2013 SNR

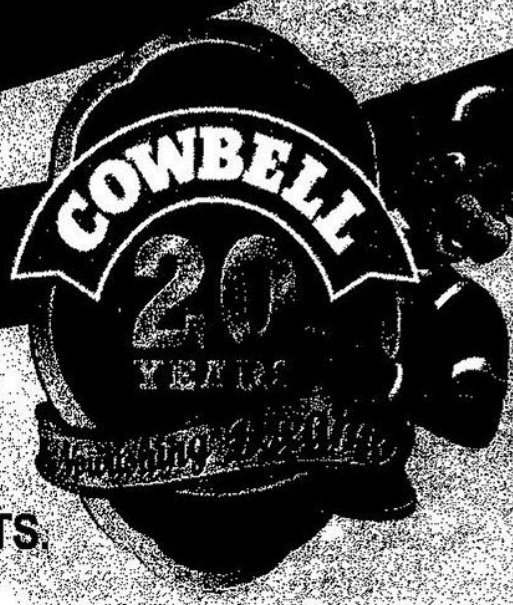
COWBELL NATIONAL SECONDARY SCHOOLS MATHEMATICS COMPETITION

Approved by Federal Ministry of Education

COWBELL NATIONAL SECONDARY SCHOOLS MATHEMATICS COMPETITION

March 16, 2013 10:00am

1 HOUR 15 MINUTES



1. THIS PAPER IS IN TWO PARTS (I & II).
2. ANSWER ALL QUESTIONS IN BOTH PARTS.
3. USE HB PENCIL THROUGHOUT FOR THE MULTIPLE CHOICE QUESTIONS.
4. THE USE OF CALCULATOR IS NOT ALLOWED.
5. SHADE THE CORRECT OPTION IN THE SPACE PROVIDED IN THE ANSWER BOOKLET.
6. PLEASE WRITE YOUR NAMES IN CAPITAL LETTERS.
7. CANDIDATES WHO DO NOT SHADE THEIR CORRECT CATEGORIES WILL BE DISQUALIFIED.
8. YOU ARE ADVISED NOT TO SPEND MORE THAN 1 HOUR IN PART I AND 15 MINUTES IN PART II
9. EACH MULTIPLE CHOICE QUESTION ATTRACTS 2 MARKS.
10. PART II ATTRACTS 20 MARKS.

DO NOT OPEN

1. A dove flies at a speed of 40km/h for 2 hours to attend a party, seeing that he would be late he increased his speed to 50km/h for 3 hours. Find the average speed for the whole journey.
   A. 38km/h B. 42km/h C. 44km/h D. 46km/h E. 48km/h

2. The distance s travelled by an accelerating rocket is given by $s = ut + \frac{1}{2} at^2$. Find s when u = 3m/s, t = 100s and $a = 0.1m/s^2$.
   A. 500 B. 600 C. 700 D. 800 E. 900

3. A straight line passes through the points (2, 4) and (-1, -5). Find its equation.
   A. Y = 2x+2 B. y = 3x – 2 C. y = 3x+2 D. y = 2x – 2 E. y = 3x + 1

4. A bus travels for x hours at a speed of (x+2) km/h. If the distance travelled is 15km, find the speed of the bus.
   A. 3km/h B. 4km/h C. 5km/h D. 6km/h E. 7km/h

5. A quadrilateral has vertices at (1, 1), (6, 2), (5, 5), (3, 6). Find the area of the quadrilateral in cm.
   A. $8cm^2$ B. $10cm^2$ C. $12cm^2$ D. $13cm^2$ E. $14cm^2$

6. A bicycle wheel of radius 10cm is turning at a rate of 5 revolutions per minute. Calculate the distance moved by a point on the rim in 2 seconds.
   A. 10.5cm B. 10.2cm C. 9.8cm D. 9.5cm E. 9.1cm

7. A metal sphere of radius 5cm is melted down and made into a solid cube. Find the length of a side of the cube.
   A. 7.01cm B. 7.24cm C. 8.06cm D. 8.62cm E. 8.92cm

8. In triangle X Y Z, angle X is a right angle and P is a point on XZ such that YP bisects angle Y. If angle $YPZ = 100^0$, calculate angle Z.
   A. 65^0 B. 70^0 C. 75^0 D. 80^0 E. 100^0

9. In a regular polygon each interior angle is 120^0 greater than each exterior angle. Calculate the number of sides of the polygon.
   A. 10 B. 11 C. 12 D. 13 E. 14

10. If a bathroom wall is covered by 160 tiles which are 15cm by 15cm, how many 10cm by 10cm tiles are needed to cover the same wall?
    A. 264 B. 280 C. 320 D. 360 E. 400

11. Two similar cones have surface areas in the ratio 4:9. Calculate the ratio of their volumes.
    A. 2:3 B. 4:9 C. 5:14 D. 7:18 E. 8:27

Two lighthouses A and B are 25km apart and A is due west of B. A ship S is on a bearing of 137^0 from A and on a bearing of 170^0 from B. Use the information above to answer questions 12 and 13.

12. Calculate the distance of S from A.
    A. 40.3km B. 42.8km C. 45.2km D. 47.8km E. 51.2km

13. Find the distance of S from B.
    A. 39.5km B.37.5km C. 35.1km D. 33.6km E. 31.4km

14. In triangle XYZ, angle $X = 22^0$ and angle $Z = 44^0$ Find the ratio YZ/XY.
    A. 0.347 B. 0.416 C. 0.539 D. 0.812 E. 1.42

15. If P = { 1,2,3,.....,10}
    Q = {2, 4, 6... 20} and
    R = {x: x is an integer, $15 \leq x \leq 25$},
    Find n(P U R).
    A. 13 B. 17 C. 18 D. 20 E. 21

16. The sets M and N intersect such that n(M) = 31, n(N) = 18 and n(MUN) = 35. How many elements are in both M and N?
    A. 12 B. 13 C. 14 D. 15 E. 16

17. At a dinner of 32 guests, 18 ate yam, 16 ate beans and 7 ate both. How many guests did not eat?
    A. 5 B. 6 C. 7 D. 8 E. 9

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