Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of General Education

Session: 2018-19 (Winter Semester)

B. Voc. Program, 1st Semester (2018-19)

End-Sem. Examination

Course Code: GEN 1101 **Time: 3 Hours**

Course Name: English Language and Comprehension **Max. Marks: 100**

Instructions:

The question paper comprises three sections A, B & C. Marks allotted are mentioned against each section.

Section-A **(2*10=20)**

Q1. Fill in the blanks with suitable nouns:

(a) Laughter is a sign of _____. (happy/happiness)

(b) The table is made of _____. (wood/woods)

Q2. Fill in the banks with suitable pronouns:

(a) I have hurt _____. (me/myself)

(b) God helps those _____ help themselves. (who/which)

Q3. Write the superlative degree for the following:

(a) Strong

(b) Better

Q4. Complete the following sentences using the correct form of the verb given in the brackets:

(a) I always _____ good books. (read/reads)

(b) The earth _____ around the sun. (move/moves)

Q5. Fill in the blanks:

(a) Rip Van Winkle lived in a small village in _____. (North America/South America)

(b) Velu was a _____. (farmer/fisherman)

Q6. Rearrange the following words/phrases to make complete and correct sentences:

(a) till/you/come back/wait/i/here/shall

(b) a film/yesterday/went/my parents/to see

Q7. Choose the correct answer:

(a) Who said, 'Something is very wrong".

Helen Keller

Helen's father

Helen's mother

Helen's teacher

(b) The poem, 'Stopping by Woods on a Snowy Evening' is written by:

- **(i)** Robert Brown
- **(ii)** Robert Frost
- **(iii)** William Shakespeare
- **(iv)** William Wordsworth

Q8. Fill in the blanks with suitable articles (a, an, the):

- **(a)** Mohan is _____ lazy man.
- **(b)** Rip's village was surrounded by _____ Catskill Mountains.

Q 9. Write the correct homophones for the following sentences:

- **(a)** The homophone for the word 'son' is _____. (sun/sum)
- **(b)** The homophone for the word 'knew' is _____. (no/new)

Q 10. Fill in the blanks with the appropriate degree of comparison.:

- **(a)** Black is the _____ colour. (darker/darkest)
- **(b)** Nursing is _____ many other professions. (the most noble/nobler than)

Section- B

(5*6=30)

Attempt any 06 questions (11-18):

Q 11. How did Rip Van Winkle spend his time?

Q 12. Explain with reference to the context.

"I will catch more fish than anyone.

Q 13. Write five utterances expressing Greeting.

Q14. Why did Velu throw the small fish into the water?

Q15. Describe Helen as a child.

Q16. What did Mowgli discover at the Council Rock?

Q17. Write five utterances expressing agreement.

Q18. Was Rip liked by everyone? Why?

Section- C

(10*5=50)

Q 19. Write the summary of the poem, 'Stopping by Woods on a Snowy Evening'.

Q 20. Write ten sentences on your Daily Routine.

Q 21. Make sentences with the following words:

- **(i)** Selfish
- **(ii)** Magical
- **(iii)** Thirsty
- **(iv)** Doll
- **(v)** Village
- **(vi)** Healthy
- **(vii)** Jungle

(viii) House
(ix) Snow
(x) Kind

Q22. Write the summary of "Rip Van Winkle".

Q23. Read the passage carefully and answer the questions given below:

Scientists know many things about the Sun. They know how old it is. The Sun is more than 4½ billion years old. They also know the Sun's size. The Sun may seem small, but that is because it is so far away. It is about 93 million miles (150 million kilometers) away from the Earth. The Sun is so large that the diameter of the Sun is 109 times the Earth's diameter. The Sun also weighs as much as 333,000 Earths. The Sun is the center of our Solar System. Besides the Sun, the Solar System is made up of the planets, moons, asteroid belt, comets, meteors, and other objects.

(a) How old is the sun?
(b) Why does the sun seem small?
(c) What is the distance of the sun from the Earth?
(d) What is there at the center of the Solar System?
(e) What is the solar system made up of?
(f) Complete the sentence:
The Sun is so large that the diameter of the Sun is _____.
(g) What is the opposite of 'many'?
(h) Write one describing word from the passage.
(i) Find out a naming word from the passage.
(j) Give a suitable title to the passage.

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Bhartiya Skill Development University
School of General Education
End Semester Examination- July 2019
Winter Semester, Sem-I (2018-19), B.Voc. Program

Course Code: GEN1101 **Time: 3 Hours**
Course Name: English Language & Comprehension **Max. Marks: 100**

Instructions: The question paper comprises three sections A, B & C. Marks allotted are mentioned against each section.

