PAPER-10

Aptitude Test for MCA (Lateral Entry)

अनुक्रमांक / Roll No.

प्रश्नपुस्तिका क्रमांक / कोड
Question Booklet Sr. No. / Code

AD

Q. Booklet Code

उत्तर–शीट क्रमांक / OMR Answer Sheet No.

1303035

घोषणा : / Declaration :
मैंने पृष्ठ संख्या 1 पर दिये गये निर्देशों को पढ़कर समझ लिया है ।
I have read and understood the instructions given on page No. 1.

परीक्षा केन्द्राध्यक्ष की मोहर
Seal of Superintendent of Examination Centre

परीक्षार्थी के हस्ताक्षर / Signature of Candidate
(आवेदन पत्र के अनुसार / as signed in application)

कक्ष निरीक्षक के हस्ताक्षर / Signature of the invigilator

परीक्षार्थी का नाम /
Name of Candidate :

पुस्तिका में मुखपृष्ठ सहित पृष्ठों की संख्या No. of Pages in Booklet including title	16	समय 2 घंटे Time 2 Hours	अंक / Marks 400	पुस्तिका में प्रश्नों की संख्या No. of Questions in Booklet	100

परीक्षार्थियों के लिए निर्देश / INSTRUCTIONS TO CANDIDATES

परीक्षार्थी को दिये गये पैराग्राफ की नकल स्वयं की हस्तलिपि में नीचे दिये गये रिक्त स्थान पर नकल (कॉपी) करनी है।
"आप सही व्यवसाय में हैं, यह आप तभी जानेंगे जब : आप काम पर जाने के लिए चिंतित हैं, आप नित्य अपना काम सबसे अच्छा करना चाहते हैं, और आप अपने कार्य के महत्व को समझते हैं।"
अथवा / OR
To be copied by the candidate in your own handwriting in the space given below for this purpose is compulsory.
"You will know you are in the right profession when : you wake anxious to go to work, you want to do your best daily, and you know your work is important."

अभ्यर्थियों हेतु आवश्यक निर्देश :		Instructions for the Candidate :	
1	ओ. एम. आर. उत्तर पुस्तिका में गोलों तथा सभी प्रविष्टियों को भरने के लिए केवल नीले या काले बाल प्वाइंट पेन का ही उपयोग करें।	1	Use BLUE or BLACK BALL POINT PEN only for all entries and for filling the bubbles in the OMR Answer Sheet.
2	SECURITY SEAL खोलने के पहले अभ्यर्थी अपना नाम, अनुक्रमांक (अंकों में) ओ. एम. आर. उत्तर–शीट का क्रमांक इस प्रश्न–पुस्तिका के ऊपर दिये गये स्थान पर लिखें। यदि वे इस निर्देश का पालन नहीं करेंगे तो उनकी उत्तर–शीट का मूल्यांकन नहीं हो सकेगा तथा ऐसे अभ्यर्थी अयोग्य घोषित हो जायेंगे।	2	Before opening the SECURITY SEAL of the question booklet, write your Name, Roll Number (in figures), OMR Answer-sheet Number in the space provided at the top of the Question Booklet. Non-compliance of these instructions would mean that the Answer Sheet can not be evaluated leading the disqualification of the candidate.
3	प्रत्येक प्रश्न चार अंकों का है। जिस प्रश्न का उत्तर नहीं दिया गया है, उस पर कोई अंक नहीं दिया जायेगा। गलत उत्तर पर अंक नहीं काटा जाएगा ।	3	Each question carries FOUR marks. No marks will be awarded for unattempted questions. There is no negative marking on wrong answer.
4	सभी बहुविकल्पीय प्रश्नों में एक ही विकल्प सही है, जिस पर अंक देय होगा।	4	Each multiple choice question has only one correct answer and marks shall be awarded for correct answer.
5	गणक, लॉग टेबिल, मोबाइल फोन, इलेक्ट्रॉनिक उपकरण तथा स्लाइड रूल आदि का प्रयोग वर्जित है।	5	Use of calculator, log tables, mobile phones, any electronic gadget and slide rule etc. is strictly prohibited.
6	अभ्यर्थी को परीक्षा कक्ष छोड़ने की अनुमति परीक्षा अवधि की समाप्ति पर ही दी जायेगी।	6	Candidate will be allowed to leave the examination hall at the end of examination time period only.
7	यदि किसी अभ्यर्थी के पास पुस्तकें या अन्य लिखित या छपी सामग्री, जिससे वे सहायता ले सकते / सकती हैं, पायी जावेगी, तो उसे अयोग्य घोषित कर दिया जा सकता है। इसी प्रकार, यदि कोई अभ्यर्थी किसी भी प्रकार की सहायता किसी भी स्रोत से देता या लेता (या देने का या लेने का प्रयास करता) हुआ पाया जावेगा, तो उसे भी अयोग्य घोषित किया जा सकता है।	7	If a candidate is found in possession of books or any other printed or written material from which he/she might derive assistance, he/she is liable to be treated as disqualified. Similarly, if a candidate is found giving or obtaining (or attempting to give or obtain) assistance from any source, he/she is liable to be disqualified.
8	किसी भी भ्रम की दशा में प्रश्न–पुस्तिका के अंग्रेजी अंश को ही सही व अंतिम माना जायेगा।	8	English version of question paper is to be considered as authentic and final to resolve any ambiguity.

