

CCE RR

ಕರ್ನಾಟಕ ಪ್ರೌಢ ಶಿಕ್ಷಣ ಪರೀಕ್ಷಾ ಮಂಡಳಿ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು – 560 003

**KARNATAKA SECONDARY EDUCATION EXAMINATION BOARD, MALLESWARAM,
BANGALORE – 560 003**

ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಪರೀಕ್ಷೆ, ಜೂನ್ — 2017

S. S. L. C. EXAMINATION, JUNE, 2017

ಮಾದರಿ ಉತ್ತರಗಳು
MODEL ANSWERS

ದಿನಾಂಕ : 16. 06. 2017]

ಸಂಕೇತ ಸಂಖ್ಯೆ : **81-U**

Date : 16. 06. 2017]

CODE No. : **81-U**

ವಿಷಯ : ಗಣಿತ

Subject : MATHEMATICS

(ಹೊಸ ಪಠ್ಯಕ್ರಮ / New Syllabus)

(ಪುನರಾವರ್ತಿತ ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / Regular Repeater)

(ಇಂಗ್ಲಿಷ್ ಭಾಷಾಂತರ / Urdu Version)

[ಪರಮಾವಧಿ ಅಂಕಗಳು : 80

[Max. Marks : 80

| Qn. Nos. | Ans. Key | Value Points | Marks allotted |
|----------|----------|-----------------|----------------|
| I. 1. | B | { 6, 7, 8 } | 1 |
| 2. | C | 90 | 1 |
| 3. | A | 5 | 1 |
| 4. | D | $\sqrt{x-y}$ | 1 |
| 5. | B | 18 | 1 |
| 6. | C | ۱۳ | 1 |
| 7. | D | $12\sqrt{2}$ cm | 1 |
| 8. | A | ۱۳ اکا | 1 |

RR-XXII-8014

[Turn over

| Qn. Nos. | Value Points | Marks allotted | |
|----------|--|---|--------------------------------|
| II. | | | |
| 9. | ${}^{100}P_0 = 1$ | 1 | |
| 10. | یقینی وقوعہ کا امکان 1 ہوتا ہے۔ | 1 | |
| 11. | گروہی وقفہ کا وسطی نقطہ $= \frac{5 + 15}{2}$ | $\frac{1}{2}$ | |
| | $= \frac{20}{2} = 10$ | $\frac{1}{2}$ | |
| 12. | طریقہ 1 : $\cos 48^\circ - \sin 42^\circ$ $= \sin 42^\circ - \sin 42^\circ$ $= 0$ | طریقہ 2 : $\cos 48^\circ - \sin 42^\circ$ $= \cos 48^\circ - \cos 48^\circ$ $= 0$ | $\frac{1}{2}$ $\frac{1}{2}$ |
| 13. | مساوات $y = 3x$ کا موازنہ $y = mx + c$ سے کرنے پر $m = 3$ ڈھلان $-y = c = 0$ مقطوعہ | $\frac{1}{2}$ $\frac{1}{2}$ | 1 |
| 14. | T.S.A. = $3\pi r^2$ ٹھوس نصف کرہ کا کل سطحی رقبہ | | 1 |
| III. | حل : | | |
| 15. | $n(A) = 37, n(B) = 26, n(A \cup B) = 51$ $n(A \cap B) = ?$ $n(A \cup B) = n(A) + n(B) - n(A \cap B)$ $51 = 37 + 26 - n(A \cap B)$ $\therefore n(A \cap B) = 63 - 51$ $n(A \cap B) = 12$ | 1 $\frac{1}{2}$ $\frac{1}{2}$ | 2 |
| 16. | a) حسابی اوسط A.M. = $\frac{a + b}{2}$ b) ہارمونی اوسط H.M. = $\frac{2ab}{a + b}$ | 1 1 | 2 |

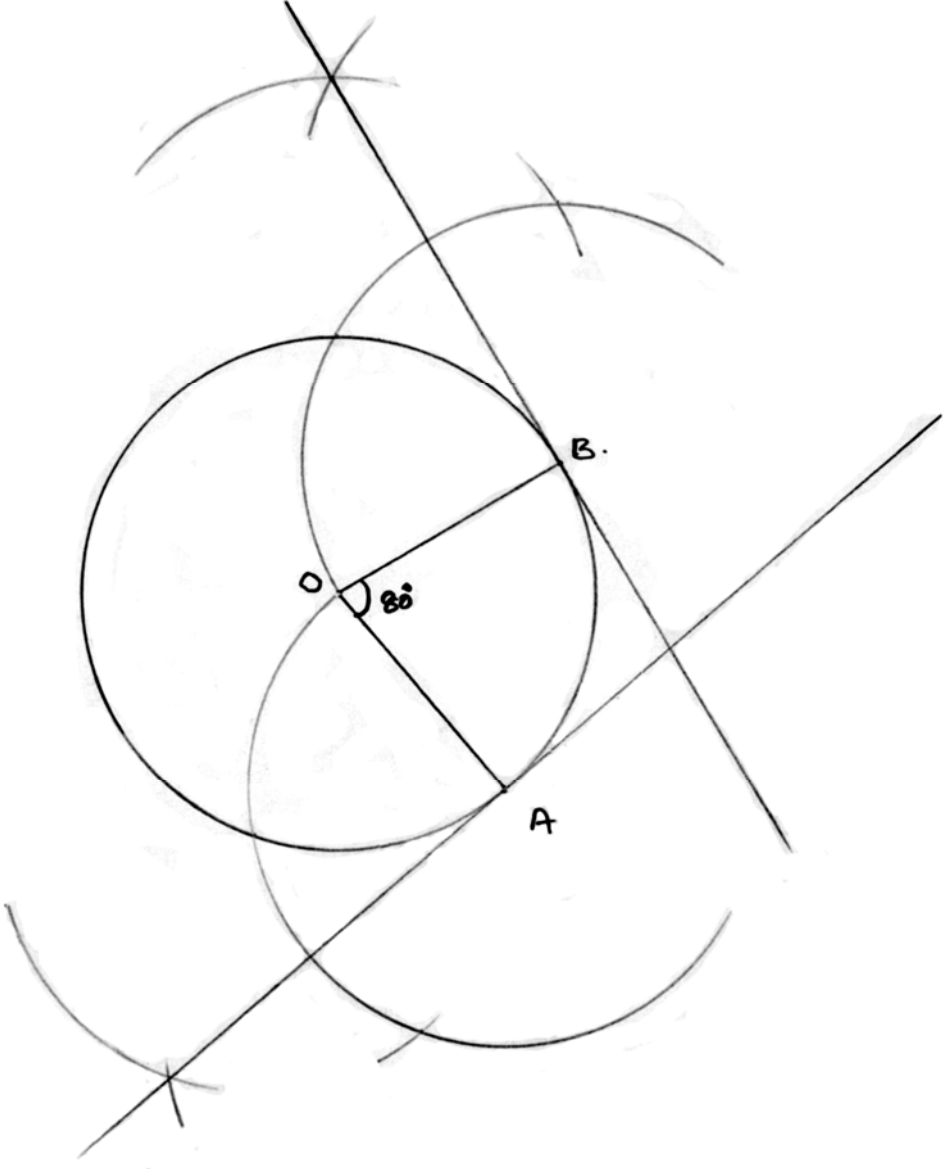
| Qn. Nos. | Value Points | Marks allotted | |
|----------|--|---|---|
| 17. | <p>حل :</p> $a = 2, r = \frac{2}{3} = \frac{2}{3} \times \frac{1}{2} = \frac{1}{3}$ $S_{\infty} = ?$ $S_{\infty} = \frac{a}{1-r}$ $= \frac{2}{1-\frac{1}{3}} = \frac{2}{\frac{2}{3}}$ $= 2 \times \frac{3}{2}$ $\therefore S_{\infty} = 3$ | <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> | 2 |
| 18. | <p>فرض کیجئے کہ $3 + \sqrt{5}$ ایک معقول عدد ہے۔</p> $\Rightarrow 3 + \sqrt{5} = \frac{p}{q} \text{ جہاں } p, q \in \mathbb{Z}, q \neq 0$ $\Rightarrow -3 + \frac{p}{q} = \sqrt{5}$ $\Rightarrow \frac{-3q + p}{q} = \sqrt{5}$ <p>چونکہ $\sqrt{5}$ ایک معقول عدد ہے۔ [فرض کردہ]</p> <p>اس لئے $\frac{-3q + p}{q}$ بھی معقول ہے۔</p> <p>لیکن ہم جانتے ہیں کہ $\sqrt{5}$ معقول نہیں ہے</p> <p>یعنی ہماری قیاس آرائی غلط ہے۔</p> <p>لہذا $3 + \sqrt{5}$ ایک غیر معقول عدد ہے</p> | <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> | 2 |
| 19. | <p>مثلاث کی تعداد $= {}^8C_3$</p> <p>یہاں $n = 8, r = 3$</p> ${}^nC_r = \frac{n!}{(n-r)!r!}$ ${}^8C_3 = \frac{8!}{(8-3)!3!}$ $= \frac{8 \times 7 \times 6 \times 5!}{5! \times 3 \times 2}$ $= 56$ | <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> | 2 |

