Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of General Education

Session: 2019-20 (Summer Semester)

B. Voc. Program, 1st Semester

2nd In-Sem. Examination

Course Code: GEN 1101 **Time: 1 Hour**

Course Name: English Language & Comprehension **Max. Marks: 20**

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

Section-A **(1*5=5)**

Q1. State the comparative degree of the following words:
(a) Bad
(b) Heavy

Q2. State the superlative degree of the following words:
(a) Easy
(b) Careful

Q3. Choose the correct article and fill in the blanks:
(a) Mary is _____ tall girl. (a/an)
(b) Where is_____ money that I gave you? (a/the)

Q4. Arrange the jumbled words in a proper sentence:
(a) he found /on the Catskill Mountains/when Rip woke up/ that he was still.
(b) every rustle/when he/he understood/grew up/in the grass.

Q5. Fill in the blanks with the correct option:
(a) Rip Van Winkle lived in a small village in _____ America. (North/South)
(b) Mowgli grew up with the wolf cubs in the_____. (jungle/city)

Section- B **(2*3=6)**

Q 6. Explain the following with reference to the context:
Come along, little brother.

Q 7. Why was Rip Van Winkle liked everyone?

Q 8. What did Mowgli do at the Council Rock?

Section- C **(3*3=9)**

Q 9. Write the summary of 'Rip Van Winkle.'

Q 10. Write about your college life in about ten lines.

Q 11. Make sentences with the following words. (Total six sentences)
(a) jungle
(b) trust
(c) cry
(d) dream
(e) lift
(f) land

SET B

Registration No.....

Bhartiya Skill Development University

School of General Education

II In-Semester Examination- Nov., 2019

Summer Semester, Sem-I (2019-20), B.Voc. Program

Answer Key

Course: English Language & Comprehension **Time: 1 Hour**

Course Code: GEN1101 **Max. Marks: 20**

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

Section-A **(1*5=5)**

Ans 1. (a) Worse
(b) Heavier

Ans 2. (a) Easiest
(b) Most careful

Ans 3. (a) a
(b) the

Ans 4. (a) When Rip woke up he found that he was still on the Catskill Mountains.
(b) When he grew up he understood every rustle in the grass.

Ans 5. (a) North
(b) jungle

Section- B **(2*3=6)**

Ans 6. From the story Mowgli. Said by Bagheera to Mowgli to invite him to play.
Ans7. Because he was helpful, kind and told stories.
Ans 8. He stared at the animals.

Section- C **(3*3=9)**

Ans 9. 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 (oddly) 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 field, 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.

Ans 10. College routine, timings and hobbies etc.

Ans 11.

(a) The jungle is big.
(b) I trust you.
(c) Don't cry.
(d) I had a dream.
(e) This is a lift.
(f) This is my land.

Set B

Registration No.: .....B.....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of General Education

Session: 2019-20 (Summer Semester)

B. Voc. Program, 1st Semester

2nd In-Sem. Examination

Course Code: GEN 1103 **Time: 1 Hour**

Course Name: Applied Mathematics **Max. Marks: 20**

Instruction:

1. All questions are compulsory.
2. Missing data if any can be suitably assumed.
3. Calculator is not permitted.

Section – A

$05 \times 01 = 05$ Marks

Q1. Which of the following is the derivate of $y = x^2 + 7x$:

(a) $\frac{dy}{dx} = x^3 + 7x^2$

(b) $\frac{dy}{dx} = 2 + 7x$

(c) $\frac{dy}{dx} = 2x + 7$

(d) $\frac{dy}{dx} = x + 7$

Q2. Given $y = 3e^{3x}$, then $\frac{dy}{dx}$ is

(a) 3

(b) $3e^{3x}$

(c) $9e^{x}$

(d) $9e^{3x}$

Q3. If we differentiate $y = 4x^2 - cos\, x$ with respect to x, then

(a) $\frac{dy}{dx} = 8x$

(b) $\frac{dy}{dx} = 8x + sin\, x$

(c) $\frac{dy}{dx} = 8x - cos\, x$

(d) $\frac{dy}{dx} = 8x - sin\, x$

Q4. $\int \frac{1}{x} dx =$

(a) $\log x + c$

(b) $\frac{1}{log\, x}$

(c) $x + c$

(d) 0

Q5. $\int e^{x} dx =$

(a) 0

(b) $xe^{x} + c$

(c) $e^{x} + c$

(d) $e^{x+1} + c$

Section – B

$03 \times 02 = 06$ Marks

Q6. If $y = (\log x)^{\sin x}$, then find $\frac{dy}{dx}$.

Q7. Evaluate $\int (e^x + x^2)dx$.

Q8. Evaluate $\int (5x^3 + 2x^2 + x - 1)\,dx$

Section – C

$03 \times 03 = 09$ Marks

Q9. If $y = \sec^{-1}\frac{a}{\sqrt{a^2 - x^2}}$, then prove that $\frac{dy}{dx} = \frac{1}{\sqrt{a^2 - x^2}}$.