OMR ANSWER SHEET

OMR Version-3 Sheet No.

1303889

If a candidate tampers with the BARCODE he/she will be disqualified

Question Booklet Serial No.

Roll No.

Use Blue or Black Ball Pen Only

Subject

Paper 1 Paper 2 Paper 3 Paper 4 Paper 5 Paper 6 Paper 7 Paper 8 Paper 9 Paper 10 Paper 11 Paper 12

BARCODE

Centre Seal

FACSIMILE

Signature of Candidate

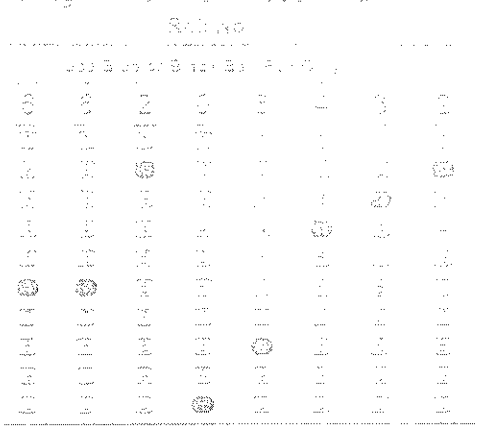
Certified that the entries above of Question Booklet Serial No. Roll No. & Subject are checked, found to be correct.

Signature of Invigilator

Do not write your Name or Roll No. on this half of the sheet. Mark your Answers by blackening the appropriate bubbles, with Blue or Black Ball Point Pen only. Do not use Pencil

1. For all entries in OMR sheet, use Blue/Black ball point pen only.
2. Entries in rectangular boxes should be written & the corresponding circles should be darkened completely.

Example :



3. Ensure that you have filled up Roll Number, Question Booklet Code & Subject in the corresponding space provided for.
4. DO NOT scribble, scratch, cut, tear, fold, wrinkle or do rough work on OMR Answer Sheet.
5. The Questions are of multiple - choice type. Out of the four Choice given, only one is the most appropriate. Darken the circle corresponding to the most appropriate answer completely using Blue/Black ball point pen only.

Example :

Q. No. 1 : The capital of India is

(1) New Delhi
(2) Kolkata
(3) Chennai
(4) Mumbai

Correct Method: 

Wrong Method: 

6. Answer sheet will be processed electronically, invalidation of answers due to incorrect method of filling will be sole responsibility of the candidate.
7. Each Question carries four marks. The marks would be awarded only for correct answer. No marks would be awarded for wrong & unattempted answers. Incorrect method of filling may lead to invalidation of answer, for which candidate will be solely responsible.
8. Bar Code printed on the Answer Sheet must not be tampered with or in any way marked otherwise the candidature will be rejected.
9. Use of calculator, log table, slide rule and communication devices such as mobile phone, pager etc. is completely prohibited.
10. The above Instructions must be strictly followed. Any violation or deviation may lead to cancellation of candidature. Further for cancellation of candidature before or after the admission due to incorrect, incomplete/untrue/fradulent entries candidate will be solely responsible.