| Qn. Nos. | Value Points | Marks allotted |
|----------|---|----------------|
| | متبادل طریقہ : | |
| | مثلاًت کی تعداد $n C_3 = \frac{n(n-1)(n-2)}{6}$ | 1 |
| | اگر $n = 8$ | |
| | $8 C_3 = \frac{8 \times 7 \times 6}{6}$ | $\frac{1}{2}$ |
| | $= 56$ | $\frac{1}{2}$ |
| 20. | حل : | |
| | $\frac{1}{8!} + \frac{1}{9!} = \frac{x}{10!}$ | |
| | $\frac{1}{8!} + \frac{1}{9 \times 8!} = \frac{x}{10 \times 9 \times 8!}$ | $\frac{1}{2}$ |
| | $\frac{1}{8!} \left(1 + \frac{1}{9}\right) = \frac{x}{10 \times 9 \times 8!}$ | $\frac{1}{2}$ |
| | $\frac{10}{9} = \frac{x}{10 \times 9}$ | $\frac{1}{2}$ |
| | $\therefore x = 100$ | $\frac{1}{2}$ |
| 21. | حل : | |
| | 7 گولیوں میں سے 4 گولیاں چننے کے طریقے $7 C_4 = 35$ | |
| | $\therefore n(S) = 35$ | $\frac{1}{2}$ |
| | سرخ گولیوں سے 2 گولیاں چننے کے طریقے $4 C_2 = 6$ | $\frac{1}{2}$ |
| | بقیہ 2 سیاہ گولیاں چننے کے طریقے $3 C_2 = 3$ | $\frac{1}{2}$ |
| | $\therefore n(A) = 4 C_2 \times 3 C_2 = 6 \times 3 = 18$ | |
| | \therefore امکان $P(A) = \frac{n(A)}{n(S)} = \frac{18}{35}$ | $\frac{1}{2}$ |

| Qn. Nos. | Value Points | Marks allotted | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|----------------|----------------|---|----|---|----|---|----|---|----|---|----|-----------------|--------------------|---|-------------------|----------------|---|----|---|---|----|---|---|---|---|---|---|---|---|---|---|--|
| 22. | <p>راست طریقہ :</p> <table border="1"> <thead> <tr> <th>x</th> <th>x²</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>25</td> </tr> <tr> <td>6</td> <td>36</td> </tr> <tr> <td>7</td> <td>49</td> </tr> <tr> <td>8</td> <td>64</td> </tr> <tr> <td>9</td> <td>81</td> </tr> <tr> <td>$\Sigma x = 35$</td> <td>$\Sigma x^2 = 255$</td> </tr> </tbody> </table> <p style="text-align: center;">جدول</p> <p>معیاری انحراف</p> $\sigma = \sqrt{\frac{\Sigma x^2}{N} - \left(\frac{\Sigma x}{N}\right)^2}$ $= \sqrt{\frac{255}{5} - \left(\frac{35}{5}\right)^2}$ $= \sqrt{51 - 49}$ $= \sqrt{2}$ <p>$\sigma = 1.4$</p> <p style="text-align: center;">N = 5</p> <p>متبادل طریقہ : (حقیقی میانہ طریقہ) :</p> <table border="1"> <thead> <tr> <th>x</th> <th>d = x - \bar{x}</th> <th>d²</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>-2</td> <td>4</td> </tr> <tr> <td>6</td> <td>-1</td> <td>1</td> </tr> <tr> <td>7</td> <td>0</td> <td>0</td> </tr> <tr> <td>8</td> <td>1</td> <td>1</td> </tr> <tr> <td>9</td> <td>2</td> <td>4</td> </tr> </tbody> </table> <p>$\Sigma x = 35$ $\Sigma d^2 = 10$</p> <p>معیاری انحراف = $\sigma = \sqrt{\frac{\Sigma d^2}{N}}$</p> $= \sqrt{\frac{10}{5}} = \sqrt{2}$ $= \sigma = 1.4$ | x | x ² | 5 | 25 | 6 | 36 | 7 | 49 | 8 | 64 | 9 | 81 | $\Sigma x = 35$ | $\Sigma x^2 = 255$ | x | d = x - \bar{x} | d ² | 5 | -2 | 4 | 6 | -1 | 1 | 7 | 0 | 0 | 8 | 1 | 1 | 9 | 2 | 4 | <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>2</p> <p>1</p> <p>2</p> <p>1/2</p> <p>1/2</p> |
| x | x ² | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 81 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| $\Sigma x = 35$ | $\Sigma x^2 = 255$ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | d = x - \bar{x} | d ² | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | -2 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | -1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 0 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 2 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Qn. Nos. | Value Points | Marks allotted | | | | | | | | | | | | | | | | | | |
|----------|--|----------------|-----------------------|-------|---|-----|---|---|-----|---|---|---|---|---|---|---|---|---|---|-----------------|
| | <p>متبادل طریقہ : [مفروضاتی میانہ طریقہ] :</p> <p>[کوئی بھی اسکور لیا جاسکتا ہے۔] $A = 6$ مفروضاتی میانہ</p> <table border="1"> <thead> <tr> <th>x</th> <th>$d = x - A$</th> <th>d^2</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>- 1</td> <td>1</td> </tr> <tr> <td>6</td> <td>0</td> <td>0</td> </tr> <tr> <td>7</td> <td>1</td> <td>1</td> </tr> <tr> <td>8</td> <td>2</td> <td>4</td> </tr> <tr> <td>9</td> <td>3</td> <td>9</td> </tr> </tbody> </table> <p>$N = 5$ $\Sigma d = 5$ $\Sigma d^2 = 15$</p> <p>معیاری انحراف $\sigma = \sqrt{\frac{\Sigma d^2}{N} - \left(\frac{\Sigma d}{N}\right)^2}$</p> <p>$= \sqrt{\frac{15}{5} - \left(\frac{5}{5}\right)^2}$</p> <p>$= \sqrt{3 - 1} = \sqrt{2}$</p> <p>$\sigma = 1.4$</p> | x | $d = x - A$ | d^2 | 5 | - 1 | 1 | 6 | 0 | 0 | 7 | 1 | 1 | 8 | 2 | 4 | 9 | 3 | 9 | 1 1/2 1/2 |
| x | $d = x - A$ | d^2 | | | | | | | | | | | | | | | | | | |
| 5 | - 1 | 1 | | | | | | | | | | | | | | | | | | |
| 6 | 0 | 0 | | | | | | | | | | | | | | | | | | |
| 7 | 1 | 1 | | | | | | | | | | | | | | | | | | |
| 8 | 2 | 4 | | | | | | | | | | | | | | | | | | |
| 9 | 3 | 9 | | | | | | | | | | | | | | | | | | |
| | <p>متبادل طریقہ : [مرحلاتی انحراف طریقہ]</p> <p>فرض شدہ میانہ $A = 7$, مشترک جز $C = 1$</p> <table border="1"> <thead> <tr> <th>x</th> <th>$d = \frac{x - A}{C}$</th> <th>d^2</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>- 2</td> <td>4</td> </tr> <tr> <td>6</td> <td>- 1</td> <td>1</td> </tr> <tr> <td>7</td> <td>0</td> <td>0</td> </tr> <tr> <td>8</td> <td>1</td> <td>1</td> </tr> <tr> <td>9</td> <td>2</td> <td>4</td> </tr> </tbody> </table> <p>$N = 5$ $\Sigma d = 0$ $\Sigma d^2 = 10$</p> <p>معیاری انحراف $\sigma = \sqrt{\frac{\Sigma d^2}{N} - \left(\frac{\Sigma d}{N}\right)^2} \times C$</p> <p>$= \sqrt{\frac{10}{5} - 0 \times 1}$</p> <p>$= \sqrt{2}$</p> <p>$\sigma = 1.4$</p> | x | $d = \frac{x - A}{C}$ | d^2 | 5 | - 2 | 4 | 6 | - 1 | 1 | 7 | 0 | 0 | 8 | 1 | 1 | 9 | 2 | 4 | 1 1/2 1/2 |
| x | $d = \frac{x - A}{C}$ | d^2 | | | | | | | | | | | | | | | | | | |
| 5 | - 2 | 4 | | | | | | | | | | | | | | | | | | |
| 6 | - 1 | 1 | | | | | | | | | | | | | | | | | | |
| 7 | 0 | 0 | | | | | | | | | | | | | | | | | | |
| 8 | 1 | 1 | | | | | | | | | | | | | | | | | | |
| 9 | 2 | 4 | | | | | | | | | | | | | | | | | | |

