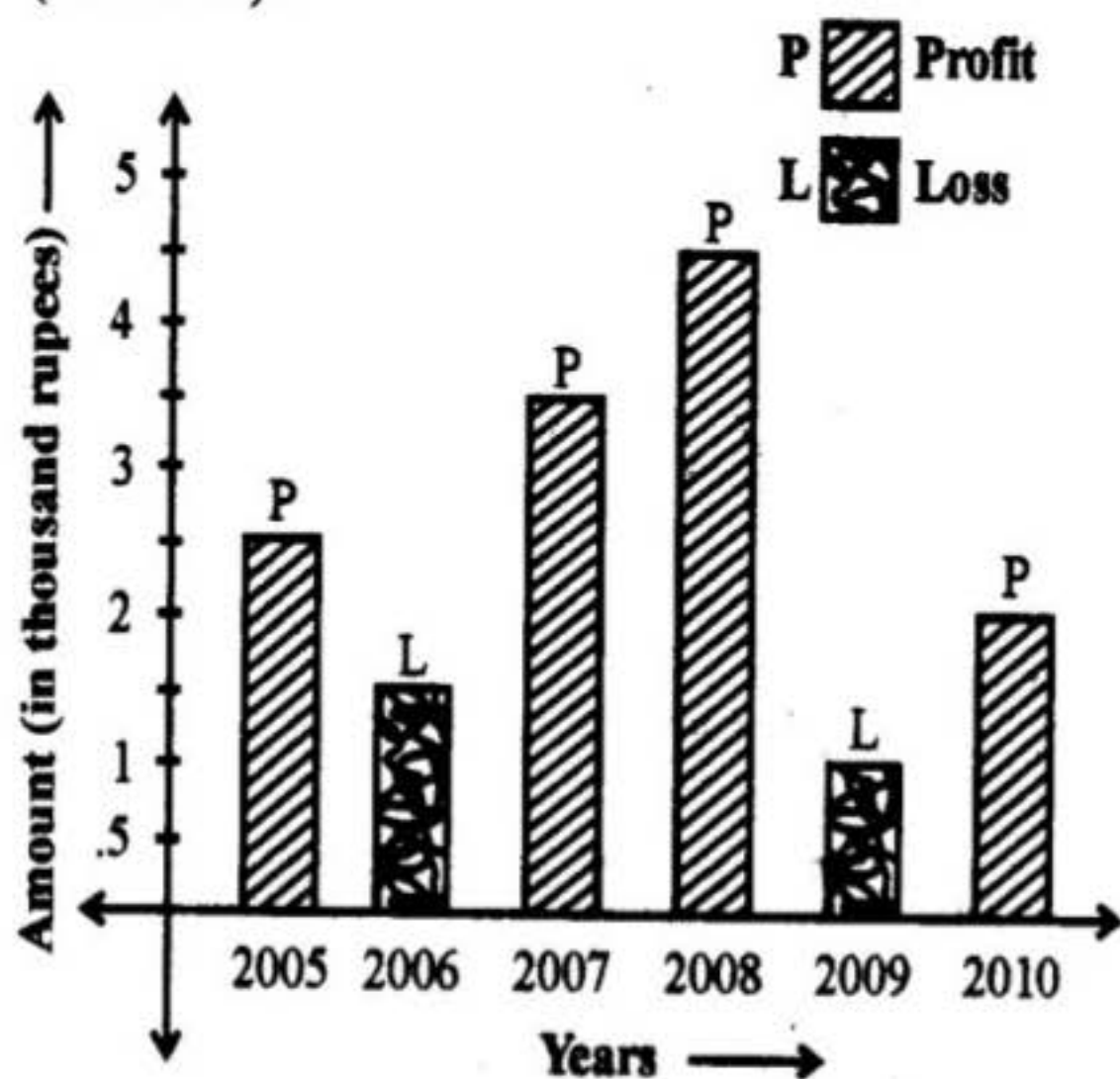


127. If $x = 2 + \sqrt{3}$, then the value of $x^2 - 4x + 2$ is
 (A) 1 (B) 2 (C) 3 (D) 4
128. The circumradius of the triangle formed by the straight line $3x + 4y = 12$ and the coordinate axes is
 (A) $5/2$ (B) $3/2$ (C) 2 (D) 6
129. If $x \left(3 - \frac{2}{x}\right) = \frac{3}{x}$, then value of $x^2 + \frac{1}{x^2}$ is
 (A) $1\frac{1}{9}$ (B) $2\frac{4}{9}$ (C) $3\frac{5}{9}$ (D) $4\frac{7}{9}$
130. If $a^2 + b^2 - c^2 = 0$, then the value of $\frac{a^6 + b^6 - c^6}{a^2b^2c^2}$ is
 (A) 0 (B) 3 (C) -3 (D) 1
131. If a, b, c, d are four non-negative real numbers and $a + b + c + d = 1$, then the maximum value of $ab + bc + cd$ is
 (A) 3 (B) 1 (C) $\frac{1}{2}$ (D) $\frac{1}{4}$
132. If P and Q are the middle points of the sides AB and AC respectively of a triangle ABC , X is any point on BC and AX meets PQ at O , then the length AO is equal to
 (A) $\frac{1}{2}AX$ (B) $\frac{1}{3}AX$
 (C) PQ (D) AP
133. $ABCD$ is a parallelogram with $AB = 10$ cm, $AD = 6$ cm. The bisector of $\angle A$ meets DC in E , and is extended to meet BC produced at F . CF is
 (A) 4 cm (B) 2 cm
 (C) 6 cm (D) 8 cm
134. The radius of a circle is 13 cm and AB is a chord which is at a distance of 12 cm from the centre. Then the length of the chord is
 (A) 16 cm (B) 10 cm
 (C) 8 cm (D) 15 cm
135. Radius of the incircle of an equilateral $\triangle ABC$ of sides $\sqrt{3}$ units is
 (A) $\frac{3}{2}$ units (B) $\frac{1}{2}$ units
 (C) $\frac{3}{4}$ units (D) $\frac{1}{4}$ units
136. Radii of two circles are 7 cm and 3 cm. If one of these lies wholly inside the other, then the distance between their centres is