1 The number of proper subsets of the set $\{1,2,3\}$ is :

(A) 8 (B) 7

(C) 6 (D) 5

2 If A, B and C are any three sets, then $A \cap (B \cup C)$ is equal to :

(A) $(A \cup B) \cap (A \cup C)$

(B) $(A \cap B) \cup (A \cap C)$

(C) $(A \cup B) \cup (A \cup C)$

(D) None of these

3 Let $A = \{(x,y) : y = e^x, x \in R\}$,

$B = \{(x,y) : y = e^{-x}, x \in R\}$, then :

(A) $A \cap B = \phi$ (B) $A \cap B \neq \phi$

(C) $A \cup B = R^2$ (D) None of these

4 If $1 \le x \le 2$, then

$\sqrt{\left[x + 2\sqrt{x-1}\right]} + \sqrt{\left[x - 2\sqrt{x-1}\right]}$ is equal to :

(A) $2\sqrt{(x-1)}$ (B) 2

(C) 0 (D) None of these

5 The domain of the function $\sqrt{\log_{0.5} x}$ is:

(A) $(1, \infty)$ (B) $(0, \infty)$

(C) $(0, 1)$ (D) $(0.5, 1)$

6 If $\bar{z}$ be the conjugate of the complex number z, then which of the following relations is false ?

(A) $|z| = |\bar{z}|$

(B) $z - \bar{z} = |\bar{z}|^2$

(C) $\overline{z_1 + z_2} = \bar{z}_1 + \bar{z}_2$

(D) $\arg(z) = \arg(\bar{z})$

7 If in an infinite GP first term is equal to the twice of the sum of the remaining terms, then its common ratio is :

(A) 1 (B) 2

(C) $\frac{1}{3}$ (D) $-\frac{1}{3}$

8 The roots of equation $ix^2 - 4x - 4i = 0$ are

(A) $-2i$ (B) $2i$

(C) $-2i, -2i$ (D) $2i, 2i$

9 The total number of terms in the expansion of $(x+a)^{100}+(x-a)^{100}$ after simplification will be :

(A) 202 (B) 51

(C) 50 (D) None of these

10 The middle term in the expansion of $(1+x)^{2n}$ is :

(A) $\frac{2n!}{n!}x^2$

(B) $\frac{(2n)!}{n!(n-1)!}x^{n+1}$

(C) $\frac{(2n)!}{(n!)^2}x^n$

(D) $\frac{(2n)!}{(n+1)!(n-1)!}x^n$

11 The following system of equations $3x-2y+z=0$, $\lambda x-14y+15z=0$, $x+2y-3z=0$ has a solution other than $x=y=z=0$ for λ is equal to :

(A) 1 (B) 2

(C) 3 (D) 5

12 $x+ky-z=0$, $3x-ky-z=0$ and $x-3y+z=0$ has non zero solution for k is equal to :

(A) -1 (B) 0

(C) 1 (D) 2

13 If $x>0$, $\lambda>0$ and $\lambda x+\frac{1}{x}-1$ is always non-negative, then the least value of λ is:

(A) 1 (B) $\frac{1}{2}$

(C) 0 (D) $\frac{1}{4}$

14 $\log_y x^3 \cdot \log_z y^3 \cdot \log_x z^3$ is equal to :

(A) 9 (B) 4

(C) 27 (D) 16

15 If $a^{m^n}=\left(a^m\right)^n$, then the value of m in terms of n is :

(A) n (B) $(n-1)^{1/n}$

(C) $\frac{1}{m+n-1}$ (D) None of these

16 If $f(x)=\begin{cases}\dfrac{2}{5-x}, & when\ x<3\\ 5-x, & when\ x>3\end{cases}$, then :

(A) $\lim\limits_{x\to 3^+} f(x)=0$

(B) $\lim\limits_{x\to 3^-} f(x)=0$

(C) $\lim\limits_{x\to 3^+} f(x)\neq \lim\limits_{x\to 3^-} f(x)$

(D) None of these

17 The value of $\lim\limits_{x\to\infty}\left(\dfrac{x^2+bx+4}{x^2+ax+5}\right)$ is :

(A) $\dfrac{b}{a}$ (B) 1

(C) 0 (D) $\dfrac{4}{5}$

18 $\lim\limits_{x\to\infty}\dfrac{(2x+1)^{40}(4x-1)^5}{(2x+3)^{45}}$ is equal to :