| Qn. Nos. | Value Points | Marks allotted |
|----------|--|-------------------|
| 23. | <p>دی گئی مساوات کا $ax^2 + bx + c = 0$ سے موازنہ پر</p> <p>جہاں $a = 1, b = -2, c = -4$ 1/2</p> $\therefore x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $= \frac{-(-2) \pm \sqrt{(-2)^2 - 4 \times 1 \times -4}}{2 \times 1}$ $= \frac{2 \pm \sqrt{4 + 16}}{2}$ $= \frac{2 \pm 2\sqrt{5}}{2}$ $= \frac{2(1 \pm \sqrt{5})}{2}$ <p>$(1 + \sqrt{5})$ یا $(1 - \sqrt{5})$ دو درجی مساوات کا جزو ہے 1/2</p> <p>یا</p> <p>یہاں $a = 1, b = -2, c = -3$ 1/2</p> $\therefore \Delta = b^2 - 4ac$ $= (-2)^2 - 4 \times 1 \times (-3)$ $= 4 + 12$ $= 16$ <p>$\Delta > 0$ اس لئے جذور حقیقی اور مختلف ہوتے ہیں۔ 1/2</p> | <p>2</p> <p>2</p> |

| Qn. Nos. | Value Points | Marks allotted |
|----------|--|----------------|
| 24. | <p>نصف قطر = $r = 3.5$ cm زاویہ = 80°</p>  <p>دائرہ $\frac{1}{2}$ زاویہ $\frac{1}{2}$ خطوط مماس کی ساخت A اور B 1</p> | 2 |

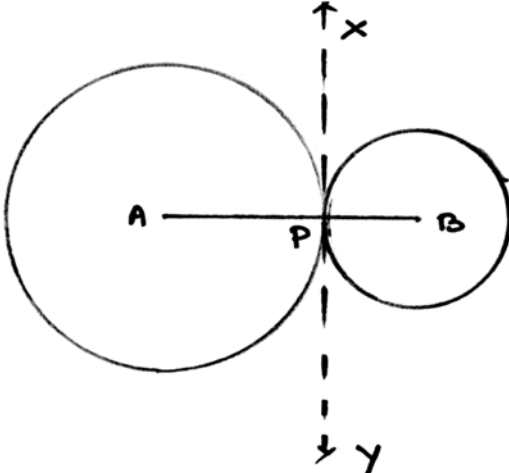
| Qn. Nos. | Value Points | Marks allotted |
|----------|---|--|
| 25. | <p>میں ΔABC اور ΔADC</p> <p>$\hat{BAC} = \hat{ADC}$ (مفروضہ)</p> <p>$\hat{ACB} = \hat{ACD}$ (مشترک زاویہ)</p> <p>$\therefore \Delta ACB \sim \Delta DCA$ (مساوی الزاویہ مثلثات)</p> <p>$\therefore \frac{AC}{DC} = \frac{CB}{CA}$ (اصول - AA)</p> <p>$\therefore AC^2 = BC \times DC$</p> <p>یا</p> <p>$BD \perp AC$ اور $\hat{ABC} = 90^\circ$ میں $\triangle ABC$</p> <p>$\therefore AB^2 = AD \times AC \rightarrow (1)$ نتائج صریح</p> <p>$BC^2 = CD \times AC \rightarrow (2)$ نتائج صریح</p> <p>(1) کی (2) سے تقسیم پر</p> <p>$\frac{AB^2}{BC^2} = \frac{AD \times AC}{CD \times AC}$</p> <p>$\therefore \frac{AB^2}{BC^2} = \frac{AD}{CD}$</p> | <p>1</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>2</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>2</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> |
| 26. | <p>$\sin 30^\circ = \frac{1}{2}$</p> <p>$\cos 60^\circ = \frac{1}{2}, \tan 45^\circ = 1$</p> <p>$\therefore \sin 30^\circ \cdot \cos 60^\circ - \tan^2 45^\circ$</p> <p>$= \frac{1}{2} \times \frac{1}{2} - (1)^2$</p> <p>$= \frac{1}{4} - 1 = \frac{1-4}{4}$</p> <p>$= -\frac{3}{4}$</p> | <p>1</p> <p>2</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> |