 (A) 4 cm (B) more than 5 cm
 (C) less than 4 cm (D) none of these
137. The sum of two angles is 135° and their difference is $\frac{\pi}{2}$. The value of the greater angle in radian is
 (A) $5\frac{\pi}{8}$ (B) $\frac{\pi}{2}$ (C) $3\frac{\pi}{8}$ (D) $\frac{\pi}{8}$
138. A guard observes an enemy boat, from an observation tower at a height of 180 metre above sea level, to be at an angle of depression of 60° . The distance of the boat from the foot of the observation tower is
 (A) 180 metre (B) $180\sqrt{3}$ metre
 (C) $60\sqrt{3}$ metre (D) 60 metre
139. If $\tan 22\frac{1}{2}^\circ = x$, then the value of $\cos 67\frac{1}{2}^\circ$ is
 (A) $\frac{x}{\sqrt{x^2 + 1}}$ (B) $\frac{1}{\sqrt{x^2 + 1}}$
 (C) $\frac{x}{\sqrt{x^2 - 1}}$ (D) $\frac{1}{\sqrt{x^2 - 1}}$
140. If $\cos x = \sin y$ and $\cot(x - 40^\circ) = \tan(50^\circ - y)$, then the values of x and y are
 (A) $70^\circ, 20^\circ$ (B) $85^\circ, 5^\circ$
 (C) $80^\circ, 10^\circ$ (D) $60^\circ, 30^\circ$
141. If $f(x) = \cos^2 x + \sec^2 x$, then the minimum value of $f(x)$ is
 (A) 1 (B) -1 (C) -2 (D) 2

The following graph shows the Profits and Losses, (in thousand rupees) in a business for the years 2005-2010.

Study the graph and answer questions (142-145):



142. The amount of maximum profit as seen from the diagram is

- (A) 2 thousand rupees
 (B) 1.5 thousand rupees
 (C) 1 thousand rupees
 (D) 4.5 thousand rupees

143. The amount of total loss incurred during 2005-2010 is

- (A) 3 thousand rupees
 (B) 2.5 thousand rupees
 (C) 1.5 thousand rupees
 (D) 2 thousand rupees

