SOLUTIONS FOR BNU 1501 EXAMINATION QUESTION PAPER MAY/JUNE 2015

1. $6a^2 - 9ab + 2b^2 - 3(ba - b^2)$

   $6a^2 - 9ab + 2b^2 - 3ba + 3b^2$

   $6a^2 - 9ab - 3ab + 2b^2 + 3b^2$

   $6a^2 - 12ab + 5b^2$ Option [4]

2. $(3ab^2c^3)^2 \ X \ 2a^3b^4 \div ab$

   $= 9a^2b^4c^6 \ X \ 2a^3b^4 \div ab$

   $= 18a^4b^7c^6$ Option [2]

3. $\sqrt{16b^8c^4} = 4b^4c^2$ Option [1]

4. $2x + 5 = x + 4$

   $2x - x = 4 - 5$

   $x = -1$ Option [3]

5. $2(x - 7) + 3x = 2x - 8$

   $2x - 14 + 3x = 2x - 8$

   $2x + 3x - 2x = 14 - 8$

   $3x = 6$

   $x = 2$ Option [2]

6. $x - 15 = 2x + 3$ Option [1]

7. $20 - x$ Option [4]

8. $Circumference = 20 + 20 + 10 + 10 + \left(\frac{1}{2} X\ \pi\ X\ 12\right)$

$= 60 + 6\pi$

$= 78{,}85\ cm$ Option [3]

9. $Area\ of\ the\ shaded\ region = \left[(20\ X\ 12) + \left(\frac{1}{2}\ X\ 12\ X\ 8\right)\right] - \left[\pi\ X\ (6)^2 X \frac{1}{2}\right]$

$= 288 - 18\pi$

$= 231{,}45 cm^2$ Option [4]

10. $V = 60\ X\ 35\ X\ 10$

$V = 21\ 000 cm^3$ $but\ 1cm^3 = 0{,}001l$

$V = 21\ 000\ X\ 0{,}001$

$V = 21{,}00l$ Option [2]

11. $Area\ of\ shaded\ area = [7X7] - [\pi\ X\ (3{,}5)^2]$

$= 49 - (12{,}25\pi)$

$= 10{,}52 cm^2$ Option [1]

12. $S = 2\pi rh$

$\frac{S}{2\pi h} = r$

$r = \frac{S}{2\pi h}$ Option [1]

13. $v = u + at$

$v - u = at$

$t = \frac{v-u}{a}$ Option [3]

14. $Total\ cost = 1\ 000 + (50\ X\ 20)$

$= 2\ 000$

$Profit = Selling\ price - Total\ cost$

$1\ 500 = Selling\ price - 2\ 000$

$Selling\ price = 1\ 500 + 2\ 000$

$= 3\ 500$

$Selling\ price\ for\ one\ t-shirt = \frac{3\ 500}{50} = R70{,}00$ Option [3]

15. $4ab = 2\ X\ 2\ X\ a\ X\ a$

$6a^2b^2 = 3\ X\ 2\ X\ a\ X\ a\ X\ b\ X\ b$

$14a^2b^3 = 2\ X\ 7\ X\ a\ X\ a\ X\ b\ X\ b\ X\ b$

$LCM = 2\ X\ 2\ X\ 3\ X\ 7\ X\ a\ X\ a\ X\ b\ X\ b\ X\ b$

$= 84\ a^2b^3$ Option [1]

16. $a.\frac{2}{3}+\frac{2}{7}-\frac{1}{2}$ $b.\frac{3}{4}\div\frac{3}{2}\ X\frac{1}{2}$ $c.\frac{3}{4}+\frac{1}{2}\ X\frac{5}{4}$

$=\frac{28}{42}+\frac{12}{42}-\frac{21}{42}$ $=\frac{3}{4}\ X\frac{2}{3}\ X\frac{1}{2}$ $=\frac{3}{4}+\frac{5}{8}$

$=\frac{19}{42}$ $=\frac{1}{4}$ $=\frac{6}{8}+\frac{5}{8}=\frac{11}{8}$

$=1\frac{3}{8}$ Option [2]

17. *Given two points* $(-1,-2)$ *and* $(1,2)$

$\frac{y-y1}{x-x1}=\frac{y2-y1}{x2-x1}$

$\frac{y-(-2)}{x-(-1)}=\frac{2-(-2)}{1-(-1)}$

$\frac{y+2}{x+1}=\frac{4}{2}$

$2(y+2)=4(x+1)$

$2y+4=4x+4$

$2y=4x+4-4$

$2y=4x$

$y=2x$ Option [3]

18. $1380 - 1200 = 180$

$Percentage\ increase = \frac{180}{1200} X\ 100$

$= 15\%$ Option [3]

19. $3 + 5 + 4 = 12$

$Using\ proportion: liquid\ B = \frac{5}{12}\ X\ 25$

$= 10{,}42$ Option [1]

20. $S = P(1 + rt)$

$S = 10\ 000\left(1 + \frac{18}{100}\ X\ 2\right)$

$S = 10\ 000(1{,}36)$

$S = R13\ 600$ Option [4]

21. $I = Prt$

$514{,}50 = 1050\ X\ r\ X\ 3$

$r = \frac{514{,}50}{1050\ X\ 3}\ X\ 100$

$r = 16\%$ Option [1]

22. $S = P(1 + i)^n$

$20\ 000 = 10\ 000\left(1 + \frac{0{,}12}{4}\right)^{4t}$

$\frac{20000}{10000} = (1 + 0{,}03)^{4t}$

$2 = (1{,}03)^{4t}$

$\ln(2) = 4tln(1{,}03)$

$t = \frac{\ln(2)}{4\ln(1{,}03)}$

$t = 5{,}86 \ \ years$ Option [2]

23. $S = P(1+i)^n$

$S = 10\ 000\left(1 + \frac{0{,}08}{12}\right)^{12\ X5}$

$S = R14\ 898{,}46$ Option [1]

24. $Loan = 700\ 000 - 100\ 000 = 600\ 0000$

$P = Ra_{\overline{n}|i} = R\left(\frac{(1+i)^n - 1}{i(1+i)^n}\right)$

$600\ 000 = \mathrm{R}\left[\frac{\left(1+\frac{0{,}0775}{12}\right)^{12X20} - 1}{\frac{0{,}0775}{12}\left(1+\frac{0{,}0775}{12}\right)^{12X20}}\right]$

$R = \frac{600\ 000}{121{,}8103085}$

$Payment, R = R4\ 925{,}69$ Option [4]

25. $S = R\left[\frac{(1+i)^n - 1}{i}\right]$

$20\ 000 = R\left[\frac{\left(1+\frac{0{,}085}{52}\right)^{52X2} - 1}{\frac{0{,}085}{52}}\right]$

$20\ 000 = R(113{,}2623048)$

$$R = \frac{20\,000}{113{,}2623048}$$

$R = R176{,}58$ Option [2]