| Qn. Nos. | Value Points | Marks allotted |
|----------|---|--|
| 27. | <p>حل :</p> $(x_1, y_1) = (-5, 4)$ $(x_2, y_2) = (-7, 1)$ $\therefore d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ $\text{دائرہ کے نصف قطر} = \sqrt{[-7 - (-5)]^2 + (1 - 4)^2}$ $= \sqrt{(-7 + 5)^2 + (-3)^2}$ $= \sqrt{(-2)^2 + (-3)^2}$ $= \sqrt{4 + 9}$ $r = \sqrt{13}$ | <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>2</p> |
| 28. | <p>نصف قطر کی درمیانی نسبت</p> $r_1 : r_2 = 2 : 3$ <p>بلندی سطحی رتبوں کی نسبت</p> $S_1 : S_2 = 5 : 6$ $\therefore \frac{S_1}{S_2} = \frac{2\pi r_1 h_1}{2\pi r_2 h_2}$ $\frac{5}{6} = \frac{2h_1}{3h_2}$ $\therefore \frac{h_1}{h_2} = \frac{5 \times 3}{6 \times 2} = \frac{5}{4}$ <p>بلندیوں کی درمیانی نسبت = 5 : 4</p> | <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>2</p> |

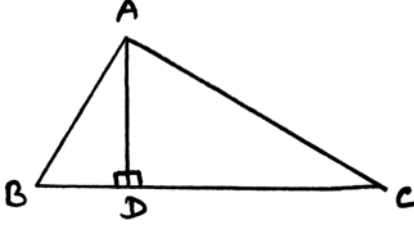
| Qn. Nos. | Value Points | Marks allotted | |
|----------|--|---|---|
| 29. | <p>کرہ کا نصف قطر = $r_1 = 10$ cm مخروط کی بلندی = $h_2 = 10$ cm مخروط کا نصف قطر = $r_2 = 5$ cm</p> $\text{کرہ کا حجم} = \frac{4}{3} \pi r_1^3$ $\text{مخروطوں کی تعداد} = \frac{\text{کرہ کا حجم}}{\text{مخروط کا حجم}}$ $= \frac{\frac{4}{3} \pi r_1^3}{\frac{1}{3} \pi r_2^2 h_2}$ $= \frac{4 \times 10^3 \times 10}{3 \times 3 \times 10}$ $= 16$ <p>مخروطوں کی تعداد = 16</p> | <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> | 2 |
| 30. | <p>پیمانہ:</p> <p>25 m = 1 cm 50 m = 2 cm 75 m = 3 cm 100 m = 4 cm 125 m = 5 cm 200 m = 8 cm.</p> | <p>$\frac{1}{2}$</p> <p>$1\frac{1}{2}$</p> | 2 |

| Qn. Nos. | Value Points | Marks allotted | |
|------------|--|--|---|
| IV. 31. | <p>کارمذوج $\sqrt{6} - \sqrt{3}$ is $\sqrt{6} + \sqrt{3}$</p> $\therefore \frac{\sqrt{6} + \sqrt{3}}{\sqrt{6} - \sqrt{3}} \times \frac{\sqrt{6} + \sqrt{3}}{\sqrt{6} + \sqrt{3}}$ $= \frac{(\sqrt{6} + \sqrt{3})^2}{(\sqrt{6} + \sqrt{3})(\sqrt{6} - \sqrt{3})}$ $= \frac{6 + 3 + 2\sqrt{6} \cdot \sqrt{3}}{6 - 3}$ $= \frac{9 + 2\sqrt{18}}{3}$ $= \frac{9 + 6\sqrt{2}}{3}$ $= \frac{3(3 + 2\sqrt{2})}{3}$ $= 3 + 2\sqrt{2}$ | <p>1</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> | 3 |
| 32. | $x + 1 \overline{) x^2 + 3x - 8}$ $\underline{x^3 + 4x^2 - 5x + 6}$ $\phantom{x + 1 \overline{) x^2 + 3x - 8}} \cancel{x^3} + \cancel{x^2}$ $\phantom{x + 1 \overline{) x^2 + 3x - 8}} (-) \quad (-)$ <hr/> $\phantom{x + 1 \overline{) x^2 + 3x - 8}} \phantom{\cancel{x^3} + \cancel{x^2}} 3x^2 - 5x + 6$ $\phantom{x + 1 \overline{) x^2 + 3x - 8}} \phantom{\cancel{x^3} + \cancel{x^2}} \underline{3x^2 + 3x}$ $\phantom{x + 1 \overline{) x^2 + 3x - 8}} \phantom{\cancel{x^3} + \cancel{x^2}} (-) \quad (-)$ <hr/> $\phantom{x + 1 \overline{) x^2 + 3x - 8}} \phantom{\cancel{x^3} + \cancel{x^2}} - 8x + 6$ $\phantom{x + 1 \overline{) x^2 + 3x - 8}} \phantom{\cancel{x^3} + \cancel{x^2}} \underline{- 8x - 8}$ $\phantom{x + 1 \overline{) x^2 + 3x - 8}} \phantom{\cancel{x^3} + \cancel{x^2}} (+) \quad (+)$ <hr/> $\phantom{x + 1 \overline{) x^2 + 3x - 8}} \phantom{\cancel{x^3} + \cancel{x^2}} 14$ | <p>1</p> | 3 |
| | <p>خارج قسمت $q(x) = x^2 + 3x - 8$</p> | 1/2 | |
| | <p>باقی $r(x) = 14$</p> | 1/2 | |

| Qn. Nos. | Value Points | Marks allotted | | | | | | | | | | | | | | | |
|----------|---|----------------|-----|---------|-----|------|--|--|-----|----|------|--|---|------|----|-------|---|
| | <p>تصدیق :</p> $g(x) \times q(x) + r(x)$ $= (x+1)(x^2 + 3x - 8) + 14$ $= x^3 + 3x^2 - 8x + x^2 + 3x - 8 + 14$ $= x^3 + 4x^2 - 5x + 6$ $= p(x)$ | 1/2 | | | | | | | | | | | | | | | |
| | <p>یا</p> $\therefore p(x) = [g(x) \times q(x)] + r(x)$ | 1/2 | | | | | | | | | | | | | | | |
| | <p>ترکیبی تقسیم :</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">- 2</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">- 16</td> <td style="padding: 5px;">- 9</td> <td style="padding: 5px;">- 36</td> </tr> <tr> <td></td> <td style="padding: 5px;"></td> <td style="padding: 5px;">- 8</td> <td style="padding: 5px;">48</td> <td style="padding: 5px;">- 78</td> </tr> <tr> <td></td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">- 24</td> <td style="padding: 5px;">39</td> <td style="padding: 5px;">- 114</td> </tr> </table> | - 2 | 4 | - 16 | - 9 | - 36 | | | - 8 | 48 | - 78 | | 4 | - 24 | 39 | - 114 | 2 |
| - 2 | 4 | - 16 | - 9 | - 36 | | | | | | | | | | | | | |
| | | - 8 | 48 | - 78 | | | | | | | | | | | | | |
| | 4 | - 24 | 39 | - 114 | | | | | | | | | | | | | |
| | <p>∴ خارج قسمت $4x^2 - 24x + 39$</p> | 1/2 | | | | | | | | | | | | | | | |
| | <p>باقی $r(x) = -114$</p> | 1/2 | | | | | | | | | | | | | | | |
| 33. | <p>فرض کیجئے کہ</p> <p>وہ تین متواتر مثبت صحیح اعداد $= x, (x+1), (x+2)$</p> $x^2 + (x+1)(x+2) = 92$ $x^2 + x^2 + 2x + x + 2 = 92$ $2x^2 + 3x + 2 = 92$ $2x^2 + 3x + 2 - 92 = 0$ $2x^2 + 3x - 90 = 0$ $2x^2 - 12x + 15x - 90 = 0$ $2x(x-6) + 15(x-6) = 0$ <p>∴ $x = 6$, یا $x = -\frac{15}{2}$</p> <p>مطلوبہ اعداد 6, 7, 8</p> | 1/2 | | | | | | | | | | | | | | | |
| | <p>یا</p> $2 \times -90 = -180$ <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">/</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;">15 - 12</td> <td></td> </tr> </table> | / | | 15 - 12 | | 1/2 | | | | | | | | | | | |
| / | | | | | | | | | | | | | | | | | |
| 15 - 12 | | | | | | | | | | | | | | | | | |
| | | 3 | | | | | | | | | | | | | | | |
| | | 3 | | | | | | | | | | | | | | | |