Q10. If $x = at^2$ and $y = 2at$, then find the derivative $\frac{dy}{dx}$.

Q11. Integrate the following w.r.t. x.

$$\int \frac{1}{4 - 9x^2}\,dx.$$

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Answer key (set B)

MEN 1103

Applied Mathematics

Q1 (c) Q3 (b) Q5 (c)

Q2 (d) Q4 (a)

Sec. B

Q.6 given $y = (\log x)^{\sin x}$

taking log on both sides

$$\log y = \log (\log x)^{\sin x}$$

$$\log y = \sin x \log (\log x)$$

differentiation with respect to x

$$\frac{1}{y}\frac{dy}{dx} = \sin x \cdot \frac{1}{\log x} \cdot \frac{1}{x} + \log(\log x)\cos x$$

$$\frac{dy}{dx} = y\left[\frac{\sin x}{x}\cdot\frac{1}{\log x} + \cos x \log(\log x)\right]$$

$$\frac{dy}{dx} = (\log x)^{\sin x}\left[\frac{\sin x}{x}\frac{1}{\log x} + \cos x \log(\log x)\right]$$

Q.7 given $\int (e^x + x^2)\, dx$ integral w.r.t x

$= e^x + \frac{x^3}{3} + c$

Q.8 given $\int (5x^3 + 2x^2 + x - 1)\, dx$ integration w.r.t x

$= 5\frac{x^4}{4} + 2\frac{x^3}{3} + \frac{x^2}{2} - x + c$

Q.9 given $y = \sec^{-1}\frac{a}{\sqrt{a^2 - x^2}}$.

diff. w.r.t to x

$$\frac{dy}{dx} = \frac{1}{\frac{a}{\sqrt{a^2-x^2}}\sqrt{\frac{a^2}{a^2-x^2} - 1}} \cdot \frac{-a \cdot \frac{1}{2\sqrt{a^2-x^2}}(-2x)}{(a^2-x^2)}$$

$$= \frac{1}{\frac{1}{\sqrt{a^2-x^2}}\sqrt{\frac{a^2 - a^2 + x^2}{a^2-x^2}}} \frac{x}{(a^2-x^2)^{3/2}}$$

$$= \frac{1}{\frac{1}{a^2-x^2}} \cdot \frac{1}{(a^2-x^2)^{3/2}} = \frac{1}{\sqrt{a^2-x^2}}$$

= R.H.S. Hence proved.

Q.10 given $x = at^2$, $y = 2at$

$$\frac{dx}{dt} = 2at \quad , \quad \frac{dy}{dt} = 2a$$

then we know that

$$\frac{dy}{dx} = \frac{\frac{dy}{dt}}{\frac{dx}{dt}} = \frac{2a}{2at} = \frac{1}{t} \quad \text{Ans}$$

Q.11 given $\int \frac{1}{4 - 9x^2} dx$

we know that

$$\int \frac{1}{a^2 - x^2} dx = \frac{1}{2a} \log\left(\frac{a+x}{a-x}\right) + c$$

$$\Rightarrow \quad \frac{1}{9} \int \frac{dx}{\frac{4}{9} - x^2} = \frac{1}{9} \int \frac{dx}{\left(\frac{2}{3}\right)^2 - x^2}$$

$$= \frac{1}{9} \frac{1}{2 \times \frac{2}{3}} \log \frac{\frac{2}{3} + x}{\frac{2}{3} - x} + c$$

$$= \frac{1}{12} \log \frac{(2+3x)}{(2-3x)} + c \quad \text{Ans}$$

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.:.....

School of General Education

Session: 2019-20 (Summer Semester)

B. Voc. Program, 1st Semester,

2nd In-Sem. Examination

Course Code: GEN1104 **Time: 1 Hour**

Course Name: Elementary Mathematics **Max. Marks: 20**

Instructions:
1. All questions are compulsory.
2. Missing data if any can be suitably assumed

Section – A

05X01 = 05 Marks

Q1. The value of cos60° is:

a. 0
c. 1
b. $1/\sqrt{2}$
d. 1/2

Q2. Is sin A=4/5, find the value of tan A:

a. 3/5
c. 3/4
b. 4/3
d. 5/3

Q3. The value of sin60° cos30° + sin30° cos60° is:

a. 4
c. 2
b. 1
d. none of these

Q4. The value of $4\tan^2 45°$ is:

a. $1/\sqrt{2}$
c. 4
b. 1/2
d. 1

Q5. The value of $2\cos 60° + 2\tan 45°$ is:

a. 3
c. 2
b. $4/\sqrt{2}$
d. 4

Section – B

03X02 = 06 Marks

Q6. A 10 m long ladder is leaning against a wall. The bottom of the ladder is 6 m from the base of where the wall meets the ground. At what height from the ground does the top of the ladder lean against the wall?

