**SET 5**

FORM THREE

MATHS 2

**MARKING SCHEME**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **WORKING** | **MARKS** | **REMARKS** |
| 1. | |  |  |  |  | | --- | --- | --- | --- | | S | 60 | 100 | 840 | | 2 | 30 | 50 | 420 | | 2 | 15 | 25 | 210 | | 5 | 3 | 5 | 42 |   22 x 5 = 20 | B1  B1 |  |
|  |  | 02 |  |
| 2. | =  =  =    520  4203  520  = | M1  M1  A1 |  |
|  |  | 03 |  |
| 3. | a = 2  n = 10  Tn =  T10 = ?  = 2 *x* (0.5)10-1  = 2 *x* (0.5)9  = 3.90625 x 10-3  Sn =  S10 = ?  =  = 2 x 0.999023437  = 3.99609375 | M1  A1  M1  A1 |  |
|  |  | 04 |  |
| 4. |  | M1  A1 |  |
|  |  | 02 |  |
| 5. | 4, 16, 28, 40, …………………. 2260cm.  a = 4  d = 12  n = ?  Tn = 2260  Tn = a + (n - 1) d  T10 = 2260  2260 = 4 + (n - 1) 12  = 4 + 12n – 12  2260 = 12n – 12  2260 = 12n – 8  12n = 2260 + 8  12n = 2268  n =  = | B1  M1  A1 |  |
|  |  | 03 |  |
| 6. | |  |  |  |  | | --- | --- | --- | --- | | Bus service number | 4 | 8 | 3 | | Time intervals | 15 | 20 | 30minutes |   15 = 3 *x* 5  20 = 2 *x* 2 *x* 5  = 22 *x* 5  30 = 2 *x* 3 *x* 5  L.C.M = 22 *x* 3 *x* 5  60 minutes = 1hour  06.00  1.00  7.00 Am | B1  B1  B1 |  |
|  |  | 03 |  |
| 7. | Maximum length = 2.55cm  Length = 2.50 ± 0.05  Minimum length = 2.24cm  Maximum width = 1.25 cm  Width = 1.20 ± 0.05  Minimum width = 1.15cm  Actual area = 2.5 x 1.2 = 3.00cm2  Maximum Area = 2.55 x 1.25  = 3.1875cm2  Maximum Area = 2.45 x 1.15  = 2.8175 cm2  [Maximum Area = Actual] + [Actual - Minimum]  2  [3.1875 - 3] + [3 – 2.8175]  2  = 0.1875 + 0.1825  2  = 0.185 | B1  B1  B1  B1 |  |
|  |  | 04 |  |
| 8. | a = -7  d = 3  n = 8  Tn = a + (n - 1)d  T8 = ?  = -7 + [8 - 1]3  = -7 + 21  = 14 Ans  SIS = ?  Sn =  =  =  =  =  = 210 | M1  A1 |  |
|  |  | 04 |  |
| 9. | Arc AB = x 2πr  =  = 13.964 | M1  A1 |  |
|  | **A**  **B**  **C**  **D**  **A = 40**  **5cm** | 02 |  |
| 10. | A =  =  =  =  =  =  =  =  =  = | B1  B1 |  |
|  | **E**  **A**  **20cm**  **D**  **F**  **C**  **9cm**  **B**  **9cm**  **9cm** | 03 |  |
| 11. | V = X- Area x 20  =  =  =  = 701.5cm2  Alternatively  V =  =  = 701.5cm2 | M1  A1  M1  A1 |  |
|  |  | 04 |  |
| 12. | =  =  =  =  =  =  = | B1  M1  A1 |  |
|  |  | 03 |  |
| 13. | [  Let | M1  A1  B1 |  |
|  |  | 03 |  |
| 14. | =    =  1  =  = | M1  M1  A1 |  |
|  |  | 03 |  |
| 15. | 1  1 1  1 2 1  1 3 3 1  1 4 6 4 1  15 10 10 5 1  1 6 15 20 15 6 1   |  | | --- | | 1, 7, 21, 35, 35, 21, 7, 1 |         =  =  =  = 1.14868 | M1  A1  M1  A1 | √ Expansion up to 4th term  √ Simplification  Subst. of 0.04 up to 4th term  Accuracy |
|  |  | 04 |  |
| 16. | =  =  =  100% = x  100% =  =  100% = z  80% =  = 0.8z  =        =    ~~=~~  =  =  = 37.5% | B1  B1  M1  A1 |  |