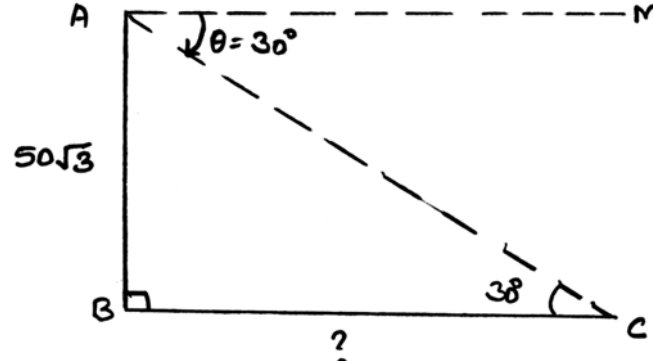
| Qn. Nos. | Value Points | Marks allotted | |
|----------|--|--|---------------|
| | فرض کیجئے کہ | | |
| | $x > y$ اور x, y وہ اعداد | $\frac{1}{2}$ | |
| | i.e. $x^2 + y^2 = 180 \rightarrow (1)$ | $\frac{1}{2}$ | |
| | $\therefore y^2 = 8x \rightarrow (2)$ | $\frac{1}{2}$ | |
| | (1) میں (2) کو درج کرنے پر | | |
| | $x^2 + 8x = 180$ | | |
| | $x^2 + 8x - 180 = 0$ | | |
| | $x^2 + 18x - 10x - 180 = 0$ | $\begin{array}{c} -180 \\ \diagup \quad \diagdown \\ 18 \quad -10 \end{array}$ | $\frac{1}{2}$ |
| | $x(x + 18) - 10(x + 18) = 0$ | $18 - 10$ | |
| | $(x - 10)(x + 18) = 0$ | | |
| | $\therefore x = 10$ or $x = -18$ | $\frac{1}{2}$ | 3 |
| | اب اگر $x = 10$ $y^2 = 8x$ | | |
| | $y^2 = 8 \times 10$ | | |
| | $y = \sqrt{80} = \sqrt{16 \times 5}$ | | |
| | $= 4\sqrt{5}$ | $\frac{1}{2}$ | |
| | مطلوبہ اعداد $10, 4\sqrt{5}$ | | |
| 34. |  | | |
| | منفروضہ: A اور B مماسی دائروں کے مراکز اور P نقطہ تماس ہے۔ | $\frac{1}{2}$ | |
| | مطلوب: ثابت کرنا ہے کہ A، P اور B ہم خط ہیں۔ | $\frac{1}{2}$ | |
| | عمل: خط مماس XPY کھینچئے۔ | $\frac{1}{2}$ | |

| Qn. Nos. | Value Points | Marks allotted |
|----------|--|---|
| | <p style="text-align: right;">ثبوت : شکل میں</p> $\left. \begin{aligned} \hat{A}PX &= 90^\circ \rightarrow (1) \\ \hat{B}PX &= 90^\circ \rightarrow (2) \end{aligned} \right\} \text{(مماس } \perp \text{ نصف قطر)}$ <p>(i) اور (ii) کی جمع لینے پر</p> $\hat{A}PX + \hat{B}PX = 90^\circ + 90^\circ$ $\hat{A}PB = 180^\circ \quad \hat{A}PB \text{ زاویہ مستقیم ہے}$ <p>∴ اس لئے APB خط مستقیم ہے لہذا A, P, B ہم خط ہیں۔</p> | <p style="text-align: right;">1/2</p> <p style="text-align: right;">3</p> <p style="text-align: right;">1/2</p> |
| 35. | <p>میں $\triangle ABC$, $AB = BC = CA$</p> <p>$AN \perp BC$</p> <p>∴ $BN = NC = \frac{1}{2} BC = \frac{1}{2} AB$</p> <p>میں $\triangle ABN$, $\hat{A}NB = 90^\circ$</p> <p>∴ $AB^2 = AN^2 + BN^2$</p> <p>$AN^2 = AB^2 - BN^2$</p> <p>$= AB^2 - \left(\frac{1}{2}AB\right)^2$</p> <p>$= AB^2 - \frac{AB^2}{4}$</p> <p>$AN^2 = \frac{4AB^2 - AB^2}{4}$</p> <p style="border: 1px solid black; padding: 2px;">$4AN^2 = 3AB^2$</p> <p style="text-align: center;">یا</p> | <p style="text-align: right;">1/2 + 1/2</p> <p style="text-align: right;">1/2</p> <p style="text-align: right;">1/2</p> <p style="text-align: right;">3</p> <p style="text-align: right;">1/2</p> <p style="text-align: right;">1/2</p> |

| Qn. Nos. | Value Points | Marks allotted |
|----------|---|---|
| | <div style="text-align: center;">  </div> <p> $\triangle ABD$ میں $\hat{A}DB = 90^\circ$ $\therefore AB^2 = AD^2 + BD^2$ $AD^2 = AB^2 - BD^2 \rightarrow (1)$ </p> <p> $\triangle ADC$ میں $\hat{A}DC = 90^\circ$ $\therefore AC^2 = AD^2 + DC^2$ $AD^2 = AC^2 - DC^2 \rightarrow (2)$ </p> <p style="text-align: center;">(i) اور (ii) کی رو سے</p> $AB^2 - BD^2 = AC^2 - DC^2$ $\therefore AB^2 + DC^2 = AC^2 + BD^2$ | <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>3</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>3</p> |
| 36. | $LHS = \tan^2 A - \sin^2 A$ $= \frac{\sin^2 A}{\cos^2 A} - \sin^2 A$ $= \frac{\sin^2 A - \sin^2 A \cos^2 A}{\cos^2 A}$ $= \frac{\sin^2 A (1 - \cos^2 A)}{\cos^2 A}$ | $\therefore \tan A = \frac{\sin A}{\cos A}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ |
| | <p>لیکن $1 - \cos^2 A = \sin^2 A$</p> $= \frac{\sin^2 A \cdot \sin^2 A}{\cos^2 A}$ $= \frac{\sin^2 A}{\cos^2 A} \cdot \sin^2 A$ $= \tan^2 A \cdot \sin^2 A$ $\therefore LHS = RHS$ | $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ |

| Qn. Nos. | Value Points | Marks allotted |
|-------------|--|-------------------|
| | <p>مبادل طریقہ :</p> <p>LHS = $\tan^2 A - \sin^2 A$</p> <p>$= (\sec^2 A - 1) - \sin^2 A$ $\therefore \tan^2 A = \sec^2 A - 1$ $\frac{1}{2}$</p> <p>$= \frac{1}{\cos^2 A} - 1 - (1 - \cos^2 A)$ $\therefore \sec^2 A = \frac{1}{\cos^2 A}$ $\frac{1}{2}$</p> <p>$\sin^2 A = 1 - \cos^2 A$</p> <p>$= \frac{1 - \cos^2 A - \cos^2 A + \cos^4 A}{\cos^2 A}$ $\frac{1}{2}$</p> <p>$= \frac{1 - 2\cos^2 A + \cos^4 A}{\cos^2 A}$</p> <p>$= \frac{(1 - \cos^2 A)^2}{\cos^2 A}$ $\therefore 1 - 2\cos^2 A + \cos^4 A$</p> <p>$= (1 - \cos^2 A)^2$ $\frac{1}{2}$</p> <p>$= \frac{(\sin^2 A)^2}{\cos^2 A}$ $\therefore 1 - \cos^2 A = \sin^2 A$ $\frac{1}{2}$</p> <p>$= \frac{\sin^2 A}{\cos^2 A} \cdot \sin^2 A$</p> <p>$= \tan^2 A \cdot \sin^2 A.$</p> <p>$\therefore$ LHS = RHS. $\frac{1}{2}$</p> | |

یا

| Qn. Nos. | Value Points | Marks allotted |
|--|---|----------------|
| V. 37 |  | 1 |
| | <p>فرض کیجئے کہ عمارت کی بلندی ہے AB</p> <p>$AB = 50\sqrt{3}$ m</p> <p>عمارت اور جسم کا درمیانی فاصلہ BC</p> <p>زاویہ نزول 30°</p> | 3 |
| | <p>لہذا $AM \parallel BC$, اس لئے $\hat{M}AC = \hat{A}CB = 30^\circ$</p> | $\frac{1}{2}$ |
| | <p>میں $\triangle ABC$, $\hat{A}BC = 90^\circ$, $\hat{A}CB = 30^\circ$</p> <p>$\therefore \tan 30^\circ = \frac{AB}{BC}$</p> <p>$\frac{1}{\sqrt{3}} = \frac{50\sqrt{3}}{BC}$</p> | $\frac{1}{2}$ |
| | <p>$\therefore BC = 50\sqrt{3} \times \sqrt{3}$</p> <p>$= 50 \times 3$</p> <p>عمارت اور جسم کا درمیانی فاصلہ ہے $= 150$ m</p> | $\frac{1}{2}$ |
| <p>حسابی تصاعد میں</p> <p>$T_3 + T_5 = 30$</p> <p>$a + 2d + a + 4d = 30$</p> <p>$2a + 6d = 30$</p> <p>$a + 3d = 15 \rightarrow (i)$</p> <p>اور $T_4 + T_8 = 46$</p> <p>$a + 3d + a + 7d = 46$</p> <p>$2a + 10d = 46$</p> <p>$a + 5d = 23 \rightarrow (ii)$</p> | $\frac{1}{2}$ | |

| Qn. Nos. | Value Points | Marks allotted |
|----------|--|----------------|
| | <p>مساوات (i) اور (ii) سے تفریق کرنے پر</p> $\begin{array}{r} a + 5d = 23 \\ - a + 3d = 15 \\ \hline (-) \quad (-) \\ 2d = 8 \\ \therefore d = 4 \end{array}$ | 1/2 |
| | <p>$d = 4$ کو مساوات (i) میں درج کرنے پر</p> $\begin{aligned} a + 3d &= 15 \\ a + 3 \times 4 &= 15 \\ a + 12 &= 15 \\ a &= 15 - 12 = 3 \end{aligned}$ | 1 |
| | <p>اگر $a = 3, d = 4$ حساباً تصاعد</p> $3, 7, 11, 15, \dots$ | 1/2 |
| | یا | |
| | <p>ہندسوی تصاعد میں $T_4 = 8$</p> $ar^3 = 8 \rightarrow (1)$ | 1/2 |
| | <p>اور $T_8 = 128$</p> $ar^7 = 128 \rightarrow (2)$ | 1/2 |
| | <p>مساوات (2) کو مساوات (1) سے تقسیم کرنے پر</p> $\frac{ar^7}{ar^3} = \frac{128}{8}$ | 1/2 |
| | $r^4 = 16$ | |
| | $\therefore \boxed{r = 2}$ | 1/2 |
| | <p>اگر $r = 2$ تو $ar^3 = 8$</p> $\begin{aligned} a(2)^3 &= 8 \\ 8a &= 8 \\ \therefore \boxed{a = 1} \end{aligned}$ | 1/2 |
| | <p>اگر $a = 1$ اور $r = 2$ تو</p> $S_n = \frac{a(r^n - 1)}{r - 1}$ | 1/2 |
| | $\therefore S_{10} = \frac{1(2^{10} - 1)}{2 - 1}$ | 1/2 |
| | $= 1024 - 1$ | |
| | $\boxed{S_{10} = 1023}$ | 1/2 |

| Qn. Nos. | Value Points | Marks allotted |
|----------|--------------|----------------|
|----------|--------------|----------------|

