

4008-01

No. of Pages : 4

Degree (Part-I) Vocational Examination, 2019

[Paper : First]

[PPU-D-I(V)H-BCA - 1]

Time : Three Hours]

[Maximum Marks : 75

Note : Candidates are required to give their answers in their own words as far as practicable. The questions are of equal value. **Question No. 1 is compulsory.** Answer **any five** questions in all.

1. Perform the following conversions :

- (a) Convert binary 1001001110 to Decimal.
- (b) Convert decimal 1024 to Binary.
- (c) Convert $(DCA4)_{16}$ to Binary.
- (d) Convert $(11010101)_2$ into 2's complement.
- (e) Find $(342)_8 + (410)_8$ and convert the result to decimal.

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(1)

[P.T.O.]

2.
 - (a) Discuss the characteristics of a digital computer
 - (b) What is the difference between analogue, digital and hybrid computer systems ?
 - (c) What is the difference between Input, output and I/O unit ? Give two examples of each.
3.
 - (a) Name the applications of a digital computer in various areas of present day life.
 - (b) Draw a labelled diagram of a drum printer and describe its working mechanism. Is it a non-impact type of printer ?
4. Differentiate between the following with examples :
 - (a) SASD and DASD
 - (b) E-Mail and Instant Messenger
 - (c) ASCII and EBCDIC
5. With respect to hard disk drive, define :
 - (i) Track and Sector
 - (ii) Seek Time and Latency Time

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- (iii) Field, Record, Block, Blocking Factor
6. How are negative numbers represented in a digital computer ? Discuss the different schemes for representing negative numbers with their characteristics.
7. What is the difference between :
- (i) HLL and LLL
 - (ii) Machine language and Assembly language
 - (iii) Compiler and Interpreter
8. What do you understand by MIS ? What are the main Information systems that are essential for a business organization ?
9. (a) What are the essential characteristics of an algorithm ? Enumerate.
- (b) Write an algorithm to print out the prime numbers from 101 to 200
10. Write short notes on :
- (a) Teleconferencing

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(b) Distributed Processing

(c) Thermal Printers

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4008-02

Printed Pages : 8

(Degree Part-I) Vocational Examination, 2019

BCA

[Paper : Second]

[PPU-D-I(V)H-BCA - 2]

Time : Three Hours]

[Maximum Marks : 75

Note : Answer any five questions. Question No. 1 is compulsory.

1. Choose the correct answer of the following :
- (i) The operating system of the computer can be viewed as :
- (a) Resource manager
 - (b) Interface between Hardware and Software
 - (c) For providing user interface
 - (d) All of the above

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- (ii) Spooling stands for :
- (a) Self propelled online object list
 - (b) Self powered operation online
 - (c) Simultaneous peripheral operations on line
 - (d) None of the above
- (iii) Real Time Systems have :
- (a) Critical Response Time
 - (b) Non-critical Response Time
 - (c) Low Response Time
 - (d) Response time is not essential
- (iv) A Time-Slice refers to :
- (a) Multiprogramming
 - (b) Time sharing
 - (c) Multitasking
 - (d) Spooling

- (v) 'Bugs' in software refer to :
- (a) Residual errors
 - (b) Incomplete code
 - (c) Data errors obtained at runtime
 - (d) All of the above

- (vi) Test Data File is needed in the :
- (a) Data dictionary
 - (b) Data flow diagram
 - (c) Running of test cases
 - (d) None of the above

- (vii) ISS stands for :
- (a) Information Sorting Service
 - (b) Interrupt Service Sorting
 - (c) Information Sorting Subroutine
 - , (d) Interrupt Service Subroutine

(viii) Additional records may be added to database by:

(a) REPLACE

(b) APPEND

(c) DISPLAY

(d) PACK

(ix) A macro defines a :

(a) Closed subroutine

(b) Closed procedure

(c) Open subroutine

(d) Open procedure

(x) By Indexing, we can organize a file :

