta^a z^{\Delta} \underline{\hspace{1cm}} \Delta E z^{\Delta} \Delta P$.
7. $t - a^{\Delta} P^{\Delta} \Delta \underline{\hspace{1cm}} DP^{\Delta} g^{\Delta} \Delta v^{\Delta} z$.
8. $\Delta^a \Delta \Delta Ai^{\Delta} \Delta \Delta T^{\Delta} P C^{\Delta} \frac{1}{4} vAi^{\Delta} E^{\Delta} \Delta \underline{\hspace{1cm}} J^{\Delta} E^{\Delta} a^g \Delta$.
9. $\Delta \Phi^{\Delta} \mu^{\Delta} P^{\Delta} g t U^{\Delta} \frac{1}{2} \Delta z^{\Delta} a^{\Delta} \Delta U^{\Delta} \frac{1}{4} U^{\Delta} t^{\Delta} a^{\Delta} \Delta I z^{\Delta} \circ Ai^{\Delta} \Delta \Delta \text{ ¥} \Delta i^{\Delta} t K j^{\Delta} \frac{1}{2} v U^{\Delta} \frac{1}{4} E^{\Delta} \Delta \underline{\hspace{1cm}} P^{\Delta} g t z K j^{\Delta} \frac{1}{2} v U^{\Delta} \frac{1}{4} E^{\Delta} \Delta a^g \Delta$.
10. $MS^{\Delta} DI U^{\Delta} g^{\Delta} E^{\Delta} DI Q^{\Delta} Av^{\Delta} a^{\Delta \Delta} Aav^a \Delta v^{\Delta} g^{\Delta} E^{\Delta} \Delta^{\Delta} z^{\Delta} v^{\Delta} E^{\Delta} \Delta z^{\Delta} \Delta g U^{\Delta} \frac{1}{4} U t^{\Delta} a^{\Delta} \underline{\hspace{1cm}}$.

III. ಹೊಂದಿಸಿ ಬರೆಯಿರಿ:

5 × 1 = 5

A

B

11. $MS^{\Delta} a^{\Delta} \gg \frac{1}{4} Ai^{\Delta} NRR = 1.2$

a) $\Delta gp^{\Delta} z^{\Delta} \Delta z^{\Delta} \Delta E^{\Delta} a^{\Delta} i^{\Delta} z^{\Delta} j II$

39. F1 $\frac{1}{2} \frac{1}{2}$ F2 JAS Jgg $\frac{1}{2}$ D $\frac{1}{2}$ Ag $\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ Az C $\frac{1}{2}$ g $\frac{1}{2}$ a B $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA $\frac{1}{2}$ qAi $\frac{1}{2}$ EA G $\frac{1}{2}$ AI $\frac{1}{2}$ EA $\frac{1}{2}$ z F g $\frac{1}{2}$ SAvP P $\frac{1}{2}$ g $\frac{1}{2}$, $\frac{1}{2}$ AI $\frac{1}{2}$ $\frac{1}{2}$ AI $\frac{1}{2}$ z jAi $\frac{1}{2}$ EA D $\frac{1}{2}$ AR $\frac{1}{2}$ zEA $\frac{1}{2}$ Az $\frac{1}{2}$ r $\frac{1}{2}$. $\frac{1}{2}$, $\frac{1}{2}$ AAvU $\frac{1}{2}$ EA $\frac{1}{2}$, $\frac{1}{2}$ C $\frac{1}{2}$ g $\frac{1}{2}$ a D $\frac{1}{2}$ Ag $\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ $\frac{1}{2}$ AI $\frac{1}{2}$ t $\frac{1}{2}$ EA PAq $\frac{1}{2}$ A $\frac{1}{2}$ r $\frac{1}{2}$ - $\frac{1}{2}$ j.
- P $\frac{1}{2}$ U $\frac{1}{2}$ EA $\frac{1}{2}$ $\frac{1}{2}$ Z = 10x + 5y
- $\frac{1}{2}$ SAzEU $\frac{1}{2}$ U M $\frac{1}{2}$ AI $\frac{1}{2}$ 2x + 3y $\geq$ 12
- 2x + y $\geq$ 8
- $\frac{1}{2}$ AI $\frac{1}{2}$ x $\geq$ 0, y $\geq$ 0

ಅಥವಾ (ದೃಷ್ಟಿ ವಿಕಲಚೇತನ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಮಾತ್ರ)

