Form No. Ex- 8 *Sl. No.....*

Particulars about the candidate
and the subject are **checked thoroughly**
and corrected where necessary.

CENTRE CODE :.....

Invigilator

Signature of Officer-in-Charge

KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

BBA 1st Semester Examination, 2015

Business Mathematics [BBA (S1) 03]

Time : 3 Hrs. **Full Marks : 80**

Enrolment Number | | | | | | | | | | |

Medium of Answer : |

388-BM

INSTRUCTIONS TO CANDIDATES

1. This booklet contains.....24.... Pages numbering...23..Please verify number of pages in the booklet before answering.
2. An Examinee is allowed to bring only Admission Card and Identity Card to the Examination Hall. Any Examinee found in possession of loose papers, books etc. is liable to be Expelled.
3. Enrolment No. and Medium of answer must be written legibly at the specified places. Examinee's name and any other identifying mark which reveals examinees identity shall not be written anywhere in the script.
4. For Making calculations, only the last page provided for rough work shall be used.
5. No pages of the script be torn out .
6. Calculators will not be allowed for making calculations in the examination hall. ***MOBILE PHONES are strictly prohibited in the examination Centre***.
7. No candidate will be allowed to leave or go out of the hall during the First hour of the Examination.
8. A candidate having completed his/her answer, the script must be handed over, to an invigilator before leaving the hall.
9. Contravention of any of the instructions mentioned above shall render a candidate liable for disciplinary action as per regulations of the University.

Examiner's Signature : _____

Examiner's Full Name : _____

Scrutiniser's Signature : _____

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Que. No.	Marks
1.	
2.	
3. a	
3. b	
3. c	
3. d	
3. e	
3. f	
3. g	
4. a	
4. b	
4. c	
5. a	
5. b	
5. c	
Total	

Head Examiner's Signature : _____

1. Answer any eight from the following questions $1\times8 = 8$

(a) Solve $\frac{1}{2}\ x^2 - 3 = 0$

(b) Fill in the blank :
$1^2 + 2^2 + 3^2 + \ldots\ldots\ldots + n^2 = \ldots\ldots$

(c) Evaluate $\log_2\ log_{\sqrt{2}}\ \log_3 81$

(d) Find the greatest coefficient in the expansion of $(3x^2 + 4y)^{11}$

(e) Define power set.

(f) Find the value of $\lim_{x\to1}$

$$\frac{x^2 - 1}{x - 1}$$

(g) Evaluate $\int (ax^3 + bx^2 + cx + d)dx$

(h) What do you mean by a point of inflection?

(i) Write down the n^{th} term of the series
10, 16, 22, ...

(j) Write down the 4^{th} term of the set
$A = \{2n - 1 : n \text{ is a positive even integer}\}$

2. Answer any eight from the following questions $2\times8 = 16$

(a) Determine whether the following system of equations has unique solution or not.
$2x - y = 7$
$x + 5y = -2$

(b) The 7th and 13th term of an A. P. are 35 and 63 respectively. Find the 19th term.

(c) Prove that $\log_3(\log_2(\log_2 256)) = 1$

(d) Find the interest and amount due on Rs 800/- for 5 years at 9.5% interest p. a.

(e) Find the amount and compound interest on Rs. 5000 for 3 years at 10% p. a.

(f) Find the middle terms in the expansion of $(2x^2 + \frac{1}{x})^7$.

(g) If A = {1, 4}. B = {4, 5} and C = {5, 7}, find $(A\times B) \cap (A\times C)$

(h) Differentiate $\frac{\log x}{x}$ with respect to x.

(i) If A = {e, u} and U = {a, e, i, o, u} then find A^C.

(j) Find $\lim_{\theta \to 0} \frac{\tan\theta}{\theta}$.

3. Answer any five questions from the following : 4×5 = 20

(a) Find $\int x^2 e^x \, dx$

(b) Find the maximum and minimum values of xy if x + y = 2

(c) Show that, for any three sets A, B, C,

(i) $A \cup (B \cap C) = (A \cap B) \cap (A \cup C)$

(ii) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

(d) Prove that, $\frac{C_0}{1} + \frac{C_1}{2} + \frac{C_2}{3} + \cdots \frac{C_n}{n+1} + \frac{1}{n+1}(2^{n+1} - 1)$

(e) A sum of money amounts to Rs. 26, 620 in 3 years and amounts to Rs. 32, 210.20 in 5 years at compound interest. Find the sum of money and the rate of interest.

(f) Solve the following quadratic equation by method of factorization

$$\frac{x+3}{x+2} + \frac{x-3}{x-2} = \frac{2x-3}{x-1}$$

(g) Solve $7x^2 - 15x + 2 = 0$ by the method of completing square.

4. Answer any two quetions from the following : 8×2 = 16

(a) Which term is the greatest in the expansion of $(2 + 3x)^{12}$ when $x = \frac{5}{6}$?

(b) Find domain and range of the following functinos :

(i) $f(x) = \sqrt{x^2 - 4}$

(ii) $f(x) = \frac{x}{|x|}$, $|x| = \begin{cases} x, & x \geq 0 \\ -x & x < 0 \end{cases}$

(c) The difference between the compound interest and simple interest on a sum of money for 3 years at 6% p. a. is Rs 545.80. Find the sum of money.

5. Answer any two questions from the following : 10×2 = 20

(a) Differentiate the following functions with respect to x :

(i) $x + \sqrt{x^3 + 1}$

(ii) $\dfrac{1 + tanx}{1 - tanx}$

(b) Simplify (i) $\dfrac{log\sqrt{27} + log8 - log\sqrt{1000}}{log1.2}$

(ii) $log2 + 16\, log\dfrac{16}{24} + 12\, log\dfrac{25}{24} + 7log\dfrac{81}{80}$

(c) Define simple and compound interest.

A man borrowed Rs. 15,000 for 9 months 8% p. a. simple interest and another man borrowed some money at 12% p. a. simple interest for 1 year 8 months. If the two men paid the same amount to clear their debts along with the interest, how much money did the second man borrow?