(a) In order of more than one key field

(b) In order of a single key field

(c) Both of the above

(d) None of the above

2. What do you understand by the term 'Interrupt' ? Classify the different type of interrupts on the basis of their origin. How does the DOS environment handle interrupts ?
3. Write a short note on the UNIX operating system, its organization and main command categories.
4. Differentiate between :
- (a) Multiuser and Multitasking
 - (b) Process Scheduling and Process State
 - (c) User Manual and Operations Manual
5. Discuss the three-level architecture of a Data base. Distinguish between DDL and DML, giving examples of each.
6. What do you understand by File organization, File access mode ? Describe the sequential, Indexed and Relative file organizations giving their relative advantages and disadvantages.
7. Discuss the following categories of commands with syntax and example :
- (a) Data display and monitoring commands
 - (b) File handling commands

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8. Describe the tools and facilities for report creation in FOXPRO.
9. (a) Explain QBE (Query by example) in FOXPRO.
(b) How can we create custom screens in FOXPRO ?
10. Write a command file (program) in FOXPRO to create a database of students with fields (Roll No., Name, Date of Birth, Gender, Course-Code, Marks 1, Marks 2, Marks 3, Marks 4, Marks 5). The program should read each value for a field in a record, within a loop. If Roll No. = 0, then print a tabular report of all the records entered so far, otherwise read the next record.

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No. of Pages : 8

Degree (Part-I) Vocational Examination, 2019

MATHEMATICS

[First Paper]

[PPU-DI(V)-(SUB)-MATH]

Time : Three Hours]

[Maximum Marks :100

Note : Candidates are required to give their answers in their own words as far as practicable. The questions are of equal value. Answer **any five** questions, selecting at least one from each group.

GROUP-A

1. (a) Define equivalence relations. Prove that the relation R on Z defined by " aRb if 3 divides $a-b$ " is an equivalence relation. Note that Z denotes the set of all integers.
- (b) Prove that the function $f : R^+ \rightarrow R$ defined by $f(x) = \log x$ is one-one and onto. Here R^+ is the set of all positive real numbers and R is the set of all real numbers.

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2. (a) Let $A = \{a, b, c\}$, $B = \{1, 2, 3\}$ and $C = \{x, y, z\}$. Find $A \times B$, $A \times C$ and $A \times (B \cup C)$. Is $A \times (B \cup C) = (A \times B) \cup (A \times C)$?
- (b) Prove that composite of two relations on a given set X is also a relation on X .
3. (a) Prove that set G of all cube roots of unity forms a cyclic group w.r.t. multiplication of complex numbers.
- (b) Prove that the permutation group $P_3 = \{I, (12), (13), (23), (123), (132)\}$ is not abelian. Also find the order of element $(1,2,3)$.
4. (a) Define rings. Give an example of ring without unity.
- (b) Let R be a ring and $b, a \in R$. Prove the following:
- (i) $a \cdot 0 = 0$
- (ii) $a(-b) = -(ab) = (-a) \cdot b$

GROUP-B

5. (a) Define Hermitian and Skew-Hermitian matrices.

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Let $A = \begin{pmatrix} 1+i & 2 \\ -3 & 1-5i \end{pmatrix}$. Determine a Hermitian matrix P and a Skew-Hermitian matrix Q such that $A = P + Q$.

(b) Define unitary matrices. Let

$$A = \frac{1}{\sqrt{3}} \begin{pmatrix} 1 & 1+i \\ 1-i & -1 \end{pmatrix}.$$

Prove that A is a unitary matrix.

6. (a) Find the rank of matrix :

$$\begin{pmatrix} 1 & 1 & 1 & -1 \\ 1 & 1 & 1 & 1 \\ 0 & 1 & 1 & 0 \end{pmatrix}$$

(b) Find A^{-1} , where $A = \begin{pmatrix} 1 & 2 & 3 \\ 1 & 3 & 4 \\ 1 & 4 & 4 \end{pmatrix}$. 14
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7. (a) Prove that the set $S = \{(x, y, z) \in \mathbb{R}^3 \mid x + y + z \leq 1\}$ is a convex set.

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0.0=0

[P.T.O.]

(b) Solve graphically the following L.P.P. :

$$\text{Min. } Z = x_1 + x_2$$

subject to constraints :

$$x_1 + x_2 \geq 5$$

$$x_1 + x_2 \leq 3$$

$$x_2 \leq 6$$

and $x_1, x_2 \geq 0$.