Answer Key

Section-A **(2*10=20)**

Q1 .Fill in the blanks with suitable nouns:

a) Laughter is a sign of _____. (happy/**happiness**)
b) The table is made up of _____. (**wood**/woods)

Q2. Fill in the banks with suitable pronouns:

a) I have hurt _____. (me/**myself**)
b) God helps those _____ help themselves. (**who**/which)

Q3. Write the superlative degree for the following

a) Strong- **Strongest**
b) Better- **Best**

Q4. Complete the following sentences using the correct form of the verb given in the brackets:

a) I always _____ good books. (**read**/reads)
b) The earth _____ round the sun. (move/**moves**)

Q5. Fill in the blanks:

a) Rip Van Winkle lived in a small village in _____. (**North America**/South America)
b) Velu was a _____. (farmer/**fisherman**)

Q6. Rearrange the following words/phrases to make complete and correct sentences:

a) till/you/come back/wait/i/here/shall **I shall wait here till you come back.**
b) a film/yesterday/went/my parents/to see **My parents went to see a film yesterday.**

Q7. Choose the correct answer:

a) Who said, 'Something is very wrong".
   (i) Helen Keller
   (ii) Helen's father
   (iii) Helen's mother
   (iv) Helen's teacher

b) The poem, 'Stopping by Woods on a Snowy Evening' is written by:

(i) Robert Brown

(ii) Robert Frost

(iii) William Shakespeare

(iv) William Wordsworth

Q8. Fill in the blanks with suitable articles (a, an, the):

a) Mohan is **a** lazy man.

b) Rip's village was surrounded by **the** Catskill Mountains.

Q 9. Write the correct homophones for the following sentences:

a) The homophone for the word 'son' is _____. (**sun**/sum)

b) The homophone for the word 'knew' is _____. (no/**new**)

Q 10. Fill in the blanks with the appropriate degree of comparison.:

a) Black is the _____ colour. (darker/**darkest**)

b) Nursing is _____ many other professions. (the most noble/**nobler than**)

Section- B **(5*6=30)**

Q 11. How did Rip Van Winkle spend his time?

Ans. Rip Van Winkle spent his time shooting, fishing or just dreaming. He loved to take his gun and his dog and climb up the mountains.

Q 12. Explain with reference to the context.

"I will catch more fish than anyone."

Ans. The above statement has been taken from the story, 'Velu: A Fisherman." Velu says this statement to himself as he comes to know that there were many fish in the sea that day. He thought so because he had a good net.

Q 13. Write five utterances expressing Greeting.

Ans. (i) Hello! How do you do?

(ii) Hi! How's life?

(iii) I'm very well, and how are you?

(iv) How are you getting on?

(v) Bye! See you later.

Q14. Why did Velu throw the small fish into the water?

Ans. Velu threw the small fish into the water because he wanted to catch the bigger ones.

Q15. Describe Helen as a child.

Ans. Helen would not let anyone comb her hair. Her clothes were always dirty. She was often angry. Sometimes, she even lay on the floor and kicked her feet.

Q16. What did Mowgli discover at the Council Rock?

Ans. Mowgli discovered that if he stared at any wolf, the wolf would be forced to drop his eyes.

Q17. Write five utterances expressing agreement.

Ans. (i) I agree.
(ii) That's right.
(iii) I'm with you.
(iv)Of course…Exactly.
(v)I agree entirely.

Q18. Was Rip liked by everyone? Why?

Ans. Rip was liked by everyone because he was a simple, kind-hearted man. The children loved him for the stories he used to tell.

Section- C **(10*5=50)**

Q 19. Write the summary of the poem, 'Stopping by Woods on a Snowy Evening'.

Ans. The poet is going in the forest. He is on a horse. It is evening time and snowing. The poet stops for some time, but the owner of the forest does not see them, because his house is in the village. Poet says that the horse must be thinking why they have stopped when there is no house. The horse shakes the bells on the neck. It is very quiet. There is only the sound of wind and snow. The poet says that the forest is beautiful, but he has to travel a long distance before resting.

Q 20. Write ten sentences on your Daily Routine.

Ans. (i) I am a student of B.Voc..
(ii) I have a daily routine of work.
(iii)I get up early in the morning.
(iv) I brush my teeth and wash my hands and face.
(v) Then I say my prayer and take my breakfast.
(vi) I go to my reading room and prepare my lessons
(vii) At 9 a.m. I get ready and go to college. I stay at college up to 5.p.m.
(viii) After college, I return home. I wash my hands and face and take my meals
(ix) Then I go to my reading room and prepare my lessons. I study there till 10 pm. .
(x) At 10 p.m, I take my supper and go to bed.