Q7. If $\sqrt{3}\ \tan\theta = 1$, find the value of $\sin\theta + \cos\theta$.

Q8. Evaluate:

a) $\frac{\sin 18°}{\cos 72°}$

b) $\cos 48° - \sin 42°$

Section – C

03X03 = 09 Marks

Q9. If $3\tan\theta = 4$ find $\dfrac{(4\sin\theta + \cos\theta)}{(4\sin\theta - \cos\theta)}$

Q10. Write all the trigonometric ratios in terms of $\sin\theta$.

Q11. If $\cot\theta = 7/8$ evaluate:

a) $\dfrac{(1+\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(1-\cos\theta)}$

b) $\cot^2\theta$

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ANSWER KEY

SCHOOL OF GENERAL EDUCATION

SESSION: 2019-20 [SUMMER SEMESTER]

2nd In-Sem. B.Voc I-Semester

SET-B

COURSE CODE: GENI104

COURSE NAME: Elementary Mathematics

Section-A

1.) d (1/2)

2.) b (4/3)

3.) b (1)

4.) c (4)

5.) d (4)

Section-B

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

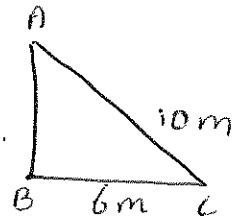
$100 = 36 + AB^2$

$100 - 36 = AB^2$

$64 = AB^2$

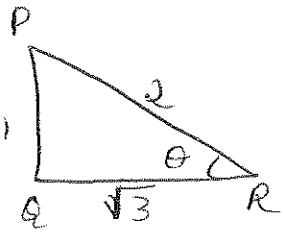
$\sqrt{64} = AB$

$AB = 8m$



7.) $\sqrt{3}\tan\theta = 1$

$\tan\theta = \frac{1}{\sqrt{3}}$



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

$= 1 + 3$

$= 4$

$PR = \sqrt{4}$

$= 2$

$\therefore \sin\theta + \cos\theta = \frac{1}{2} + \frac{\sqrt{3}}{2} = \frac{1+\sqrt{3}}{2}$

8.) a) $\frac{\sin 18^\circ}{\cos 72^\circ}$

$= \frac{\sin 18^\circ}{\cos(90^\circ - 18^\circ)}$

$= \frac{\sin 18^\circ}{\sin 18^\circ} = 1$

b) $\cos 48^\circ - \sin 42^\circ$

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

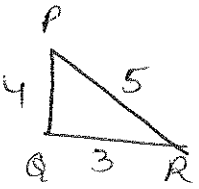
$= \sin 42^\circ - \sin 42^\circ$

$= 0$

section-c

9.) $3\tan\theta = 4$

$\tan\theta = \frac{4}{3}$



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

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

$= 16 + 9$

$= 25$

$PR = 5$

( ). $\frac{4\sin\theta + \cos\theta}{4\sin\theta - \cos\theta} = \frac{4 \times \frac{4}{5} + \frac{3}{5}}{4 \times \frac{4}{5} - \frac{3}{5}} = \frac{\frac{16}{5} + \frac{3}{5}}{\frac{16}{5} - \frac{3}{5}}$

$= \frac{19}{5} \times \frac{5}{13} = \frac{19}{13}$

10.) $\sin^2\theta + \cos^2\theta = 1$

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

( ) $\sec\theta = \frac{1}{\sqrt{1 - \sin^2\theta}}$

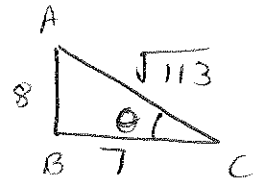
$\operatorname{cosec}\theta = \frac{1}{\sin\theta}$

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

$= \frac{\sin\theta}{\sqrt{1 - \sin^2\theta}}$

$\cot\theta = \frac{\sqrt{1 - \sin^2\theta}}{\sin\theta}$

11.) $\cot\theta = \frac{7}{8}$



$$AC^2 = AB^2 + BC^2$$
$$= 8^2 + 7^2$$
$$= 64 + 49$$
$$= 113$$
$$AC = \sqrt{113}$$

a) $$\frac{\left(1+\frac{8}{\sqrt{113}}\right)\left(1-\frac{8}{\sqrt{113}}\right)}{\left(1+\frac{7}{\sqrt{113}}\right)\left(1-\frac{7}{\sqrt{113}}\right)}$$

$$= \frac{\left(\sqrt{113}+8\right)\left(\sqrt{113}-8\right)}{\left(\sqrt{113}+7\right)\left(\sqrt{113}-7\right)}$$

$$= \frac{113-64}{113-49}$$

$$= \frac{49}{64}$$

b) $\cot^2\theta = \frac{49}{64}$