8. Using Simplex method, solve the following L.P.P. :

$$\text{Maximize } Z = 3x_1 + 2x_2$$

subject to constraints :

$$x_1 + x_2 \leq 4$$

$$x_1 - x_2 \leq 2$$

and $x_1, x_2 \geq 0$.

GROUP-C

9. (a) If $2 \cos \theta = x + \frac{1}{x}$ and $2 \cos \phi = y + \frac{1}{y}$,

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prove that the values of

$$x^m y^n + \frac{1}{x^m y^n} = 2 \cos(m\theta + n\phi).$$

- (b) If $\sin \alpha + \sin \beta + \sin \gamma = 0 = \cos \alpha + \cos \beta + \cos \gamma$, then prove that $\cos 3\alpha + \cos 3\beta + \cos 3\gamma = 3 \cos(\alpha + \beta + \gamma)$.

10. (a) If $\sin(a + iB) = x + iy$, then prove that :

$$\frac{x^2}{\cosh^2 B} + \frac{y^2}{\sinh^2 B} = 1.$$

- (b) Find the sum of series :

$$\left(\frac{2}{3} + \frac{1}{7}\right) - \frac{1}{3}\left(\frac{2}{3^3} + \frac{1}{7^3}\right) + \frac{1}{5}\left(\frac{2}{3^5} + \frac{1}{7^5}\right) \dots \text{adinf.}$$

11. (a) Test the convergence of the series :

$$\left(\frac{2^2}{1^2} - \frac{2}{1}\right)^{-1} + \left(\frac{3^3}{2^3} - \frac{3}{2}\right)^{-2} + \left(\frac{4^4}{3^4} - \frac{4}{3}\right)^{-3} + \dots \text{adinf}$$

- (b) Define alternating series. Prove that the series :

$$1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \frac{1}{5} - \frac{1}{6} + \dots \text{adinf}$$
 is convergent

but not absolutely convergent.

12. (a) Prove that every convergent sequence is bounded.
- (b) Let $\sum u_n$ be a convergent sequence. Prove that $\lim_{n \rightarrow \infty} u_n = 0$. Also give an example of a series $\sum u_n$ for which $\lim_{n \rightarrow \infty} u_n = 0$, but the series is not convergent.
13. (a) Prove that the function f defined as :

$$f(x) = \begin{cases} x & , \quad x \text{ is rational} \\ 1-x & , \quad x \text{ is irrational} \end{cases}$$

is continuous only at $x = 1/2$.

- (b) Define continuity of a function. Give an example of a function on \mathbb{R} which is discontinuous at $x = 0$.

GROUP-D

14. (a) Find the condition that a straight line $y = mx + c$ may touch the circle $x^2 + y^2 = a^2$.

- (b) Find the equation to the circle which passes through the points $(1, 0)$, $(0, -6)$ and $(3, 4)$.

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15. (a) Reduce the conic $12x^2 - 23xy + 10y^2 - 25x + 26y - 14 = 0$ to its standard form.
- (b) Find the vertex, axis, focus and latus rectum of the conic $4y^2 + 12x - 20y + 67 = 0$

GROUP-E

16. (a) Define direction angles and direction cosines. Find direction cosines of a line joining points $(1, 0, -1)$ and $(2, 0, 1)$.

- (b) Find the equation of the plane through the points $(2, 2, 1)$ and $(9, 3, 6)$ and is perpendicular to the plane $2x + 6y + 6z = 9$.

17. (a) Find the equation of the following straight line in symmetrical form :

$$\left. \begin{array}{l} x + y + z = 1 \\ x - y + 2z = 2 \end{array} \right\}$$

- (b) For what values of c the lines

$$\frac{x-1}{-3} = \frac{y-2}{2c} = \frac{z-3}{2} \text{ and}$$

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$$\frac{x-1}{3c} = \frac{y-5}{1} = \frac{z-6}{-5}$$

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No. of Pages : 8

Degree (Part-I) Vocational Examination, 2019

ENGLISH

(Language and Literature)

[Paper : First]

[PPU-DI(V)-(SUB)-ENG(100M)]

Time : Three Hours]

[Maximum Marks : 100

Note : Answer all questions. Candidates are required to give their answers in their own language as far as practicable. The figures on the right hand side indicate full marks.