Q 21. Make sentences with the following words:

(i) Selfish- Ram is a **selfish** boy.
(ii) Magical- Catskill Mountains were **magical**.
(iii) Thirsty- I gave my water bottle to a **thirsty** old man.
(iv) Doll- Anvi has a beautiful **doll**.

(v) Village- My village is 120 Kms. from Jaipur.
(vi) Healthy- I exercise daily to keep myself fit and **healthy**.
(vii) Jungle- Lion lives in the **jungle**.
(viii) House- My friend has a very big and beautiful **house.**
(ix) Snow- The forest was full of **snow** in winter. I
(x) Kind- My grandfather is a **kind** person.

Q22. Write the summary of "Rip Van Winkle".

Ans. Rip Van Winkle was a simple, kind hearted man who lived in a small village in North America. He told good stories and so the children loved him. Rip's only problem was that he was lazy and spent his time shooting, fishing and dreaming.

One day, Rip went to the Catskill Mountains. He saw a strangely dressed man who was trying to lift a big barrel. Rip kindly lifted the barrel and went up the mountain. When they came to a level filed, Rip saw seven men playing a game. They gave him something to drink. After drinking, Rip fell asleep.

When Rip woke up everything had changed. He went to his village and could not recognize anything. He also had become an old man. He saw a young woman with a baby. She told him that her father's name was Rip. Rip was very happy to see his daughter. He went and lived in her house very happily.

Q23. Read the passage carefully and answer the questions given below:

(a) How old is the sun?

Ans. The Sun is more than 4½ billion years old.

(b) Why does the sun seem small?

Ans. The Sun may seem small, but that is because it is so far away.

(c) What is the distance of the sun from the Earth?

Ans. It is about 93 million miles (150 million kilometers) away from the Earth.

(d) What is there at the center of the Solar System?

Ans. The Sun is the center of our Solar System.

(e) What is the solar system made up of?

Ans. Besides the Sun, the Solar System is made up of the planets, moons, asteroid belt, comets, meteors, and other objects.

(f) Complete the sentence The Sun is so large that the diameter of the Sun is **109 times the Earth's diameter.**

(g) What is the opposite of many? **few.**

(h) Write one describing word from the passage- **large.**

(i) Find out a naming word from the passage - **Sun.**

(j) Give a suitable title to the passage- **The Sun.**

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of General Education

Session: 2018-19 (Winter Semester)

B. Voc. Program, 1st Semester (2018-19)

End-Sem. Examination

Course Code: GEN 1103 **Time: 3 Hours**

Course Name: Applied Mathematics **Max. Marks: 100**

Instructions:

1. Calculator is strictly prohibited.
2. Missing data if any can be suitably assumed.

Section – A

20×01 = 20 Marks

Q1. If A = {1, 3, 6, 9} and B = {2, 3, 6, 8}, then A-B is

(A) {1, 3} (B) {1, 9}

(C) {2, 8} (D) {1, 3, 6, 9}

Q2. Which of the following number is not the prime number?

(A) 4 (B) 31

(C) 23 (D) 17

Q3. How many meters are there in 1 kilometer?

(A) 1000 (B) 0.01

(C) 0.001 (D) 100

Q4. How many centimeters in 2 m 25 cm?

(A) 225 (B) 2.35

(C) 235 (D) 2.25

Q5. How many years in 30 months?

(A) 2.5 (B) 2

(C) 3 (D) 4

Q6. Convert 45 mm into meters:

(A) 0.45 (B) 0.0045

(C) 0.045 (D) 450

Q7. Arithmetic Mean (A.M.) between 10 and 12 is

(A) 11 (B) 12

(C) 5 (D) 22

Q8. The 3rd term of $T_n = 2^{n+1}$ is

(A) 82 (B) 16

(C) 8 (D) 9

Q9. If 2, 6, 10, 14,..... is a sequence, then what is the common difference (d)?

(A) 2 (B) 4

(C) 10 (D) 6

Q10. What is the Geometric Mean (G.M) between 1 and 16?

(A) 5 (B) 8.5

(C) 4 (D) 0

Q11. $\frac{d}{dx}(2x^2) =$

(A) $12x$ (B) $4x^2$

(C) 0 (D) $4x$

Q12. $\int \frac{1}{x} dx =$

(A) $\frac{1}{x} + c$ (B) x

(C) $\log x + c$ (D)1

Q13. $\frac{d}{dx}(2x) =$

(A) 0 (B) 2

(C) 1 (D) 4

Q14. $\frac{d}{dx}(3a) =$

(A) 3 (B) a

(C) 0 (D) 1

Q15. $\int 4dx =$

(A) $x + c$ (B) $4x + c$

(C) 0 (D) $x^4 + c$

Q16. $\frac{d}{dx}(e^x) =$

(A) $e^x \log a$ (B) e^x

(C) e (D) x

Q17. $\frac{d}{dx}(1) =$

(A) x (B) 0

(C) e (D) 1

Q18. What is the range of the data 3, 8, 9, 1, 7, 12, 18

(A) 3 (B) 17

(C) 9 (D) 0

Q19. What is the mode of the following data?