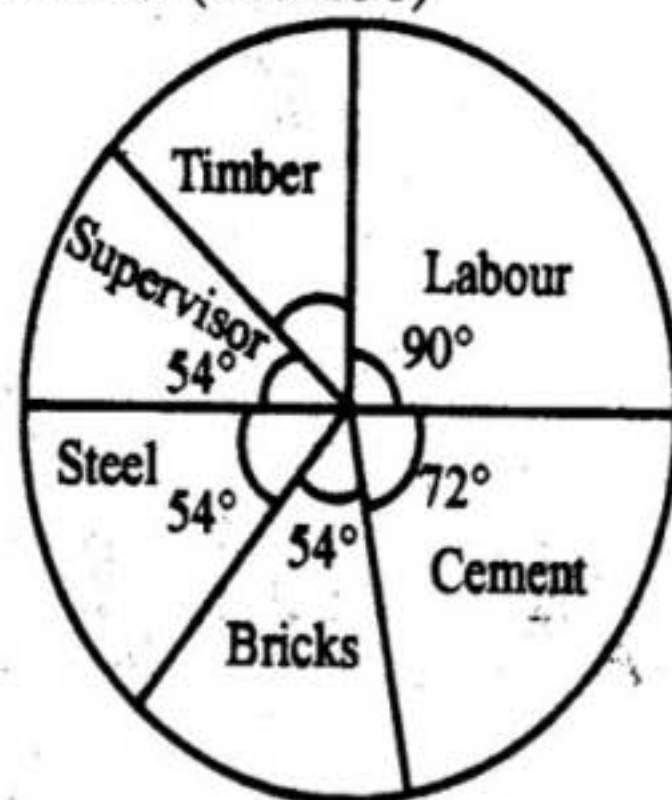
144. The ratio of the maximum profit earned to the minimum loss suffered is

- (A) 4 : 3 (B) 3 : 4
 (C) 9 : 2 (D) 2 : 9

145. If the loss is $x\%$ of the profit for the years under study, then x is

- (A) 15 (B) 25
 (C) 20 (D) 19

The pie-graph given below shows the break-up of the cost of construction of a house. Assuming that the total cost of construction is ₹ 6,00,000, answer the Question Nos. (146-150)



146. The amount spent on cement is

- (A) ₹ 2,00,000 (B) ₹ 1,60,000
 (C) ₹ 1,20,000 (D) ₹ 1,00,000

147. The amount spent on labour exceeds the amount spent on steel by

- (A) 5% of the total cost
 (B) 10% of the total cost
 (C) 12% of the total cost
 (D) 15% of the total cost

148. The amount spent on cement, steel and supervision is what percent of the total cost of construction?

- (A) 40% (B) 45%
 (C) 50% (D) 55%

149. The amount spent on labour exceeds the amount spent on supervision by

- (A) ₹ 2,00,000 (B) ₹ 16,000
 (C) ₹ 1,20,000 (D) ₹ 60,000

150. The amount spent on Timber is

- (A) ₹ 60,000 (B) ₹ 90,000
 (C) ₹ 1,20,000 (D) ₹ 36,000

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142. A, B and C started a business with ₹ 3 lacs, ₹ 5 lacs and ₹ 6 lacs respectively. A remained in the business throughout the year. After 6 months, B invested ₹ 4 lacs more and C left the business 2 months before the end of the year. If the total profit was ₹ 3 lacs, then how much more profit did B get than C? (in ₹)
- (A) ₹ 40,000 (B) ₹ 80,000
(C) ₹ 20,000 (D) ₹ 1,60,000
143. 22 big lemons bought at the rate of ₹ 10 for 11 and 33 small lemons bought at the rate of ₹ 5 for 11 are mixed and sold at ₹ 12 for 10. The total loss or gain in this transaction is
- (A) Profit of ₹ 31 (B) Loss of ₹ 11
(C) Profit of ₹ 21 (D) Loss of ₹ 21
144. In an examination, 72% of the students passed in Mathematics and 78% passed in Bengali. If none failed in both the subjects, then what percent of the students passed in both the subjects?
- (A) 55% (B) 60%
(C) 45% (D) 50%
145. A and B can do a piece of work in 18 days; B and C in 24 days; A and C in 36 days. In what time can they do it all working together?
- (A) 12 days (B) 13 days
(C) 16 days (D) 26 days

146. Find the difference between the simple and compound interest on ₹ 10,000 for 2 years at 4% per annum.
- (A) ₹ 16 (B) ₹ 18
(C) ₹ 19 (D) ₹ 31
147. If $\tan \theta = \cos 30^\circ + \sin 60^\circ$, then the value of θ is
- (A) 45° (B) 60°
(C) 30° (D) 15°
148. Manoj covers two-third of a certain distance at 4 km/hr and the remaining at 5 km/hr. If he takes 42 minutes in all to cover the total journey, the distance in km is
- (A) 4 (B) 4.6
(C) 2.5 (D) 3
149. ABCD is a cyclic trapezium and $AD \parallel BC$, $\angle ABC = 80^\circ$, the measure of $\angle BCD$ is
- (A) 80° (B) 100°
(C) 60° (D) 110°
150. A shopkeeper is giving 6 kg of tomatoes at the rate of price ₹ 5 per kg. What should be the mark up on cost price if he wants to make a profit of 20%?
- (A) 25% (B) 50%
(C) 44% (D) 20%

