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

BPP 1st Year Examination, 2015

(Stream - 3)

Paper - IV : Additional Mathematics - I

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

542 (Ad. Math.)

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

Medium of Answer : |

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.

Mandatory

Examiner's Signature : _____

Examiner's Full Name : _____

Scrutiniser's Signature : _____

Scrutiniser's Full Name : _____

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. $1 \times 8 = 8$

(a) Give one example of null set.

(b) Write down the power set of the set $A = \{a, b, c\}$

(c) Find the value of $\log_2 16$.

(d) When a relation is said to be transitive?

(e) Define linear function with a suitable example.

(f) Find the value the value of $\sin 45^0$ and $\cos 90^0$?

(g) Write the formula of $\cos (A + B)$ and $\tan (A + B)$.

(h) Find Arithmetic Mean (AM) of 3, 6, 9.

(i) Express the following in set-builder method.

(i) {2, 4, 6, 8, ...}

(ii) {red, green, blue, yellow, ...}

(j) What is an equivalence relation?

2. Answer any eight from the following questions. 2×8 = 16

(a) If z = 2 + 4i , find the value of

$\bar{z}$ and |z|.

(b) Evaluate .

(c) In how many ways 3 players from a group of 10 players can be selected for a competition?

(d) Convert 135^0 into radians.

(e) Find the 12th term in the expansion of

$$(2x - \frac{1}{x})^{15}$$

(f) Prove that tan $(\frac{\pi}{4} + A) = \frac{1+\tan A}{1-\tan A}$.

(g) Find the n^{th} term of the sequence :

1,

(h) Convert into degrees.

(i) How many different arrangements can be made by taking 3 of the letters of the word COMPUTER?

(j) Prove that A × B ≠ B × A by taking a suitable example.

$$\frac{2\pi}{3}, \frac{-2}{4}, \frac{-5}{4}, \frac{-8}{4}, \frac{-11}{4}, \ldots$$

3. Answer any five from the following questions. $4 \times 5 = 20$

(a) Find out the roots of the quadratic equation $x^2 - 2x - 3 = 0$ using factorization method.

(b) Express $\frac{2+5i}{1+i}$ in a + ib form.

(c) Find the values of ${}^5P_3$ ad ${}^{10}C_7$.

(d) Define arithmetic progresion. Write down the A.P series upto 8th term if the first term is 1 and the common difference is 3.

(e) Form the quadratic equation if the roots are 3 and 7.

(f) Give any three properties of conjugate complex number.

(g) Give the definition of subset, superset and proper subset with suitable examples.

4. Answer any two from the following $8\times2 = 16$

(a) Find the value of $\sin 15^0$, $\cos 15^0$ and $\tan 15^0$.

(b) What are the properties of logarithm?

Prove that $\log_5\left(\frac{25}{625}\right) = -2$.

(c) Answer the following -

(i) Prove that $\cos\theta + \cos^2\theta = 1$ if $\sin^2\theta + \sin^4\theta = 1$

(ii) Find the fourth term in the expression of

$$\left(x+\frac{2}{x}\right)^9$$

5. Answer any two questions from the following $10\times2 = 20$

(a) Define polynomial function.

(i) Check whether the function of defined by

$f(x) = \sqrt{x} + 7$ is a polynomial function.

(ii) If C and R represent the set of complex and real numbers respectively, and if f: $C \to R, f(z) = |z|, z \in C$ then verify whether of is one-one or onto.

(b) If $z = \frac{1+i}{1-i}$, then find |z| and Arg z.

Represent z and $\bar{z}$ in graph.

(c) (i) Find the sum of the first 10 terms of the series -18, -11, 8, 10, ...

(ii) Find the logarithm of

$$\log_2 16\sqrt{8}$$