1,2,2,2,2,6,6,6,6,6,6,6,4

(A) 2 (B) 6

(C) 4 (D) 1

Q20. What is the mean of the following data?

3,1,5,6,7,4,6,9,8

(A) 3.45 (B) 5.45

(C) 5 (D) 4.45

Section – B

06×05 = 30 Marks

Attempt any 06 questions (21-28):

Q21. If A = {a, b, d, f, g}, B = {d, e, f, g} and C = {a, b, c}, then find

(i) A – B

(ii) B – C

Q22. Write the following sets into set-builder form:

(i) {1, 2, 3, 4, 5, ...}

(ii) {5, 25, 125, 625}

Q23. Convert:

(i) 2 km 6 meter = _____ cm

(ii) 12 meter = _____ km

(iii) 45 min = _____ hr

(iv) 780 mm = _____ meter

(v) 2 hr = _____ sec

Q24. Find the common difference and write the next five terms of the AP $-1, \frac{1}{4}, \frac{3}{2}, \ldots$.

Q25. If $y = \frac{2x + 4a + 5x^2}{\log x}$, then find $\frac{dy}{dx}$.

Q26. Evaluate $\int \frac{x^{1/2} + \sqrt{x} + x^2}{x} dx$.

Q27. (a) If $y = (x^3 + 2x^2)\cos x$, then find $\frac{dy}{dx}$.

(b) Find the range of the given data

12, 39, 27, 8, 78, 97, 99, 103, 6, 34, 15, 98

Q28. A family with a monthly income of Rs. 20000 had planned the following expenditures per month under various heads:

Heads	Expenditures (in thousands)
Grocery	4
Rent	5
Education	2
Medicine	2
Fuel	2
Other	2

Draw a bar graph.

Section – C

05×10 = 50 Marks

Q29. (a) A = {1, 2, 3, 5, 9} and B = {3, 4, 5} then find

(i) $A \cup B$

(ii) $A \cap B$

(b) Write the power set of following sets:

(i) A = {a, {b, c}, d}

(ii) B = {1, 2, 3}

Q30. (a) Insert **six** arithmetic mean (A.M) between 3 and 24.

(b) For what value of k, the numbers $1+k$, $(5/6)+k$, and $(13/18)+k$ are in GP.

Q31. (a) Add 45 km 34 m and 34 km 5 m

(b) Subtract 15 km 30 m from 35 km 45 m

Q32. Evaluate

(i) $\int ax^3\left(\frac{1}{x}+x^2+\sqrt{x^2}\right)dx$

(ii) $y = e^{3x}(a+b\cos x)$, find $\frac{dy}{dx}$.

Q33. In a mathematics test given to 15 students, the following marks (out of 100) are recorded:

41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60

Find the mean, median and mode of this data.

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Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of General Education

Session: 2018-19 (Winter Semester)

B. Voc. Program, 1st Semester (2018-19)

End-Sem. Examination

Course Code: GEN 1104 **Time: 3 Hours**

Course Name: Elementary Mathematics **Max. Marks: 100**

Instructions:

1. Calculator is strictly prohibited.
2. Missing data if any can be suitably assumed.

Section – A

20×01 = 20 Marks

Q1. Surface area of sphere is:

(A) $A = 3\pi r^2$ (B) A= 4Π r^3

(C) A= 4 πr^2 (D) A= 4/3 Π r^3

Q2. The sum of supplementary angles is:

(A) 180^0 (B) 360^0

(C) 90^0 (D) 125^0

Q3. Convert 12m 36 cm into cm :

(A) 12.36 cm (B) 1236 cm

(B) 12036 cm (D) 0.1236 cm

Q4. $(12)_{10}$ in binary form is written as:

(A) $(1100)_2$ (B) $(110000)_2$

(C) $(00001100)_2$ (D) $(1111)_2$

Q5. Which of the following is a prime number?

(A) 0 (B) 13

(C)1 (D) 25

Q6. Average value of a given data is determined by:

(A) Mean (B) Mode

(C) Median (D) None of the above

Q7. How many km are there in 1 meter:

(A) 1000 (B) 100

(C) 0.001 (D) 0.01

Q8. Find the mode of the following data?

1,2,2,3,3

(A) 2 (B) there is no mode

(C) 3 (D) 1

Q9. What is the volume of a cube whose side is 6cm?