F1 $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA F2 JAS Jgg $\frac{1}{2}$ D $\frac{1}{2}$ Ag $\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ A $\frac{1}{2}$ z $\frac{1}{2}$ AI $\frac{1}{2}$ t z $\frac{1}{2}$ B $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA M $\frac{1}{2}$ U $\frac{1}{2}$ EA r $\frac{1}{2}$ a. F1 JAS D $\frac{1}{2}$ Ag $\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ A 2 $\frac{1}{2}$ AI $\frac{1}{2}$ EA B f $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA 2 $\frac{1}{2}$ AI $\frac{1}{2}$ EA C f $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA $\frac{1}{2}$ EA $\frac{1}{2}$ z. F2 JAS D $\frac{1}{2}$ Ag $\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ A 3 $\frac{1}{2}$ AI $\frac{1}{2}$ EA B f $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA 1 $\frac{1}{2}$ AI $\frac{1}{2}$ EA C f $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA $\frac{1}{2}$ EA $\frac{1}{2}$ z. MS $\frac{1}{2}$ AI $\frac{1}{2}$ U $\frac{1}{2}$ EA P $\frac{1}{2}$ C $\frac{1}{2}$ g $\frac{1}{2}$ a B $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA C f $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA $\frac{1}{2}$ AI $\frac{1}{2}$ t 12 $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA 8 DVz. 1 $\frac{1}{2}$ AI $\frac{1}{2}$ EA F1 D $\frac{1}{2}$ Ag $\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ A $\frac{1}{2}$ z g $\frac{1}{2}$ EA. 10 $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA 1 $\frac{1}{2}$ AI $\frac{1}{2}$ EA F2 D $\frac{1}{2}$ Ag $\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ A $\frac{1}{2}$ z g $\frac{1}{2}$ EA. 5 DVz. RZ $\frac{1}{2}$ EA $\frac{1}{2}$, $\frac{1}{2}$ AAvU $\frac{1}{2}$ EA $\frac{1}{2}$, $\frac{1}{2}$ g $\frac{1}{2}$ SAvP P $\frac{1}{2}$ g $\frac{1}{2}$, $\frac{1}{2}$ AI $\frac{1}{2}$ ga $\frac{1}{2}$.

ವಿಭಾಗ - D

VIII. ಈ ಕೆಳಗಿನ ಯಾವುದಾದರೂ ಎರಡು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ:

2 × 10 = 20

40. F P $\frac{1}{2}$ U $\frac{1}{2}$ EA zv $\frac{1}{2}$ AA $\frac{1}{2}$ P Jgg $\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ A $\frac{1}{2}$ AI $\frac{1}{2}$ W $\frac{1}{2}$ AP $\frac{1}{2}$ v $\frac{1}{2}$ Ag t zgU $\frac{1}{2}$ EA PAq $\frac{1}{2}$ A $\frac{1}{2}$ r $\frac{1}{2}$ z, Aii $\frac{1}{2}$ $\frac{1}{2}$ z $\frac{1}{2}$ z $\frac{1}{2}$ z Dg $\frac{1}{2}$ EAUiPg $\frac{1}{2}$ AVz JAZ $\frac{1}{2}$ w $\frac{1}{2}$ 1.

$\frac{1}{2}$ AI $\frac{1}{2}$ EA $\frac{1}{2}$ U $\frac{1}{2}$ EA [$\frac{1}{2}$ $\frac{1}{2}$ U $\frac{1}{2}$ EA $\frac{1}{2}$]	$\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ A - A		$\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ A - B		Dz $\frac{1}{2}$ z d $\frac{1}{2}$ EA, AS $\frac{1}{2}$
	d $\frac{1}{2}$ EA, AS $\frac{1}{2}$	$\frac{1}{2}$ Ag t U $\frac{1}{2}$ EA	d $\frac{1}{2}$ EA, AS $\frac{1}{2}$	$\frac{1}{2}$ Ag t U $\frac{1}{2}$ EA	
0 – 10	6,000	60	7,000	84	4,000
10 – 20	10,000	80	15,000	90	16,000
20 – 60	20,000	240	25,000	250	18,000
60 $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA $\frac{1}{2}$ z	4,000	120	3,000	120	2,000

41. F zv $\frac{1}{2}$ AA $\frac{1}{2}$ P $\frac{1}{2}$ AI $\frac{1}{2}$, Aii $\frac{1}{2}$ Ag $\frac{1}{2}$ EA, $\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ A $\frac{1}{2}$ AI $\frac{1}{2}$ v $\frac{1}{2}$ U $\frac{1}{2}$ EA q $\frac{1}{2}$ AI $\frac{1}{2}$ z $\frac{1}{2}$ - $\frac{1}{2}$ EA $\frac{1}{2}$ AI $\frac{1}{2}$ $\frac{1}{2}$ z , $\frac{1}{2}$ EA $\frac{1}{2}$ AI $\frac{1}{2}$ U $\frac{1}{2}$ EA PAq $\frac{1}{2}$ A $\frac{1}{2}$ r $\frac{1}{2}$ - $\frac{1}{2}$ j.