1. Explain the following with reference to the context :

[8×3=24]

(a) But patience, to prevent

That murmur, soon replies, "God doth not need
Either man's work or his own gifts; who best
Bear his mild yoke, they serve him best. His state
Is Kingly. Thousands at his bidding speed

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[P.T.O.]

And post o'er Land and Ocean without rest:
They also serve who only stand and wait."

OR

And for all this, nature is never spent;
There lives the dearest freshness deep down
things;

And though the last lights off the black West went
Oh, morning, at the brown brink eastward,
springs —

Because the Holy Ghost over the bent
World broods with warm breast and with ah!
bright wings.

- (b) But Ratan had no philosophy. She was wandering about the post office in a flood of tears. It may be that she had still a lurking hope in some corner of her heart that her Dada would return, and that is why she could not tear herself away. Alas for our foolish human nature! Its fond mistakes are persistent. The dictates of reason take a long time to assert their own sway. The surest proofs meanwhile are disbelieved. False hope is clung

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(2)

to with all one's might and main, till a day comes when it has sucked the heart dry and it forcibly breaks through its bonds and departs. After that comes the misery of awakening, and then once again the longing to get back into the maze of the same mistakes.

OR

When sunset came he was not longer climbing, but he was far and high. His clothes were torn, his limbs were bloodstained, he was bruised in many places, but he lay as if he were at his ease, and there was a smile on his face.

(c) I hold the world but as the world, Gratiano

A stage where every man must play a part,

And mine a sad one.

OR

I am a Jew. Hath not a Jew eyes ?

Hath not a Jew hands, organs, dimensions,
senses, affections, passions;

Fed with the same food, hurt with the same weapons, subject to the same diseases

Healed by the same means, warmed and cooled by the same winter and summer as a Christian is ?

2. Discuss the salient features of Romantic poetry with reference to poets prescribed in your course. [20]

OR

Critically appreciate P.B. Shelley's "Ode to the West Wind" or Tennyson's "Break, Break, Break."

3. Discuss Robert Lynd as an essayist with reference to the essays you've read. [20]

OR

Critically appreciate Oscar Wilde's short story "The Selfish Giant".

4. Sketch the character of Shylock or Portia. [20]

OR

Discuss The Merchant of Venice as a romantic comedy.

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5. Write a precis of the following paragraph : [16]

Every afternoon, as they were coming from school, the children used to go and play in the Giant's garden.

It was a large lovely garden, with soft green grass. Here and there over the grass stood beautiful flowers like stars, and there were twelve peach-trees that in the spring-time broke out into delicate blossoms of pink and pearl, and in the autumn bore rich fruit. The birds sat on the trees and sang so sweetly that the children used to stop their games in order to listen to them. 'How happy we are here!' they cried to each other.

One day the Giant came back. He had been to visit his friend the Cornish ogre, and had stayed with him for seven years. After the seven years were over he had said all that he had to say, for his conversation was limited, and he determined to return to his own castle. When he arrived he saw the children playing in the garden.

'What are you doing here?' he cried in a very gruff voice, and the children ran away.

'My own garden is my own garden', said the Giant; 'any one can understand that, and I will allow nobody to play

in it but myself'. So he built a high wall all round it, and
put up a notice-board.

TRESPASSERS

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He was a very Selfish Giant.