(A) 216 cm^2 (B) 216 cm^3

(C) 216 m^3 (D) 36 cm^3

Q10. What is the value of sin 90^0 :

(A) 1 (B) 1/2

(B) 0 (D) $1/\sqrt{2}$

Q11. Find the mean of the given data:

10,12,13,25,36

(A) 19 (B) 20

(C) 25 (D) 19.2

Q12. Condition for profit is:

(A) S.P. = C.P. (B) S.P. > C.P.

(C) S.P. < C.P. (D) none of the above

Q13. $(B)_{16}$ in decimal represents:

(A) $(10)_{10}$ (B) $(13)_{10}$

(C) $(16)_{10}$ (D) $(11)_{10}$

Q14. A number that starts from zero are known as:

(A) Natural numbers (B) Prime numbers

(C) Integers (D) Whole numbers

Q15. Angle less than 90^0 are classified as:

(A) Obtuse angle (B) Complete angle

(C) Acute angle (D) Right angle

Q16. Radius of a circle of diameter 18 cm is:

(A) 9 cm (B) 4 cm

(C) 6 cm (D) 1.2 cm

Q17. What is the median of the given data:

1,9,6,6,5,10,8

(A) 5 (B) 10

(C) 6 (D) 0

Q18. What is the value of 2 sin 30^0:

(A) 1/2 (B) 0

(C) 1 (D) $\sqrt{3}/2$

Q19. Volume of cuboid whose dimensions are 2m X 3 cm X 5 cm:

(A) 30 m (B) 3000 cm

(B) 3000 cm^2 (D) 3000 cm^3

Q20. $(111)_2$]in decimal is written as:

(A) $(11)_{10}$ (B) $(7)_{10}$

(C) $(10)_{10}$ (D) $(13)_{10}$

Section – B

06×05 = 30 Marks

Attempt any 06 questions (21-28):

Q21. Find the surface area and volume of cylinder whose radius and height is 13m and 63 cm respectively.

Q22. A ladder 13 m long is placed on the ground in such a way that it touches the top of a vertical wall 12 m high. Find the distance of the foot of the ladder from the bottom of the wall?

Q23. Ronit buys an old scooter for Rs. 4700 and spends Rs. 800 on its repairs. If he sells the scooter for Rs. 5800. Find his profit or loss percent?

Q24. **(a)** If $\sin A = 3/4$ calculate $\cos A$ and $\tan A$.

(b) Write all the trigonometric ratios in terms of cos A.

Q25. **(a)** Cost of 6m cloth is 396 Rs. Find the cost of 1 m of cloth. Also determine the cost of 19 m of cloth.

(b) Conversions:

(i) 2m 30 cm = _____ cm

(ii) 16 92 m = _____ km

(iii) 13cm 6 mm= _____ mm

Q26. If a right circular cone has radius 36 cm and height 15 cm, then find the volume, surface area and lateral surface area of cone?

Q27. If the length, breadth and height of a solid cube are in the ratio 4 : 3 : 2 and total surface area is 832 cm^2. Find its volume and curved surface area?

Q28. A tent is in the shape of a cylinder surmounted by a conical top. If the height and diameter of the cylindrical part are 2.1 m and 4 m respectively, and the slant height of the top is 2.8 m, find the area of the canvas used for making the tent

Section – C

05×10 = 50 Marks

Q29. **(a)** Convert binary numbers into decimal numbers:

(i) $(10101010)_2$

(ii) $(111000)_2$

(b) Convert decimal numbers into binary numbers:

(i) $(156)_{10}$

(ii) $(128)_{10}$

(c) Convert decimal numbers into hexadecimal numbers:

(i) $(176)_{10}$

(ii) $(256)_{10}$

(d) Convert hexadecimal numbers into decimal numbers:

(i) $(26B)_{16}$

(ii) $(12A)_{16}$

Q30. (a) A shopkeeper expects a gain of 22.5% on his cost price. If in a week, his sale was of Rs. 392, what was his profit?

(b) Sam purchased 20 dozen of toys at the rate of Rs. 375 per dozen. He sold each one of them at the rate of Rs. 33. What was his percentage profit?

Q31. (a) The height of two building is 34 m and 29 m respectively. If the distance between the two building is 12 m, find the distance between their tops.

(b) A roof is being placed on a frame that is 9 feet tall and 30 feet wide. How long are the diagonal pieces of the frame?

Q32. (a) Evaluate:

(i) $\sin 18^0 / \cos 72^0$

(ii) $\cos 38^0 \cos 52^0 - \sin 38^0 \sin 52^0$

(iii) $\tan 26^0 / \cot 64^0$

(iv) $\tan 48^0 \tan 23^0 \tan 42^0 \tan 67^0$

(v) $\text{cosec } 31^0 - \sec 59^0$

(vi) $\cos 48^0 - \sin 59^0$

(b) If $\tan 2A = \cot (A - 18^0)$ where 2A is an acute angle, find the value of A.

