TB(2A) Ch. 4 Approximation and errors
Multiple Choice Questions

1. [11-12 Mid-year Exam #1]

Which of the following is/are incorrect?

I. 0.321 has 4 significant figures
II. 100.0 has 1 significant figure
III. 100.001 has 6 significant figures

A. I only
B. I and II only
C. II and III only
D. All of the above

2. [11-12 Mid-year Exam #2]

An elephant has a measured weight of 12 625 kg. If the relative error of the measurement is 0.04, what is the range of the actual weight of the elephant?

A. 12 000 kg – 13 250 kg
B. 12 120 kg – 13 130 kg
C. 12 125 kg – 13 125 kg
D. 12 520 kg – 12 720 kg

3. [11-12 Mid-year Exam #20]

A rectangle has an area of 26.70 cm^2, correct to 4 significant figures. If the length of the rectangle is measured to be 5.5 cm by using a ruler with a scale interval of 1 mm, what is the upper limit of the width of the rectangle?

A. 4.8 cm **B.** 4.899 cm
C. 4.9 cm **D.** 4.908 cm

4. [11-12 Final Exam #6]

0.0234561 =

A. 0.023 (correct to 3 significant figures).
B. 0.02345 (correct to 4 significant figures).
C. 0.023456 (correct to 5 significant figures)
D. 0.02345 (correct to 6 decimal places).

5. [12-13 Final Exam #12]

A football field has its length and width measured to be 105 m and 68 m respectively, correct to the nearest m. Find the maximum area of the field.

A. 7 140 m^2 **B.** 7 226.75 m^2
C. 7 314 m^2 **D.** 7 350 m^2

6. [12-13 Mid-year Exam #1]

Round off 0.093949 to 3 significant figures.

A. 0.09 **B.** 0.094
C. 0.0939 **D.** 0.0940

7. [12-13 Mid-year Exam #6]

In a measurement, the lower limit and the upper limit of the actual weight of Joyce are 50.25 kg and 50.75 kg respectively. Find the maximum absolute error of the measurement.

A. 0.1 kg **B.** 0.25 kg
C. 0.5 kg **D.** 1 kg

8. [12-13 Mid-year Exam #19]

The length of a side of a square is measured to be 3 cm, correct to the nearst cm. Find the accumulated error of its area.

A. 0.25 cm^2 **B.** 2.75 cm^2
C. 3.25 cm^2 **D.** 6 cm^2

9. [13-14 Mid-year Exam #1]

0.204678 =

A. 0 (correct to the nearest integer).
B. 0.204 (correct to 3 decimal places).
C. 0.21 (correct to 2 significant figures).
D. 0.2047 (correct to 3 significant figures).

10. [13-14 Mid-year Exam #4]

The thickness of a book is 34 mm correct to the nearest mm. Which of the following could be its actual thickness?

A. 33.3 mm **B.** 33.5 mm
C. 34.5 mm **D.** 35.0 mm

11. [13-14 Mid-year Exam #18]

In the year 2013, there were 105,432 candidates sitting for the HKDSE examination. If this number is rounded to 2 significant figures, what is the relative error of the approximate value?

A. 0.041 **B.** 0.042
C. 0.043 **D.** 0.044

12. [13-14 Mid-year Exam #19]

The length of a side of a square is measured to be 2.5 cm with a percentage error of 2%. Find the accumulated error of its area.

A. 0.002 5 cm^2 **B.** 0.01 cm^2
C. 0.247 5 cm^2 **D.** 0.252 5 cm^2

13. [13-14 S6 Mock Exam #1]

0.7401496 =

A. 1 (correct to 1 sig. fig.)
B. 0.74 (correct to 3 d.p.)
C. 0.74015 (correct to 5 d.p.)
D. 0.7401500 (correct to 7 sig. fig.)

14. [13-14 Final Exam #7]

It is given that $a = 0.005\ 490\ 0$, which of the following statements is/are correct?

I. a has 7 significant figures.
II. The most significant figure of a is 5.
III. $a = 0.005\ 500\ 0$, correct to 2 significant figures

A. II only
B. III only
C. I and II only
D. I and III only

15. [13-14 Final Exam #8]

The temperature of a cup of water is measured to be 10°C by a thermometer with a scale interval of 1°C. What is the range of its actual temperature?