(A) 16 (B) 24

(C) 32 (D) 8

19 If $y=1+x+\dfrac{x^2}{2!}+\dfrac{x^3}{3!}+\ldots\ldots\infty$ then $\dfrac{dy}{dx}$ is equal to :

(A) y (B) $y-1$

(C) $y+1$ (D) None of these

20 $\dfrac{d}{dx}\left[\cos\left(1-x^2\right)^2\right]$ is equal to :

(A) $-2x\left(1-x^2\right)\sin\left(1-x^2\right)^2$

(B) $-4x\left(1-x^2\right)\sin\left(1-x^2\right)^2$

(C) $4x\left(1-x^2\right)\sin\left(1-x^2\right)^2$

(D) $-2\left(1-x^2\right)\sin\left(1-x^2\right)^2$

21 The radius of a sphere is measured to be 20 cm with a possible error of 0.02 of a cm. The consequent error in the surface of the sphere is :

(A) 10.5 sq cm

(B) 5.025 sq cm

(C) 10.05 sq cm

(D) None of these

22 $\int \sin^{-1}(\cos x)\,dx$ is equal to :

(A) $\frac{\pi x}{2}+c$ (B) $\frac{\pi x^2}{2}+c$

(C) $\frac{\pi x-x^2}{2}+c$ (D) $\frac{\pi x+x^2}{2}+c$

23 $\int \frac{dx}{e^x-1}$ is equal to :

(A) $\ln\left(1-e^{-x}\right)+c$

(B) $-\ln\left(1-e^{-x}\right)+c$

(C) $\ln\left(e^x-1\right)+c$

(D) None of these

24 $\int_0^{\pi/2} \frac{\sin x\cos x}{1+\sin^4 x}dx$ is equal to :

(A) $\frac{\pi}{2}$ (B) $\frac{\pi}{4}$

(C) $\frac{\pi}{6}$ (D) $\frac{\pi}{8}$

25 $\int_{-3}^{3} \frac{x^2\sin 2x}{x^2+1}dx$ is equal to :

(A) zero

(B) 1

(C) $2\log_e 3$

(D) None of these

26 Area enclosed by the parabola $ay=3\left(a^2-x^2\right)$ and $x-$axis is :

(A) $4a^2$ sq unit

(B) $12a^2$ sq unit

(C) $4a^3$ sq unit

(D) None of these

27 The order of the differential equation of the family of curves represented by an equation containing four arbitrary constants, will be :

(A) 2 (B) 4

(C) 6 (D) None of these

28 The common property of points lying on $x-$axis is :

(A) $x=0$ (B) $y=0$

(C) $a=0, y=0$ (D) $y=0, b=0$

29 If the vertices of a triangle are $(a, b-c)$, $(b, c-a)$ and $(c, a-b)$, then the centroid of the triangle lies :

(A) at origin (B) on $x-$axis

(C) on $y-$axis (D) None of these

30 The circle $x^2+y^2+4x-4y+4=0$ touches

(A) $x-$axis

(B) $y-$axis

(C) $x-$axis and $y-$axis

(D) None of these

31 The point on the parabola $y^2=18x$, for which the ordinate is three times the abscissa, is :

(A) $(6,2)$ (B) $(-2,-6)$

(C) $(3,18)$ (D) $(2,6)$

32 The length of the latus rectum of the ellipse

$5x^2+9y^2=45$ is :