Q33. (a) Find the value of:

(i) $$\frac{5\cos^2 60^0 + 4\sec^2 30^0 - \tan^2 45^0}{\sin^2 30^0 + \cos^2 30^0}$$

(ii) $$\frac{1 - \tan^2 45^0}{1 + \tan^2 45^0}$$

(iii) $$\frac{\cos 45^0}{\sec 30^0 + \text{cosec } 30^0}$$

(iv) $$\frac{3\sin 45^0 + 2\cos 45^0}{6\sin 45^0 \cos 45^0}$$

(b) Find the H.C.F. and L.C.M of 144 and 36. Hence verify the result?

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ANSWER KEY

GEN
404

End-Term Examinations

2018-19 (Winter Semester)

Elementary Mathematics

Section-A

1.) $A = 4\pi r^2$ (C)

2.) 180° (A)

3.) 1236 cm (B)

4.) $(1100)_2$ (A)

5.) 13 (B)

6.) Mean (A)

7.) 0.001 (C)

8.) there is no mode (B)

9.) $216\ cm^3$ (B)

10.) 1 (A)

11.) 19.2 (D)

12.) S.P. > C.P (B)

13.) $(11)_{10}$ (D)

14.) Whole numbers (D)

15.) Acute angle (C)

16.) 9cm (A)

17.) 6 (C)

18.) 1 (C)

19.) $3000\ cm^3$ (D)

20.) $(7)_{10}$ (B)

Section-B

21.) Surface area of cylinder $= 2\pi r(r+h)$

$= 2 \times \frac{22}{7} \times 1300(1300+63)$

$= \frac{44}{7} \times 1300 \times 1363$

$= \frac{7797600}{7}$

$= 1113657.14 cm^2$

22.) Volume of cylinder $= 2\pi rh$

$= 2 \times \frac{22}{7} \times 1300 \times 63^9$

$= 44 \times 1800 \times 9$

$= 514800 cm^3$

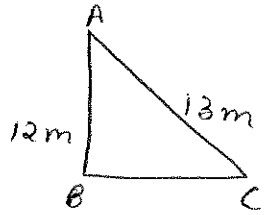
22.) $AC^2 = AB^2 + BC^2$

$(13)^2 = 12^2 + (BC)^2$

$169 - 144 = (BC)^2$

$\sqrt{25} = BC$

$BC = 5m$



23.) C.P. of a scooter = Rs. 4700

" expenses = Rs. 800

Total C.P. = 4700 + 800

= 5500 Rs.

S.P of a scooter = Rs. 5800

Profit = S.P. - C.P

= 5800 - 5500

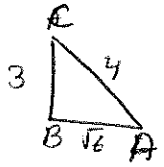
= 300 Rs.

$$\text{Profit } \% = \frac{\text{Profit}}{\text{C.P.}} \times 100$$

$$= \frac{300}{5500} \times 100 = \frac{60}{11}$$

$$= 5.45\ \% \quad \text{or} \quad 5\frac{4}{11}\ \%$$

24.) a) $\sin A = \frac{3}{4}$.



$AC^2 = AB^2 + BC^2$

$(4)^2 = (3)^2 + BC^2$

$16 - 9 = BC^2$

$\sqrt{6} = BC$

$\cos A = \frac{\sqrt{6}}{4}$; $\tan A = \frac{3}{\sqrt{6}}$

b) $\sin^2 A + \cos^2 A = 1$

$\sin A = \sqrt{1 - \cos^2 A}$

$\text{cosec } A = \frac{1}{\sqrt{1 - \cos^2 A}}$

$$\tan A = \frac{\sin A}{\cos A}$$

$$= \frac{\sqrt{1-\cos^2 A}}{\cos A}$$

$$\cot A = \frac{\cos A}{\sqrt{1-\cos^2 A}}$$

$$\sec A = \frac{1}{\cos A}$$

25) a.) Cost of 6m cloth = 396 Rs.

Cost of 1m cloth = $\frac{396}{6}$ Rs

= 66 Rs.