A. $9°C \leq \text{Actual temperature} < 11°C$
B. $9.5°C < \text{Actual temperature} \leq 10.5°C$
C. $9.5°C \leq \text{Actual temperature} < 10.5°C$
D. $9.5°C \leq \text{Actual temperature} \leq 10.5°C$

16. [13-14 S.6 Mock Exam #1]

0.7401496 =

A. 1 (correct to 1 sig. fig.)
B. 0.74 (correct to 3 d.p.)
C. 0.74015 (correct to 5 d.p.)
D. 0.7401500 (correct to 7 sig. fig.)

17. [14-15 Mid-year Exam #8]

How many significant figures does 0.00987060 have?

A. 5 **B.** 6
C. 8 **D.** 9

18. [14-15 Mid-year Exam #9]

The length of a 1-feet square tile should be 30.48 cm (correct to the nearest 0.01 cm) in order to fulfill the quality control requirement. Find the range of the acceptable length of the square tile.

A. $30.475\text{ cm} \leq \text{length} < 30.485\text{ cm}$
B. $30.47\text{ cm} \leq \text{length} < 30.49\text{ cm}$
C. $30.465\text{ cm} \leq \text{length} < 30.495\text{ cm}$
D. $30.43\text{ cm} \leq \text{length} < 30.53\text{ cm}$

19. [14-15 Mid-year Exam #19]

When a number is rounded off to 3 decimal places, the approximated value has 5 significant figures. This number is possible to be lying between

A. 3 and 5. **B.** 10 and 100.
C. 100 and 200. **D.** 300 and 500.

20. [14-15 Mid-year Exam #20]

The Body Mass Index (BMI) is calculated as:

$$\text{BMI} = \frac{\text{Weight (kg)}}{\left[\text{Height (m)}\right]^2}$$

Joanne weighs 57 kg (correct to the nearest kg) and her height is 1.63 m (correct to the nearest 0.01 m). Find the range of her possible BMI correct to 3 decimal places.

A. $21.396 < \text{BMI} < 21.510$
B. $21.323 < \text{BMI} < 21.586$
C. $21.265 < \text{BMI} < 21.642$
D. $21.136 < \text{BMI} < 21.775$

21. [14-15 S.6 Mock Exam #6]

The base and height of a parallelogram are measured as 5 m and 3 m respectively, correct to the nearest m. Let x cm^2 be the actual area of the parallelogram. Find the range of values of x.

A. $11.25 < x \leq 19.25$
B. $11.25 \leq x < 19.25$
C. $1125 \leq x < 1925$
D. $112500 \leq x < 192500$

22. [14-15 Final Exam #3]

Which of the following statements are true?

I. $879.48 = 900$, correct to 1 significant figure.
II. $879.48 = 880$, correct to the nearest integer.
III. $879.48 = 879.5$, correct to 1 decimal place.

A. I and II only
B. I and III only
C. II and III only
D. I, II and III

23. [14-15 Final Exam #15]

In 2014, the population in Hong Kong was about 7,061,000, correct to the nearest hundred. The land area was about $1104\,km^2$ correct to the nearest km^2. Find the upper limit of the population density in $people/km^2$ correct to 3 decimal places.

A. $6191.\dot{1}\dot{8}\dot{8}\,people/km^2$
B. $6191.188\,people/km^2$
C. $6392.983\,people/km^2$
D. $6398.777\,people/km^2$

24. [15-16 Mid-year Exam #1]

When 0.003150994 is rounded off to 5 significant figures, it becomes

A. 0.00315.
B. 0.0031510.
C. 0.003151.
D. 0.0031508.

25. [15-16 Mid-year Exam #2]

The weight of the school bag of Kim is 2.2 kg, correct to the nearest 0.2 kg. Which of the following may be the actual weight of Kim's school bag?

A. 2.0 kg
B. 2.1 kg
C. 2.3 kg
D. 2.4 kg

26. [15-16 Mid-year Exam #13]

A number is rounded off to give an approximate value 27 030. To give this approximated value, how many significant figures may the number be rounded off to?

I. 3
II. 4
III. 5

A. II only
B. III only
C. I and II only
D. II and III only

27. [15-16 Mid-year Exam #14]

A car travels 162 km, correct to the nearest 0.5 km, in 3 hours, correct to the nearest 2 minutes. The maximum speed, correct to 3 significant figures, is

A. 40.6 km/h.
B. 53.8 km/h.
C. 54.4 km/h.
D. 81.1 km/h.

28. [15-16 Final Exam, #15]

The length of a piece of wire is measured as 10 m correct to the nearest m. If the wire is cut into *n* pieces such that the length of each piece is measured as 20 cm correct to the nearest cm, find the greatest possible value of *n*.

A. 50
B. 51
C. 53
D. 54

~ End ~