38. $x^2 - 2x - 3 = 0$

$\therefore y = x^2 - 2x - 3$

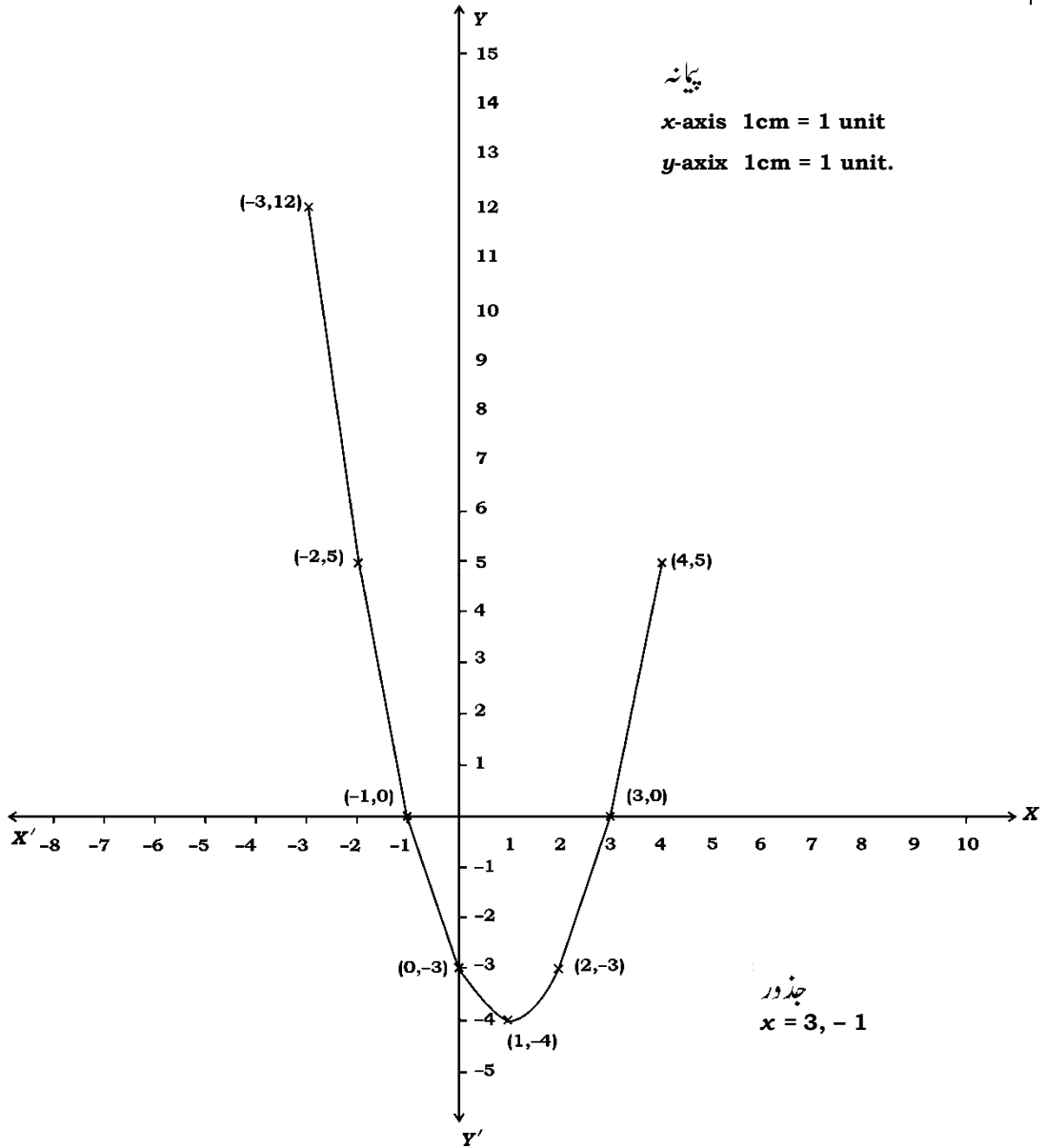
| | | | | | | | | |
|---|----|----|----|---|---|----|----|----|
| x | 0 | 1 | 2 | 3 | 4 | -1 | -2 | -3 |
| y | -3 | -4 | -3 | 0 | 5 | 0 | 5 | 12 |