$\frac{1}{2}$, A	DzAg $\frac{1}{2}$ $\frac{1}{2}$ U $\frac{1}{2}$ EA		$\frac{1}{2}$ zAx $\frac{1}{2}$ U $\frac{1}{2}$ A $\frac{1}{2}$ $\frac{1}{2}$ U $\frac{1}{2}$ EA	
	(g $\frac{1}{2}$ EA.)	$\frac{1}{2}$ j $\frac{1}{2}$ AI $\frac{1}{2}$ t	(g $\frac{1}{2}$ EA.)	$\frac{1}{2}$ j $\frac{1}{2}$ AI $\frac{1}{2}$ t
CQ	50	10	60	08
U $\frac{1}{2}$ EA $\frac{1}{2}$	40	08	45	12
$\frac{1}{2}$ AI $\frac{1}{2}$	100	03	160	02
Ju	80	02	120	03

42. a) F zv $\frac{1}{2}$ AA $\frac{1}{2}$ P $\frac{1}{2}$ AI $\frac{1}{2}$ MAZ $\frac{1}{2}$ PA $\frac{1}{2}$ U $\frac{1}{2}$ EA $\frac{1}{2}$ AI $\frac{1}{2}$ $\frac{1}{2}$ AI $\frac{1}{2}$ GA $\frac{1}{2}$ Iz $\frac{1}{2}$ AI $\frac{1}{2}$ »w v $\frac{1}{2}$ EA $\frac{1}{2}$ j , $\frac{1}{2}$ Avz. v $\frac{1}{2}$ EA $\frac{1}{2}$ AI $\frac{1}{2}$ OP Z $\frac{1}{2}$ EA , g $\frac{1}{2}$ AI $\frac{1}{2}$ U $\frac{1}{2}$ EA $\frac{1}{2}$ qz $\frac{1}{2}$ $\frac{1}{2}$ z w $\frac{1}{2}$ AI $\frac{1}{2}$ EA $\frac{1}{2}$ w $\frac{1}{2}$ 1.

$\frac{1}{2}$ $\frac{1}{2}$ U $\frac{1}{2}$ EA	2010	2011	2012	2013	2014	2015	2016
$\frac{1}{2}$ AI $\frac{1}{2}$ GA $\frac{1}{2}$ I (, $\frac{1}{2}$ AI $\frac{1}{2}$ g g $\frac{1}{2}$ EA.)	120	104	130	126	145	131	132

- b) MAZ $\frac{1}{2}$ P $\frac{1}{2}$ AS $\frac{1}{2}$ z $\frac{1}{2}$ EAi $\frac{1}{2}$, Pg Gv $\frac{1}{2}$ z $\frac{1}{2}$ EA (, $\frac{1}{2}$ AI $\frac{1}{2}$ g QAI $\frac{1}{2}$ U $\frac{1}{2}$ EA $\frac{1}{2}$) F P $\frac{1}{2}$ U $\frac{1}{2}$ $\frac{1}{2}$ AI $\frac{1}{2}$ q $\frac{1}{2}$ AVz. EzP $\frac{1}{2}$ Y = a + b X j $\frac{1}{2}$ Aw $\frac{1}{2}$ AI $\frac{1}{2}$, g $\frac{1}{2}$ AI $\frac{1}{2}$ GA $\frac{1}{2}$ $\frac{1}{2}$ z w $\frac{1}{2}$ AI $\frac{1}{2}$ EA $\frac{1}{2}$ $\frac{1}{2}$ AI $\frac{1}{2}$ EA $\frac{1}{2}$ f $\frac{1}{2}$ 1.

$\frac{1}{2}$ $\frac{1}{2}$ U $\frac{1}{2}$ EA	2016	2017	2018	2019	2020	2021	2022
Gv $\frac{1}{2}$ z $\frac{1}{2}$ EA	80	90	92	83	94	99	92