(A) $\frac{\sqrt{5}}{4}$ (B) $\frac{\sqrt{5}}{2}$

(C) $\frac{5}{3}$ (D) $\frac{10}{3}$

33 A point on the curve $\frac{x^2}{A^2}-\frac{y^2}{B^2}=1$ is :

(A) $(A\cos\theta, B\sin\theta)$

(B) $(A\sec\theta, B\tan\theta)$

(C) $\left(A\cos^2\theta, B\sin^2\theta\right)$

(D) None of these

34 The radius of the circle whose arc of length 15 cm makes an angle of $\frac{3}{4}$ radian at the center is :

(A) 10 cm (B) 20 cm

(C) $11\frac{1}{4}$ cm (D) $22\frac{1}{2}$ cm

35 If $\frac{3\pi}{4}<\alpha<\pi$, then $\sqrt{\operatorname{cosec}^2\alpha+2\cot\alpha}$ is equal to :

(A) $1+\cot\alpha$ (B) $1-\cot\alpha$

(C) $-1-\cot\alpha$ (D) $-1+\cot\alpha$

36 If $\tan m\theta=\tan n\theta$, then the general value of θ will be in :

(A) AP (B) GP

(C) HP (D) None of these

37 If $\sin^2\theta = \frac{1}{4}$, then the most general value of θ is :

(A) $2n\pi \pm (-1)^n \frac{\pi}{6}$

(B) $\frac{n\pi}{2} \pm (-1)^n \frac{\pi}{6}$

(C) $n\pi \pm \frac{\pi}{6}$

(D) $2n\pi \pm \frac{\pi}{6}$

38 The values of $\theta\left(0 < \theta < 360^\circ\right)$ satisfying $\operatorname{cosec}\theta + 2 = 0$ are :

(A) $210^\circ, 300^\circ$ (B) $210^\circ, 240^\circ$

(C) $240^\circ, 300^\circ$ (D) $210^\circ, 330^\circ$

39 In $\Delta ABC, (a-b)^2 \cos^2\frac{C}{2} + (a+b)^2 \sin^2\frac{C}{2}$ is equal to :

(A) a^2 (B) b^2

(C) c^2 (D) None of these

40 If in a $\Delta ABC, (s-a)(s-b) = s(s-c)$, then $\angle C$ is equal to :

(A) 90° (B) 45°

(C) 30° (D) 60°

41 If $\sin\left(\sin^{-1}\frac{1}{5} + \cos^{-1}x\right) = 1$, then x is equal to :

(A) 1 (B) 0

(C) $\frac{4}{5}$ (D) $\frac{1}{5}$

42 $\sin\left\{\sin^{-1}\frac{1}{2} + \cos^{-1}\frac{1}{2}\right\}$ is equal to :

(A) 0 (B) –1

(C) 2 (D) 1

43 The angle of elevation of the top of a tower from a point 20 m away from its base is 45°. The height of the tower is :

(A) 10 m (B) 20 m

(C) 40 m (D) $20\sqrt{3}$ m

44 The angle of depression of a ship from the top of a tower 30 m high is 60°, then the distance of ship from the base of tower is :

(A) 30 m (B) $30\sqrt{3}$ m

(C) $10\sqrt{3}$ m (D) 10 m

45 A force is a :

(A) unit vector

(B) localized vector

(C) zero vector

(D) free vector

46 Five points given by A, B, C, D and E are in a plane.

Three forces AC, AD and AE act at A and three forces CB, DB and EB act at B. Then their resultant is :

(A) 2 AC (B) 3 AB

(C) 3 DB (D) 2 BC

47 If two balanced dice are tossed once, the probability of the event, that the sum of the integers coming on the upper side of the two dice is 9, is :

(A) $\frac{7}{18}$ (B) $\frac{5}{36}$

(C) $\frac{1}{9}$ (D) $\frac{1}{6}$

48 The probability of getting number 5 in throwing a dice is :

(A) 1 (B) $\frac{1}{3}$

(C) $\frac{1}{6}$ (D) $\frac{5}{6}$

49 A card is drawn from a pack of 52 cards. A gambler bets that it is a spade or an ace. What are the odds against his winning this bet ?