جدول 2

پیارا بولا کھینچنا 1

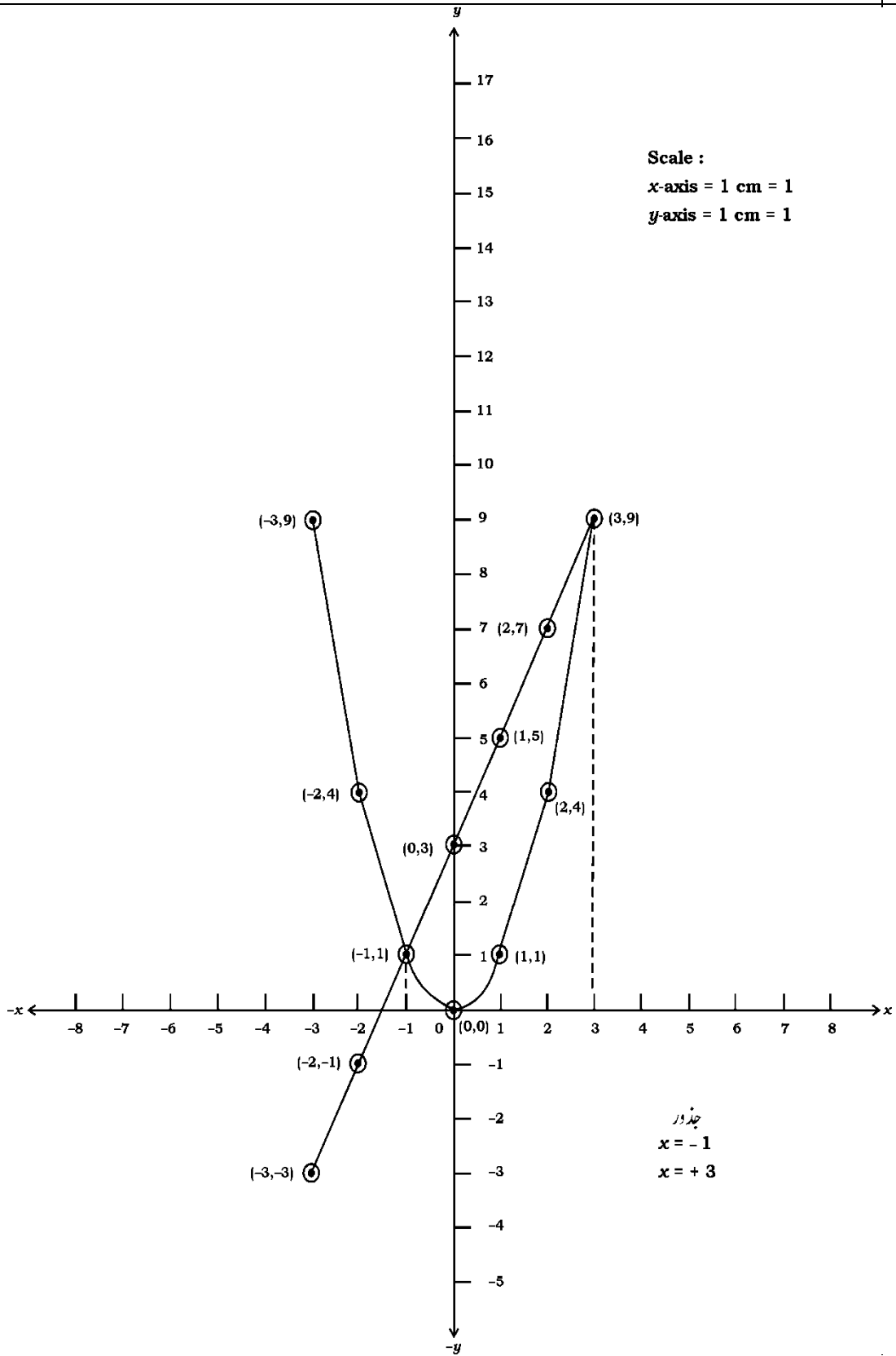
جدور معلوم کرنا 1

4



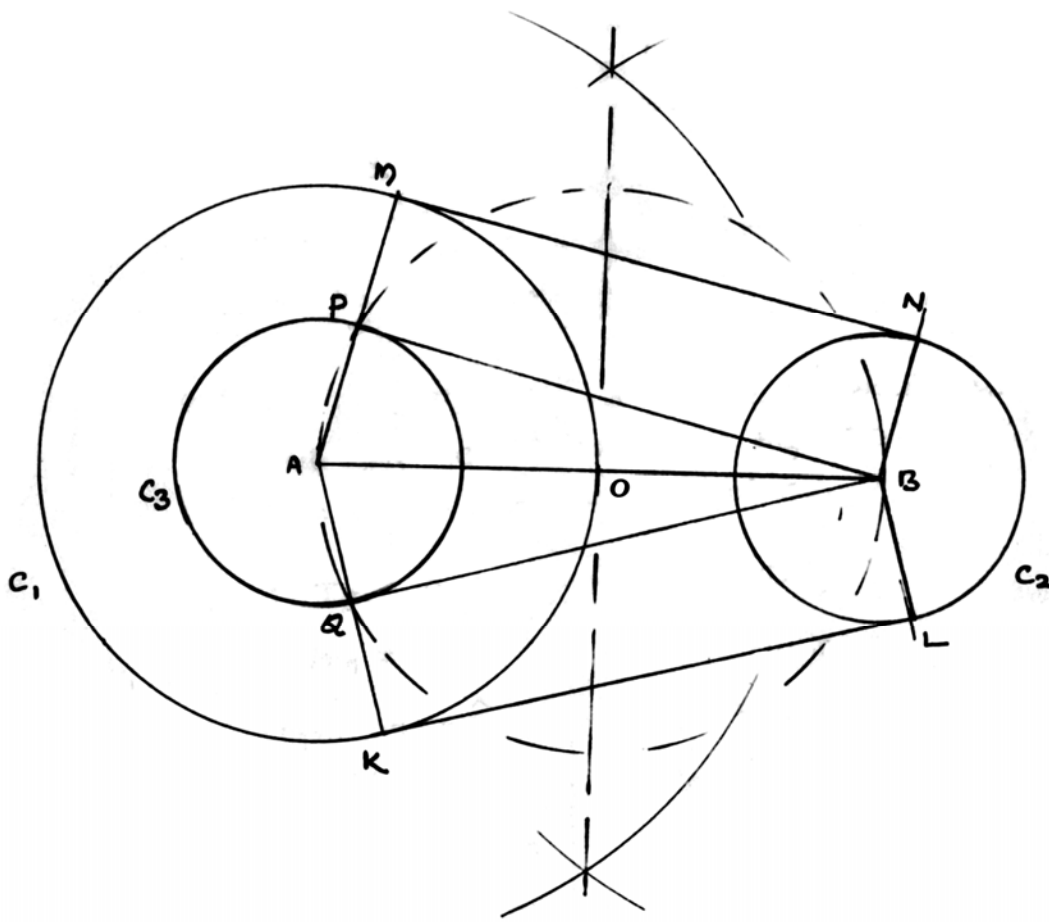
| Qn. Nos. | Value Points | Marks allotted | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|---|-------------------|----|----|----|---|---|---|---|-----|---|---|---|---|---|---|---|-----|----|----|----|---|---|---|---|-----|----|----|---|---|---|---|---|---|
| | <p>متبادل طریقہ :</p> $x^2 - 2x - 3 = 0$ <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px;">$y = x^2$</div> <div style="border: 1px solid black; padding: 2px 5px;">$y = +2x + 3$</div> </div> <p>$y = x^2$</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>x</td> <td>-3</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>y</td> <td>9</td> <td>4</td> <td>1</td> <td>0</td> <td>1</td> <td>4</td> <td>9</td> </tr> </table> <p>$y = 2x + 3$</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>x</td> <td>-3</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>y</td> <td>-3</td> <td>-1</td> <td>1</td> <td>3</td> <td>5</td> <td>7</td> <td>9</td> </tr> </table> <p style="text-align: right; margin-right: 20px;"> 2 جدول 1 پیارا بولا کھینچنا 1 جذور معلوم کرنا </p> | x | -3 | -2 | -1 | 0 | 1 | 2 | 3 | y | 9 | 4 | 1 | 0 | 1 | 4 | 9 | x | -3 | -2 | -1 | 0 | 1 | 2 | 3 | y | -3 | -1 | 1 | 3 | 5 | 7 | 9 | 4 |
| x | -3 | -2 | -1 | 0 | 1 | 2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| y | 9 | 4 | 1 | 0 | 1 | 4 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | -3 | -2 | -1 | 0 | 1 | 2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| y | -3 | -1 | 1 | 3 | 5 | 7 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Qn. Nos. | Value Points | Marks allotted |
|----------|--------------|----------------|
|----------|--------------|----------------|



Scale :
 x-axis = 1 cm = 1
 y-axis = 1 cm = 1

بسط
 $x = -1$
 $x = +3$

| Qn. Nos. | Value Points | Marks allotted |
|----------|---|----------------|
| 39. | <p> $d = 8 \text{ cm}$ $R = 4 \text{ cm}$ $r = 2 \text{ cm}$ $R - r = 4 - 2 = 2 \text{ cm}$ </p>  <p> مماس کی لمبائی $\rightarrow KL = MN = 7.8 \text{ cm}$ خط AB کھینچ کر درمیانی نقطہ حاصل کرنا 1 دائرے C_1، C_2 اور C_3 کھینچنا $1 \frac{1}{2}$ BP، BQ اور KL کو جوڑنا 1 خطوط مماس کی لمبائی ناپ کر لکھنا $\frac{1}{2}$ </p> | 4 |

| Qn. Nos. | Value Points | Marks allotted |
|----------|---|----------------|
| 40. | <div style="text-align: center;"> </div> <p style="text-align: center;">مفروضہ $\triangle DEF$ اور $\triangle ABC$ میں</p> <p style="text-align: center;">$\hat{BAC} = \hat{EDF}$, $\hat{ABC} = \hat{DEF}$</p> <p style="text-align: center;">مطلوب : ثابت کرنا ہے کہ $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$</p> <p style="text-align: center;">عمل AB اور AC پر نقاط G اور H اس طرح لیجئے کہ</p> <p style="text-align: center;">$AG = DE$ اور $AH = DF$ ہو۔ G اور H کو جوڑئے</p> <p>ثبوت : In $\triangle AGH$ and $\triangle DEF$</p> <p style="text-align: center;">$AG = DE$ عمل</p> <p style="text-align: center;">$\hat{GAH} = \hat{EDF}$ مفروضہ</p> <p style="text-align: center;">$AH = DF$ $\frac{1}{2}$</p> <p>$\therefore \triangle AGH \cong \triangle DEF$ مماثل مثلثات کی خاصیت</p> <p style="text-align: center;">$\therefore GH = EF$ $\frac{1}{2}$</p> <p style="text-align: center;">$\hat{AGH} = \hat{DEF}$ CPCT</p> <p>but $\hat{DEF} = \hat{ABC}$ مفروضہ</p> <p>$\therefore \hat{AGH} = \hat{ABC}$ نظیری زاویے</p> <p>$\therefore GH \parallel BC$ $\frac{1}{2}$</p> <p>$\therefore \frac{AB}{AG} = \frac{BC}{GH} = \frac{AC}{AH}$ BPT کا معکوس</p> <p>but $AG = DE$, $GH = EF$, $AH = DF$</p> <p>$\therefore \frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$ $\frac{1}{2}$</p> | 4 |