| 17. | (a) (i)  (ii)                      (b) | B1  B1  B1  M1  M1  M1  A1  B1  M1  A1 |  |
|  |  | 10 |  |
| 18. | (a) 90% = 450  =  =  (b) P = 1000  R = 18  T = ?  I = 2000 1000  = 1000  1000 =  100  T =  = 5.56yrs  (c) p = 10000  n = 2  r = 12% p.a  a = P  =  =  = 12544  CI = 12544 – 10000  = 2544 Ans  (d) A = P  =  = | M1  A1  B1  M1  A1  M1  M1  A1  M1  A1 |  |
|  |  | 10 |  |
| 19. | (a) 1 min 270 000 cm3  270 litres  1890  270  70 mins  (b) (i) 270 x 25  = 6750  270 – 20  = 250  18 900 – 8750  250  = 12150  250  = 48. 6 mins  48.6 + 25  = 73.6 mins  (ii) 542 x 25 + 6300  = 19850 litres  270 x 73.6 – 19850  19872 – 19850  22 | B1  M1  A1  M1  M1  A1  B1  M1  A1 |  |
|  |  | 10 |  |
| 20 | |  |  |  |  |  | | --- | --- | --- | --- | --- | | CLASS | MID POINT x | FREQUENCY  f | cf | fx | | 30-39 | 34.5 | 2 | 2 | 69 | | 40-49 | 44.5 | 3 | 5 | 133.5 | | 50 -59 | 54.5 | 10 | 15 | 545 | | 60 -69 | 64.5 | 12 | 27 | 774 | | 70 – 79 | 74.5 | 8 | 35 | 596 | | 80 – 89 | 84.5 | 3 | 38 | 253.5 | | 90 – 99 | 94.5 | 2 | 40 | 189 | |  |  | ∑f = 40 |  | ∑fx = 2560 |  1. Modal mark = [60 - 69] 2. Mean mark =   ∑f  = 2560  40  = 64  2  =  2  = = 64.083 | B1  B1  B1  B1  M1  A1  M1 M1  M1  A1 | All √ Mid mks  All √ (fx) values  √ ∑fx= 2560 |
|  |  | 10 |  |
| 21. | (a) Seat = 200  Adult = Kshs. 150  Students = Kshs. 75  DayI  100% = 200  80% = 200 x 80  100  = 160 seats occupied  20 occupied by students  =  [140 x 150] + [20 x 75]  = 21000 + 1500  = Kshs. 22 500  (b) (i) [200 –x ]adults. (x) Students  150 [200 – x ] + 75(x) = 25 350 √  30 000 – 150 x + 75x = 25 350  30 000 – 75x = 25 350 √    (ii) -75x = 25350 – 30000  -75x = -4650  x = 62 Students  (c) 1. Cost of hosting  2. Allowances for Adjudicators  3. Electricity Bill  7 : 3 : 2  Allowances = 126 000    =  = 504 000 Ksh  (ii)  = 84 000 Kshs. | M1  M1  A1  B1  B1  M1  A1  B1  M1  A1  B1 |  |
|  |  | 10 |  |
| 22. | (a) B1 ΔPQR √ drawn  (b) B1 Anticlockwise 90o  B1 √ PI QI RI plotted  B1 √ PI QI RI drawn  (c) B1 √ identification for line x + y = 0  B1 √ plotting of PII QII RII  B1 √ ly drawn Δ  B1 (i) PI QI RI and PII QII RII  (d) B1 PQR and PIIQIIRII are oppoitely congruent  (ii) PQR and PI QI RI are directly congruent |  |  |
| 23. | (a) PS =  =  = 30  (b) PS2 = 172 + 172 -2 x 17 x 17cos  900 = 578 – 578cos  Cos  (c)  =  = 289(1.08 – 0.42)  = 289 x 0.66  = 192.13cm2 | M1  M1  A1  M1  M1  A1  M1  M1  A1 |  |
|  |  | 10 |  |
| 24. | (a) , 3.375, 4.096  (b) (i)  m =  3.4 – 1.9  = 3.0  1.5  = 2  *a* as a gradient b as y –intercept  *a* = 2  *b* = 2.9  (ii) | B2  S1  P1  L1  M1  A1  B1  B1  B1 | All values √  B1 more than half √  √ scale  √ plotting  √ line |