(A) 17 : 52 (B) 52 : 17

(C) 9 : 4 (D) 4 : 9

50 Two forces P and Q act at a point in the opposite directions. The magnitude of their resultant is :

(A) $\sqrt{P^2 + Q^2}$ (B) $P + Q$

(C) $|P - Q|$ (D) $P - Q$

51 A body is in equilibrium under the action of the three non parallel coplanar forces, then

(A) they must act in a straight line

(B) they must meet in a point

(C) their horizontal and vertical components must be equal

(D) None of the above

52 The acceleration of a particle starting from rest is 3 m/s^2. Then its velocity at the end of 2 s is

(A) 18 m/s (B) 6 m/s

(C) 3 m/s (D) 24 m/s

53 A man can throw a stone to a maximum horizontal distance of 36 m. Then the maximum height (in meter) to which it may rise is :

(A) 9 (B) 12

(C) 15 (D) 18

54 The 70^{th} percentile is equal to :

(A) 7^{th} decile (B) Q_3

(C) 6^{th} decile (D) None of these

55 The arithmetic mean of 10 observations is 12.45. If each reading is increased by 5, then resulting mean is increased by :

(A) 5 (B) 29

(C) 0.5 (D) 50

56 The variance of 15 observations was found to be 8. If each observation is multiplied by 4, the new variance of the series is :

(A) 32 (B) 24

(C) 8 (D) 128

57 The median and standard deviation (S.D.) of a distribution are 20 and 4 respectively. If each item is increased by 2, the new median and S.D. will be:

(A) 20, 6 (B) 22, 6

(C) 18, 6 (D) 22, 4

58 The mean deviation of numbers 3,4,5,6,7 is :

(A) 1.8

(B) 1.5

(C) 1.2

(D) 1.0

59 If two regression lines are coincident, then which is correct ?

(A) $r = 0$

(B) $r = -\frac{1}{2}$

(C) $r = \frac{1}{2}$

(D) $r = \pm 1$

60 A person standing on the bank of a river finds that the angle of elevation of the top of a tower on the opposite bank is 45°. Then which of the following statements is correct?

(A) Breadth of the river is twice the height of the tower.

(B) Breadth of the river and the height of the tower are the same

(C) Breadth of the river is half the height of the tower

(D) None of the above

61 The solution of the equation

$$\begin{vmatrix} \cos\theta & \sin\theta & \cos\theta \\ -\sin\theta & \cos\theta & \sin\theta \\ -\cos\theta & -\sin\theta & \cos\theta \end{vmatrix} = 0, \text{ is}$$

(A) $\theta = n\pi$

(B) $\theta = 2n\pi \pm \frac{\pi}{2}$

(C) $\theta = n\pi \pm (-1)^n \frac{\pi}{4}$

(D) $\theta = 2n\pi \pm \frac{\pi}{4}$

62 If $\tan\frac{\theta}{2} = t$, then $\frac{1-t^2}{1+t^2}$ is equal to

(A) $\cos\theta$ (B) $\sin\theta$

(C) $\sec\theta$ (D) $\cos 2\theta$

63 Given the sets $A = \{1, 2, 3\}$, $B = \{3, 4\}$, $C = \{4, 5, 6\}$ then $A \cup (B \cap C)$ is

(A) 3

(B) $\{1, 2, 3, 4\}$

(C) $\{1, 2, 4, 5\}$

(D) $\{1, 2, 3, 4, 5, 6\}$

64 If x, y and z are real and distinct, and $u = x^2 + 4y^2 + 9z^2 - 6yz - 3zx - 2xy$, then u is always

(A) non-negetive

(B) zero

(C) non-positive

(D) nothing can be said

65 If $\log_{10} 3 = 0.477$, the number of digits in 3^{40} is

(A) 18 (B) 19

(C) 20 (D) 21

66 The roots of the equation $x^4 - 1 = 0$, are

(A) $1, 1, i, -i$

(B) $1, -1, i, -i$

(C) $1, -1, \omega, \omega^2$

(D) None of these

67 If the ratio of the sum of the first three terms and the sum of first six terms of a GP is 125 : 152, then the common ratio r is :

(A) $\frac{3}{5}$ (B) $\frac{5}{3}$

(C) $\frac{2}{3}$ (D) $\frac{3}{2}$

68 If a, b, c are in HP, then the value of

$\left[\frac{1}{b}+\frac{1}{c}-\frac{1}{a}\right]\left[\frac{1}{c}+\frac{1}{a}-\frac{1}{b}\right]$, is :