Cost of 19m cloth = 66 × 19

= 1254 Rs.

b) i) 2m 30cm = 230 cm

(ii) 1692 m = 1.692 km

(iii) 13 cm 6mm = 136 mm

26) Slant height = $\sqrt{r^2+h^2}$

$= \sqrt{(36)^2+(15)^2}$

$= \sqrt{1296+225}$

$= \sqrt{1521}$

= 39 cm

Volume of cone = $\frac{1}{3}\pi r^2 h$

$= \frac{1}{3} \times \frac{22}{7} \times 36 \times 36 \times 15$

$= 9504/7 = 1357.71 \text{ cm}^3 \times 15 = 20365.71$

Lateral surface area $= \pi rl$

$= \frac{22}{7} \times 36 \times 39$

$= \frac{30888}{7}$

$= 4412.57 cm^2$

Total surface area $= \pi r(l+r)$

$= \frac{22}{7} \times 36 (39+36)$

$= \frac{22}{7} \times 36 \times 75$

$= \frac{59400}{7} = 8485.71 cm^2$

27.) Total surface area of cuboid $= 2(lb+bh+hl)$

$832 = 2(4x \times 3x + 3x \times 2x + 2x \times 4x)$

$416 = 12x^2 + 6x^2 + 8x^2$

$416 = 26x^2$

$208 \frac{\cancel{416}}{\cancel{26}_{13}} = x^2$

$16 = x^2$

$x = \sqrt{16} = 4$

$\Rightarrow$ Length $= 4 \times 4 = 16 cm$ Breadth $= 3 \times 4 = 12 cm$

height $= 2 \times 4 = 8 cm$

Volume of cuboid $= l \times b \times h$

$= 16 \times 8 \times 12 = 1536 cm^3$

Lateral surface area $= 2(l+b) \times h$

$= 2(16+12) \times 8$

$= 2 \times 28 \times 8$

$= 16 \times 28$

$= 448 cm^2$

28.) curved surface area of cylinder = $2\pi rh$

$= 2 \times \frac{22}{\cancel{7}} \times 2 \times \cancel{2.1}^{0.3}$

$= 44 \times 0.6$

$= 26.4 \text{ m}^2$

Curved surface area of cone = πrl

$= \frac{22}{\cancel{7}} \times 2 \times \cancel{2.8}^{0.4}$

$= 44 \times 0.4 = 17.6 \text{ m}^2$

Section-C

29.) 1) a) $(10101010)_2 = 1\times2^7 + 0\times2^6 + 1\times2^5 + 0\times2^4 + 1\times2^3 + 0\times2^2 + 1\times2^1 + 0\times2^0$

$= 128 + 0 + 32 + 0 + 8 + 0 + 2 + 0$

$= 128 + 32 + 8 + 2$

$= 128 + 42$

$= (170)_{10}$

b) $(111000)_2 = 1\times2^5 + 1\times2^4 + 1\times2^3 + 0\times2^2 + 0\times2^1 + 0\times2^0$

$= 32 + 16 + 8$

$= 32 + 24 = (56)_{10}$

2.) a)

	Q	R
156/2	78	0
78/2	39	0
39/2	19	1
19/2	9	1
9/2	4	1
4/2	2	0
2/2	1	0
1/2	0	1

$(156)_{10} = (100\ 11100)_2$

b)

	Q	R
128/2	64	0
64/2	32	0
32/2	16	0
16/2	8	0
8/2	4	0
4/2	2	0
2/2	1	0
1/2	0	1

$(128)_{10} = (10000000)_2$

3.) a)

	Q	R
176/16	11	0
11/16	0	11

$(B0)_{16} = (176)_{10}$

b)

	Q	R
256/16	16	0
16/16	1	0
1/16	0	1

$(100)_{16} = (256)_{10}$

4.) a) $(26B)_{16} = 2 \times 16^2 + 6 \times 16^1 + 11 \times 6^0$

$= 2 \times 256 + 96 + 11$

$= 512 + 107$

$= (619)_{10}$

b) $(12A)_{16} = 1 \times 16^2 + 2 \times 16^1 + 10 \times 16^0$

$= 256 + 32 + 10$

$= 256 + 42$

$= (298)_{10}$

30.) a) $P\% = 22.5\%$ $S.P = Rs.\ 392$

$$C.P = \left(\frac{100}{100 + P\%}\right) \times S.P$$

$$= \left(\frac{100}{100+22.5}\right) \times 392$$

$$= \frac{100}{122.5} \times 392$$

$C.P = Rs.\ 320$

$P = S.P - C.P$

$= 392 - 320$

$= Rs.\ 72$

b) Cost price of 1 dozen of toys = Rs. 375

Cost of 20 dozen of toys = 375×20

$= 7500$ Rs.

Cost of 1 dozen of toy = $\frac{7500}{20}$ Rs.

Cost of 12 toys = $\frac{7500}{20}$ Rs.