ENGLISH LANGUAGE

Directions : In Question Nos. 151 to 155, some parts of the sentences have errors and some have none. Find out which part of a sentence has an error and blacken the oval [●] corresponding to the appropriate letter (A, B, C). If a sentence is free from error, blacken the oval corresponding to (D).

151. While we love nature in its peaceful and (A)
pleasant moments / we find it hardly / (B)
to love its furies and wildness. / (C)
No error. (D)

152. Umbrella is / of no avail / against (A) (B)
a thunderstorm. / No error. (C) (D)

153. I shall return the book / when you will (A) (B)
arrive / here. / No error. (C) (D)

154. The old man saw / that the bird / (A) (B)
is circling again. / No error. (C) (D)

155. Our manager doesn't mind / to pay (A)
handsome salary / as long as the (B)
employees are competent enough to (C)
meet the deadlines. / No error. (D)

Directions : In Question Nos. 156 to 160, sentences are given with blanks to be filled in with an appropriate word(s). Four alternatives are suggested for each question. Choose the correct alternative out of the four and indicate it by blackening the appropriate oval [●] in the Answer Sheet.

156. What are you going to do _____ school today ?
 (A) from (B) until
 (C) after (D) before

157. That small dictionary is all right, but a big one would be _____.
 (A) important (B) easy
 (C) expensive (D) useful

158. _____ large city Mumbai has become in last twenty years.
 (A) What (B) What a
 (C) How (D) How a

159. All his statements duly testify _____ his truthfulness and honesty.
 (A) about (B) of
 (C) to (D) in

160. The accused _____ having committed the theft.
 (A) disagreed (B) declined
 (C) denied (D) refused

Directions : In Question Nos. 161 to 165, out of the four alternatives, choose the one which best expresses the meaning of the given word.

161. flimsy
(A) filmy (B) weak
(C) firm (D) fly
162. mingle
(A) blend (B) jingle
(C) join (D) diminish
163. commence
(A) commit (B) start
(C) convince (D) communicate
164. endeavours
(A) plans (B) activities
(C) efforts (D) programmes
165. motive
(A) design (B) reason
(C) impulse (D) urge

Directions : In Question Nos. 166 to 170, choose the word opposite in meaning to the given word.

166. refinement
(A) rudeness (B) coarseness
(C) anger (D) foolishness
167. belated
(A) premature (B) outdated
(C) delayed (D) deferred
168. reverence
(A) contempt
(B) astonishment
(C) firmness
(D) displeasure
169. quieten
(A) to soothe (B) to settle
(C) to rouse (D) to lull
170. impulsive
(A) cautious (B) hasty
(C) reckless (D) spontaneous

Directions : In Question Nos. 171 to 175, four alternatives are given for the Idiom\Phrase underlined in the sentence. Choose the alternative which best expresses the meaning of the Idiom\Phrase.

171. I have a feeling that she is taking you for a ride.
(A) taking you in the car
(B) trying to push you
(C) pulling you along
(D) trying to trick you
172. It is a far cry from Delhi to Athens.
(A) a long way off
(B) an emotional journey
(C) a boring journey
(D) not too long a way
173. Their opinions in the meeting fell flat.
(A) did not inspire others
(B) did not produce the desired effect
(C) were not goal-oriented
(D) left everyone awestruck
174. At the end of the argumentation, he got the better of me.
(A) he thought I was good
(B) he got defeated
(C) I understood him better
(D) he overcame me
175. Please look through this chapter before the examinations.
(A) turn the pages of
(B) study
(C) omit
(D) get an explanation of

Directions : In Question Nos. 176 to 180, a part of the sentence is underlined. Below are given alternatives to the underlined part at (A), (B) and (C) which may improve the sentence. Choose the correct alternative. In case no improvement is needed, your answer is (D).