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HINDI COMPOSITION

[COMPOSITION]

[Paper : First]

[PPU-DI(V)-(COMP)-HIN(100M)]

Time : Three Hours]

[Maximum Marks : 100

नोट : परीक्षार्थी यथासम्भव अपने शब्दों में ही उत्तर दें। सभी प्रश्न अनिवार्य हैं। निर्देशानुसार प्रश्नों के उत्तर दीजिए।

1. निम्नलिखित प्रश्नों में से ~~किन्हीं~~ **तीन** के उत्तर दीजिए : [12×3=36]

(क) निम्नलिखित में से **किसी एक** का काव्यात्मक परिचय दीजिए :

~~तुलसीदास, बिहारी,~~ रामधारी सिंह दिनकर

(ख) कबीर के काव्य की सामाजिक चेतना का सोदाहरण परिचय दीजिए।

(ग) बिहारी की काव्यभाषा की विशेषताओं का वर्णन कीजिए।

~~(घ)~~ 'पूस की रात' कहानी की समीक्षा कीजिए।

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(ड) 'सबिया' रेखाचित्र अथवा 'समय काटने वाले' व्यंग्य का सारांश अपने शब्दों में लिखिये।

2. निम्नलिखित अवतरणों में से किन्हीं तीन की सप्रसंग व्याख्या कीजिए : [8×3=24]

(क) बड़ सुख सार पाओल तुम तीरे, छोड़इत निकट नयन बह नीरे।

करजोरि बिनयओ बिमल तरंगे, पुन दरसन होए पुनमति गगे।

(ख) कौन ठगवा नगरिया लूटल हो।

चन्दन काठ के बनल खटोलना, तापर दुलहिन सूतल हो।

(ग) कनक कनक तैं सौगुनी, मादकता अधिकाई।

उहिं खाएँ बौराइ नर, इहिं पाएँ बौराइ।

(घ) मैं कहती हूँ, तुम क्यों नहीं खेती छोड़ देते। मर-मर कर काम करो, उपज हो तो बाकी दे दो, चलो छुट्टी हुई। बाकी चुकाने के लिए ही तो हमारा जन्म हुआ है। पेट के लिए मजूरी करो। ऐसी खेती से बाज आये।

(ड) हाँ, बरसात बीत गई। बाढ़ खतम हो गई। अब नदी अपनी धारा में है; शान्त गति से बहती। न बाढ़ है, न हाहाकार, कीचड़ और खर-पात का नाम-निशान नहीं। शांत, स्निग्ध, गंगा।

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3. निम्नलिखित में से किसी एक पर निबन्ध लिखिए : [15]

(क) राष्ट्रपिता महात्मा गाँधी

(ख) छात्र और राजनीति

(ग) पर्यावरण संरक्षण

4. निम्नलिखित प्रश्नों में से किन्हीं तीन के उत्तर दीजिए : [5×3=15]

(क) निम्नलिखित वाक्यों को शुद्ध कीजिए :

(i) हिन्दी के प्रचार में बड़े-बड़े संकट हैं।

(ii) सब लोग अपनी राय दें।

(iii) खेतों में लंबे-लंबे घास उग आए।

(iv) अब आज से ऐसी गलती मत करना।

(v) वहाँ पर कितने लोग थे।

(ख) निम्नलिखित शब्दों में से उपसर्ग को अलग कर लिखिए :

(i) अनर्थ

(ii) उत्कृष्ट

(iii) बदकिस्मत

(iv) संपूर्ण

(v) सत्कर्म

(ग) मुहावरा और लोकोक्ति में अंतर स्पष्ट कीजिए।

(घ) अपने महाविद्यालय में खेल की सुविधा उपलब्ध कराने हेतु अपने प्रधानाचार्य महोदय को एक आवेदन लिखिए।

5. निम्नलिखित वस्तुनिष्ठ प्रश्नों के उत्तर दीजिए : [1×10=10]

(क) 'रामचरित मानस' किसकी रचना है ?

(ख) 'निसि दिन बरसत नैन हमारे' - इस पंक्ति के कवि कौन हैं ?

(ग) विद्यापति की पदावली की भाषा क्या है ?

(घ) बिहारी किस काल के कवि हैं ?

(ङ) 'बीजक' किसकी रचना है ?

(च) प्रेमचंद के किसी एक उपन्यास का नाम लिखिए।

(छ) मैथिलीशरण गुप्त की किसी एक रचना का नाम लिखिए।

(ज) रहीम किसके दरबार के नौ रत्नों में एक थे ?

(झ) रामधारी सिंह दिनकर का जन्म भारत के किस राज्य में हुआ था ?

(ञ) 'सबिया' किसकी रचना है ?

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