Cost of 1 toy = $\frac{7500}{20 \times 12} = \frac{750}{24}$

$C.P = Rs.\ 31.25$

$S.P = Rs.\ 33$

$P = 33 - 31.25$

$P = 1.75$ Rs.

$$P\% = \frac{1.75}{31.25} \times 100$$

$= 5.6\%$

31) a) $AD^2 = AO^2 + OD^2$

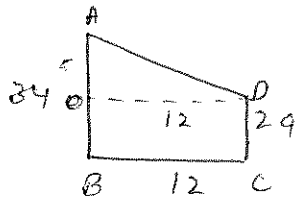
$= (5)^2 + (12)^2$

$= 25 + 144$

$= 169$

$AD = \sqrt{169}$

$= 13\,m$



b) $PR^2 = PQ^2 + QR^2$

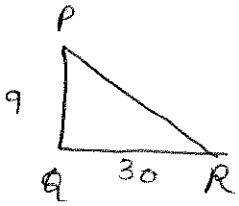
$= (9)^2 + (30)^2$

$= 81 + 900$

$= 981$

$PR = \sqrt{981}$

$= 31.3$ feet



Q32) a) $\dfrac{\sin 18^\circ}{\cos 72^\circ} = \dfrac{\sin 18^\circ}{\cos(90^\circ - 72^\circ)} = \dfrac{\sin 18^\circ}{\sin 18^\circ} = 1$

b) $\cos 38^\circ \cos 52^\circ - \sin 38^\circ \sin 52^\circ$

$\cos(90 - 38^\circ) \cos 52^\circ - \sin(90^\circ - 38^\circ) \sin 52^\circ$

$\sin 52^\circ \cos 52^\circ - \cos 52^\circ \sin 52^\circ = 0$

c) $\tan 26^\circ / \cot 64^\circ = \dfrac{\tan 26^\circ}{\cot(90^\circ - 64^\circ)} = \dfrac{\tan 26^\circ}{\tan 26^\circ} = 1$

d) $\tan 48^\circ \tan 23^\circ \tan 42^\circ \tan 67^\circ$

$= \tan(90^\circ - 48^\circ) \tan 23^\circ \tan 42^\circ \tan(90^\circ - 67^\circ)$

$= \cot 42^\circ \tan 23^\circ \tan 42^\circ \cot 23^\circ$

$= 1$

e) $\operatorname{cosec} 31^\circ - \sec 59^\circ$

$\operatorname{cosec}(90-31^\circ) - \sec 59^\circ = \sec 59^\circ - \sec 59^\circ = 0$

f) $\cos 48^\circ - \sec \sin 42^\circ$

$\cos 48^\circ - \sin(90^\circ - 42^\circ)$

$\cos 48^\circ - \cos 48^\circ = 0$

b) $\tan 2A = \cot(A - 18^\circ)$

$\cot \tan(90^\circ - 2A) = \cot(A - 18^\circ)$

$90^\circ - \cot 2A = \cot(A - 18^\circ)$

$90^\circ - 2A = A - 18^\circ$

$90^\circ + 18^\circ = 3A$

$108 = 3A$

$36^\circ = A$

31.) a) $$\frac{5\cos^2 60^\circ + 4\sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$$

$$= \frac{5 \times \frac{1}{4} + 4 \times \frac{4}{3} - 1}{\frac{1}{4} + \frac{3}{4}} = \frac{\frac{5}{4} + \frac{16}{3} - 1}{\frac{4}{4}} = \frac{15 + 64 - 12}{12}$$

$$= \frac{64}{12} = \frac{32}{6} = \frac{16}{3}$$

b) $$\frac{1 - \tan^2 45^\circ}{1 + \tan^2 45^\circ} = \frac{1-1}{1+1} = \frac{0}{2} = 0$$

c) $$\frac{\cos 45^\circ}{\sec 30^\circ + \operatorname{cosec} 30^\circ} = \frac{\frac{1}{\sqrt{2}}}{\frac{2}{\sqrt{3}} + 2} = \frac{\frac{1}{\sqrt{2}}}{\frac{2+2\sqrt{3}}{\sqrt{3}}} = \frac{\sqrt{3}}{\sqrt{2}} \times \frac{1}{2+2\sqrt{3}}$$

d) $\dfrac{3\sin 45^\circ + 2\cos 45^\circ}{6\sin 45^\circ \cos 45^\circ}$

$= \dfrac{3\times\frac{1}{\sqrt{2}} + 2\times\frac{1}{\sqrt{2}}}{6\times\frac{1}{\sqrt{2}}\times\frac{1}{\sqrt{2}}} = \dfrac{\frac{3+2}{\sqrt{2}}}{6/2} = 5/\sqrt{2} \times \dfrac{1}{3} = \dfrac{5}{3\sqrt{2}}$

32) H.C.F. =

$$36\overline{)\sqrt{144}\,|\,4}$$
$$-144$$
$$000$$

H.C.F = 36

L.C.M =

2	36, 144
2	18, 72
2	9, 36
2	9, 18
3	9, 9
3	3, 3
	1, 1

$= 16 \times 9 = 144$

Verify: $36 \times 144 = 36 \times 144$