176. He was rich by sheer accident of birth.

- (A) chance
- (B) coincidence
- (C) incidence
- (D) No improvement

177. John recollects me of a boy I used to know.

- (A) recalls
- (B) reminds
- (C) remembers
- (D) No improvement

178. The street is infested by rats.

- (A) to
- (B) from
- (C) with
- (D) No improvement

179. Remember that examinations never start late, they always start in time.

- (A) on time
- (B) by the clock
- (C) in the nick of time
- (D) No improvement

180. If I were you, I will buy this book.

- (A) might
- (B) shall
- (C) would
- (D) No improvement

Directions : In Question Nos. 181 to 185, out of the four alternatives choose the one which can be substituted for the given words/sentence.

181. Enter a country as an enemy

- (A) defeat
- (B) spy
- (C) invade
- (D) overcome

182. Plants of a region

- (A) fauna
- (B) flora
- (C) nursery
- (D) forest

183. Expressions no longer in current use

- (A) artistic
- (B) archaic
- (C) ancient
- (D) modern

184. A talk between two persons

- (A) prologue
- (B) monologue
- (C) dialogue
- (D) speech

185. A person who cannot be corrected

- (A) illegible
- (B) impossible
- (C) incorrigible
- (D) invulnerable

Directions : In Question Nos. 186 to 190, there are four words out of which one is correctly spelt. Find the correctly spelt word and indicate it by blackening the appropriate oval [●].

186. (A) allaince (B) alliance

(C) allianse (D) allianns

187. (A) labirinthine (B) labyrinthine

(C) labirrinthine (D) labyrynthine

188. (A) substansial (B) substancial

(C) substantial (D) substancal

189. (A) exagerate (B) exaggerate

(C) exhaggerate (D) exaggrate

190. (A) accomodate

(B) acomodate

(C) accomodate

(D) accomodete

Directions : In Question Nos. 191 to 200, you have a passage with 10 questions following the passage. Read the passage carefully and choose the best answer to each question out of the four alternatives.

Animals do not know worry. What bird could raise a family if it worried about the problems to be overcome, the impossible number of feeding trips in a day to keep those clamouring mouths stilled with food ? That is not the way birds or animals respond to life. Nature says "Feed them !" and the mother bird goes ahead and does it. Between dawn and sunset a tiny wren must make hundreds of such round trips to feed her brood.

An animal doesn't know what brotherhood means, but when it hears the call "Help !" it answers instinctively. If a prairie dog is shot, the others in the prairie dog village come tumbling out, not worried about gunfire and pull their wounded fellow underground. Big-game hunters have seen elephants, disregarding danger, lift a wounded elephant to his feet with their tusks and by supporting him with one member of the herd on each side, help him walk to the forest depths.

191. A bird makes innumerable trips to collect food to
- (A) feed its mate
 - (B) feed itself and its mate
 - (C) feed its young in the nest
 - (D) store food for the winter
192. The mother bird feeds the brood
- (A) when it sees them hungry
 - (B) when her instinct tells her to do so
 - (C) when they cry
 - (D) after it feeds itself and its mate
193. When an animal hears the call for help,
- (A) it doesn't bother
 - (B) it rushes to the spot
 - (C) it gets scared and runs away
 - (D) it responds instinctively

194. If a prairie dog is shot, the others
- (A) go underground
 - (B) chase away their enemy
 - (C) pull the wounded dog to safety
 - (D) start barking together
195. Elephants lift a wounded fellow elephant to his feet
- (A) with their tusks
 - (B) with their trunks
 - (C) with their feet
 - (D) by pushing on his side
196. Which of the following statement is true in the context of the passage ?
- (A) Animals worry about raising a family.
 - (B) Animals often behave sensibly.
 - (C) Animals do not know what brotherhood means.
 - (D) Animals make several feeding trips in a day to collect food for their young ones.
197. As used in the passage, the word 'stilled' means
- (A) calmed
 - (B) supplied
 - (C) provided
 - (D) filled
198. The author's tone in the passage can best be described as
- (A) sentimental
 - (B) biased
 - (C) critical
 - (D) informative
199. The author is primarily concerned with
- (A) expressing the beauty of birds and animals.
 - (B) discussing how birds and animals evolved.
 - (C) explaining that birds and animals are free from worry.
 - (D) explaining that birds and animals respond to life instinctively.
200. The expression 'tumbling out' in one of the sentences in the passage means
- (A) reacting aggressively
 - (B) flowing out hurriedly and confusedly
 - (C) moving out steadily
 - (D) attacking the enemy collectively