(A) $\frac{2}{bc}+\frac{1}{b^2}$ (B) $\frac{3}{c^2}+\frac{2}{ca}$

(C) $\frac{3}{b^2}-\frac{2}{ab}$ (D) None of these

69 If A and B are square matrices of order 3 such that $|A|=-1$, $|B|=3$, then $|3AB|$ is equal to :

(A) –9 (B) –81

(C) –27 (D) 81

70 If R is a relation from a finite set A, having m elements to a finite set B having n elements, then the number of relations from A to B is :

(A) 2^{mn} (B) 2^{mn-1}

(C) $2mn$ (D) m^n

71 $\lim_{n\to\infty}\frac{\sqrt{n}}{\sqrt{n}+\sqrt{n+1}}$ is equal to :

(A) 1 (B) $\frac{1}{2}$

(C) 0 (D) ∞

72 If $f(x)=\begin{cases} x, \text{ when } 0<x<\frac{1}{2} \\ 1, \quad \text{when } x=\frac{1}{2} \\ 1-x, \text{ when } \frac{1}{2}<x<1 \end{cases}$, then

(A) $\lim_{x\to\frac{1}{2}+} f(x)=2$

(B) $\lim_{x\to\frac{1}{2}-} f(x)=2$

(C) $f(x)$ is continuous at $x=\frac{1}{2}$

(D) $f(x)$ is discontinuous at $x=\frac{1}{2}$

73 If $\sin y = x\cos(a+y)$, then $\frac{dy}{dx}$ is equal to :

(A) $\frac{\cos^2(a+y)}{\cos a}$

(B) $\frac{\cos(a+y)}{\cos^2 a}$

(C) $\frac{\sin^2(a+y)}{\sin a}$

(D) None of these

P.T.O.

74 A particle is moving along the curve $x = at^2 + bt + c$. If $ac = b^2$, then the particle will be moving with uniform :

(A) rotation

(B) velocity

(C) acceleration

(D) retardation

75 $\int \frac{\sin x\,dx}{a^2 + b^2\cos^2 x}$ is equal to :

(A) $\log\left(a^2 + b^2\cos^2 x\right) + c$

(B) $\frac{1}{ab}\tan^{-1}\left(\frac{a\cos x}{b}\right) + c$

(C) $\frac{1}{ab}\cot^{-1}\left(\frac{b\cos x}{a}\right) + c$

(D) $\frac{1}{ab}\cot^{-1}\left(\frac{a\cos x}{b}\right) + c$

76 How many such letters are there in the word 'CREATIVE' which have as many letters between them in the word as in the alphabet?

(A) 1 (B) 2

(C) 3 (D) 4

77 In the word 'DISTURBANCE' if first and eleventh letters, second and the tenth letters ..... are mutually interchanged, then which will be the seventh letter from your right side ?

(A) R (B) B

(C) A (D) C

78 If it is possible to make a meaningful word with the first, the fourth, the seventh and the eleventh letters of the word 'INTERPRETATION', which of the following will be the third letter of that word ? If no such word can be made, give "X" as the answer and if more than one word can be made, give "M" as an answer:

(A) T (B) I

(C) X (D) M

79 A meaningful word starting with 'A' is made from the first, the seond, the fourth, the fifth and the sixth letters of the word "CONTRACT" which of the following is the middle letter of the word ?

(A) C (B) T

(C) O (D) R

80 Frankness : Blunt

(A) Rise : Awake

(B) Weep : Laugh

(C) Sickness : Death

(D) Rest : Activity

81 Good is related to Bad in the same way as 'Roof' is related to

(A) Wall (B) Pillar

(C) Terrace (D) Floor

82 Data processing is related to 'Raw Data' in the same way as 'University' is related to :

(A) Teacher

(B) Building

(C) Students

(D) Principal

83 'Face' is related to 'Expression' in the same way as 'Hand' is related to

(A) Gesture (B) Work

(C) Handshake (D) Pointing

84 Jackal : Dog

(A) Crow : Bat

(B) Orange : Lemon

(C) Tiger : Wolf

(D) Ant : Antelop

85 Hockey : Game

(A) King : Rule

(B) Constitution : Assembly

(C) Book : Read

(D) Latin : Language

86 If MADRAS is coded as NZEQBR, CALCUTTA will be coded as :

(A) OZMBVSUB

(B) DZMBVSUZ

(C) DZMBVUUZ

(D) BBKBTUSB

87 If SYSTEM is written as SYSMET, and NEARER as AENRER, FRACTION will be coded as :

(A) ARFITOON

(B) CARFNOIT

(C) ARFITCNO

(D) NOITCARF

88 If Neha says "Amrita's father Raj is the only son of my father-in-law Mahesh, "then how Bindu, who is the sister of Amrita is related to Mahesh ?

