**JINJA JOINT EXAMINATIONS BOARD**

**MOCK EXAMINATIONS 2019**

**MARKING GUIDE**

**MATHEMATICS 456/2**

**SECTION A**

|  |  |  |  |
| --- | --- | --- | --- |
| NO. | SOLUTION | MARKS | COMMENT |
| 1.  2.  3.  4.  5.  6.  7.  8.  9.  10.  11.  (b)  12.  13.  14.  15.  16.  17. | M=  4(2t-16)=16  8t-64=16  8t=80  t=10  P(x)=  Pq(6)  =12  No. of students in a school 270  No. of girls 110  No. of boys 270-110=160  No of students who stay for lunch 210  No. of students who do not stay for lunch  270 -210= 60  No. of girls who go home =50  No. of girls who stay at school for lunch  110-50=60  No. of boys who stay at school for lunch  210-60=150  No. of boys who do not stay at school for lunch  160-150=10 students.  Let the scale of the map be 1 : x  1cm on the map corresponds to x cm on the ground  Actual area =  = ,  T = R +  = P  P =    =  =   1. Gross m.income=Net income+ income tax   =417,000+23,000  =440,000/=     1. Taxable= Gross income-Allowances   = 440,000- 45,000  = 395,000/=  T  Average speed=  =140  =      **SECTION B (60 MARKS)**  a )i)f(x) = 2x+8 fg(x) = x-3  Let g(x) = m  f(m) = 2m + 8  fg(x) = 2m + 8 and fg(x) = x – 3  2m + 8 = x – 3  (ii)  2x=y-11  y = 2x +11  (iii)   1. f(x) = g(x)   3x = -27  **x = -9**   1. not defined   g(x) = 0  x = 11  **not defined when x = 11**    3.5h = 420  h = 120  (b)Volume of the original cone =  =  Volume of the cut off cone=  = **24,640**  Volume of the frustrum = 48125 – 24640=**23,485**  Volume of the hemisphere =  Volume of the solid= (23485+11229.177)  =  = 6   1. F= a + b   12 300= a + b  12300 = a +10b ………………(i)  14700 = a +b  14700 = a + 12b ……………….(ii)  Eliminating a in the two equations  2b = 2400  b = 1200  12300 = a + 12000  a = 300  F = 300 + 1200  F =300 +1200  **F = 11,100/= when the bus takes 81 passengers**  **Allowances**  Transport= 40,000/=per month  Medical =/= per month  Insurance = per month  Housing 80,000 per month  Family = per month  Total allowances= **227,500/=**  **Taxable income = 850,000 – 227,500 = 622,500/=**     |  |  |  |  | | --- | --- | --- | --- | | Slabs | Amount to tax | Tax | Balance not taxed | | 1-120000 | 120000 | 0 | 502,500 | | 120,001-280,000 | 160000 | 9.5%x160000  =15,200 | 342,500 | | 280,001-480000  480001-880,000 | 200000  142500 | 12.5%x200000  =25,000  20%x142500  =28,500 | 142,500  - |   Total tax =**68,700/=**  Annual tax = 68700x12 =**824,400/=**  Net income =Gross income – Taxes  = 850,000- 68700  = **781,300/=**  1 dollar = ugx 3650  781,300/= equals = =214.05 dollars  **214 dollars**( to the nearest whole no.)    43+17+15+c =100  C = 25  25+17+39+b= 90  b = 9  15+17+9 =96  a = 55  100+39+55+9+d=250  d = 47  (b)Atmost one bond=43+39+55+47=**184 vehicles**  (c)  D=6ookm s= 80km/hr  Mubaka from town A   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | T(HRS) | 8.00 | 8.30 | 9.30 | 10.30 | 11.30 | | D(KM) | 0 | 40 | 120 | 200 | 280 |  |  |  |  |  | | --- | --- | --- | --- | | 12.30 | 1.30 | 2.30 | 3.30 | | 360 | 440 | 520 | 600 |   Byakuno from town A  S=100km/hr   |  |  |  |  |  | | --- | --- | --- | --- | --- | | T | 9.30 | 10.30 | 11.30 | 12.30 | | D | 0 | 100 | 200 | 300 |  |  |  |  |  | | --- | --- | --- | --- | | 1.30 | 2.30 | 2.42 | 4.30 | | 400 | 500 | 520 | 600 |   T= 5hrs 12 min=5.2hrs   1. D=SXT   = 100 x 5.2  = 520 km   1. Mubaka set off at 8.00am 2. Byakuno arrived at 4.30pm and   Mubaka at 3.30pm   1. The difference in times of arrival was one hour.     **r+½**  **OE =r +½(t –r)**  **OE=½( r + t)**  **= -r +**  **=**  **= m**  **= (3t -5r)**  ……………………….(i)  **=**  **= -r + (r + t)**  **=** ……………(ii)  6m - 5n =0 …………………………(iii)  **-r** m **=**  n +2m =2 …………………(iv)  3(n + 2m = 2)  3n +6m = 6 ……………(v)  Solving (iii) & (v) by elimination,  8n = 6 ,  **and**  (c )  =  =  **=**  **=**  **=**  = **t - =**  **=**  **= 5: 3**  **:** |  | For getting 160  For getting 60  For getting150  For getting 10 the required solution  Marks should be awarded to a candidate who used an alternative method  Award A0 to candidates who leave it as an improper fraction  For the sketch  Award M0 A0 to Candidates who don’t put vector symbols  For getting the time  Award A1 to those who give it as 34km/hr  For drawing the pyramid  Award A1 mark to those with  Award A0A0 to candidates wrote the final answer 16 without first writing 15.71 or 15.7  Award marks to a candidate who used  And has right solution.  Award A1 to those who rounded off to 1 d.place.  For the equations formed  For all correct values in per month  Bonus mark for each correct tax a part from 0 in the first row or slab.  A1 mark should be awarded to a candidate who first got 214.1 or 214.05 dollars  Bonus marks should be awarded to correct tables of Mubaka and Byakuno  For vector **RT**  If the vector symbol is not indicated please award M0 and A0  For solving the equations  For both solutions. |