(A) Daughter

(B) Wife

(C) Daughter-in-law

(D) None of these

89 Poonam said to her friend "Yesterday, I attended the birthday party of the son of the only son-in-law of my mother's mother." How is Poonam related to the man whose birthday party she attended ?

(A) Niece (B) Daughter

(C) Sister (D) Mother

90 Village Chimur is 20 Km to the north of the Village Rewa. Village Rahate is 18 Km to the East of Village Rewa. Village Angane is 12 Km to the west of Chimur. If Sanjay starts from Village Rahate and goes to Village Angane, in which direction is he from his starting point ?

(A) North (B) North-West
(C) South (D) South-East

91 A policeman left his police post and proceeded South 4 Km on hearing a loud sound from point A. On reaching the place, he heard another sound and proceeded 4 Km to his left to the point B. From B, he proceeded left to reach to another place C 4 Km away. In which direction, he has to go to reach his police post ?

(A) North (B) South
(C) East (D) West

92 If it is possible to make a meaningful word with the fourth, the eighth and the tenth letters of the word 'COUNTERACT', which of the following will be the last letter of that word ? If no such word can be made, give "X" as answer, if more than one word can be made, give "M" as answer.

(A) N (B) T
(C) X (D) M

93 Pick the odd man out from the options

(A) Burrow (B) Nest
(C) Rodent (D) Rat

94 Pick the odd man out from the options

(A) Cloak (B) Robe
(C) Shawl (D) Jacket

Q. 95-96 : Each question contains six statements, followed by four options of combinations of any three of the given sentences. Choose the option in which the combinations are logically related.

95 (a) Apples are fruits.
(b) All Apples are pears.
(c) Some fruits are pears.
(d) Some apples are pears.
(e) All fruits are sweet.
(f) Some pears are sweet.

(A) (d) (a) (c)
(B) (c) (d) (a)
(C) (b) (c) (a)
(D) (e) (f) (c)

96 (a) No tiger is carnivorous.
(b) All animals are carnivorous.
(c) Cats are carnivorous.
(d) No cat is a tiger.
(e) No tiger is an animal.
(f) All cats are animals.

(A) (a) (d) (c)
(B) (a) (b) (e)
(C) (f) (b) (a)
(D) (a) (f) (c)

Q. 97-100 : Read the information given below and answer the questions :

The age and height of six children in a class are as follows :

(i) Amit is taller and older than Tanu but shorter and younger than Shruti.

(ii) Bharat is taller than Chander who is not as tall as Tanu.

(iii) The oldest is the shortest.

(iv) The youngest would be the fourth if the children stood in a line according to their height and one started counting from the tallest.

(v) Bharat is younger than Ritu but older than Chander who is older than Shruti.

97 Who is older than Tanu but younger than Shruti ?

(A) Tanu (B) Chander

(C) Shruti (D) Amit

98 Which of the following statements is definitely true ?

(A) Bharat is the most old person.

(B) Tanu has the maximum height.

(C) Amit is older than Bharat.

(D) Ritu is the shortest.

99 Which of the following is the correct order of heights in descending order ?

(A) Amit, Shruti, Bharat, Tanu, Chander and Ritu.

(B) Ritu, Bharat, Chander, Shruti, Amit and Tanu.

(C) Bharat, Shruti, Amit, Chander and Ritu.

(D) Shruti, Bharat, Amit, Tany, Chander and Ritu.

100 Whose rank in height can not be positioned definitely ?

(A) Tanu (B) Bharat

(C) Shruti (D) Chander

SPACE FOR ROUGH WORK / कच्चे काम के लिये जगह