

प्राविधिक शिक्षा तथा व्यावसायिक तालीम परिषद्
परीक्षा नियन्त्रण कार्यालय

सानोठिमी, भक्तपुर

नियमि तथा आंशिक परीक्षा - २०७८, भाद्र

कार्यक्रम: डिप्लोमा इन इन्जिनियरिङ्ग सबै

पूर्णाङ्क: ४०

वर्ष/ खण्ड : प्रथम वर्ष प्रथम खण्ड (नयाँ/पुरानो पाठ्यक्रम)

उत्तीर्णाङ्क: १६

विषय: कम्युनिकेशन नेपाली

समय: १.५ घण्टा

(परीक्षार्थीहरूले उत्तर दिँदा घोकेको, कण्ठ गरेको र पाठ्यपुस्तकबाट हुबहु सारेको जस्तो उत्तर नदिई सकभर आफ्नो शैली र ढङ्गमा आफ्नो कुरा अभिव्यक्त गरी सृजनात्मक उत्तर दिनुपर्दछ र अझदिँदा यस्ता उत्तरलाई प्रोत्साहन दिइनेछ ।)

सबै प्रश्नहरू अनिवार्य छन् ।

१. औपचारिक र अनौपचारिक भाषिक भेदको भिन्नतालाई उदाहरण सहित प्रष्ट पार्नुहोस् । (४)
२. निम्नलिखित अनुच्छेद पढी सोधिएका प्रश्नहरूको उत्तर दिनुहोस् :

सामान्य कारणबाट सुरु हुने मानसिक रोग पहिचान हुने अवस्थासम्म पुग्दा नियन्त्रणभन्दा बाहिर पुगिसेकेको हुन्छ । यसर्थ मानसिक रोग एकै पटक लाग्दैन । धेरै दिनदेखि व्यक्तिले कुनै कठिनाई अथवा असजिलो महसुस गरिरहेको हुन्छ, तर त्यसप्रति त्यति सचेत भने हुने गरिदैन । मानिसको मस्तिकमा बारम्बार आइरहने सोच, मनोवृत्ति, असङ्गत कल्पना, चिन्तन एवम् डरजस्ता लक्षणहरू मानसिक रोगीमा देखिन्छन् । यिनै लक्षणहरू सबल एवम् सशक्त बन्दै जाँदा व्यक्तिमा डिप्रेसन, हिस्टेरिया, माइग्रने एवम् अन्य स्नायू रोगहरू देखिन थाल्छन् । धेरै चिकित्सकहरूले शारीरिक रोगको मूल कारण मानसिक हो भन्ने कुरालाई स्विकारेको पाइन्छ । मनोचिकित्सकहरू मानसिक रोगको मूल कारण "मनोसामाजिक सङ्घर्ष" हो भन्ने गर्दछन् । मानिसले सामाजिक एवम् नैतिक आचरणविरुद्धको चाहानालाई बलजफ्ती दबाउन खोज्दा मानसिक तनाव र असन्तुष्ट जीवन सङ्घर्षबीच बाँच्नुपर्ने हुन्छ । यस अवस्थामा मानिस एकातिर सामाजिक मूल्य मान्यताभित्र आफूलाई राख्न खोज्दछ भने अर्कोतिर आफ्नो आन्तरिक इच्छाको परिपूर्ति यस्ता सामाजिक मूल्य र मान्यता विरुद्ध सङ्घर्ष गरेर प्राप्त गर्न चाहान्छ । यिनै सङ्घर्षको परिणामस्वरूप व्यक्तिको सोचाइ र व्यवहारमा असन्तुलन आउन थाल्छ । उक्त महत्वाकाङ्क्षा बोक्ने मानिस सदैव अशान्त, असन्तुष्ट र अधैर्य हुन्छन् । यस्ता व्यक्ति सानातिना परिस्थितिमा पनि अत्यधिक उग्र एवम् अधैर्य हुने र सेवेगात्मक अस्थिर अवस्थामा आउने गर्दछन् । अत्यधिक उत्तेजित एवम् अधैर्य अवस्थामा आइरहने व्यक्तिलाई मानसिक रोग लाग्ने सम्भावना प्रबल हुन्छ । अस्वस्थकर प्रतिस्पर्धा, कठिन आर्थिक सङ्कट, आपसी कलह र वैमनस्य, राजनीतिक अस्थिरता र असमझदारी जस्ता

स्थितिले पनि मानसिक रोगलाई जन्माउने गर्दछन् । त्यसरी नै अर्न्तमुखी व्यक्तित्व भएका व्यक्तिहरु जसले आफ्ना इच्छाहरुलाई व्यक्त गर्दैनन् र उनीहरु आन्तरिक रुपमा दमित एवम् कुन्ठित बन्ने गर्दछन्, त्यसता व्यक्तिहरुलाई मानसिक रोगले चाँडै आक्रमण गर्दछ । यी वातावरणीय एवम् व्यक्तिगत कारण बाहेक वंशाणुगत अथवा जिन्सको कारणले, स्नायु एवम् जैविक कारण र मस्तिष्कको कार्यमा आउने गडबडीको कारणले गर्दा व्यक्तिमा मानसिक रोग लाग्ने गर्दछ । यस्ता वंशाणुगत एवम् मस्तिष्कको कारणबाट हुने मानसिक रोगको उपचार निकै कठिन हुन्छ ।

बोध प्रश्नहरु :

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क) मानसिक रोग लागेको मानिसमा के कस्ता लक्षणहरु देखिन्छन् ? (२)

ख) मानसिक सोचाइ र व्यवहारमा केले असन्तुलन ल्याउँछ ? (२)

ग) मानिसलाई के के कुराले मानसिक रोग लाग्दछ ? (२)

शब्द भण्डार :

घ) तलका शब्दको आधारपद छुट्याउनुहोस् : (२)

नैतिक, मानसिक, अत्याधिक, परिपूर्ति

ङ) तलका शब्दको समास वा विग्रह गर्नुहोस् : (२)

त्रिफल, अन्न र पानी, निमुखा, यस अर्थ

३. प्रश्न २ को अनुच्छेदबाट ४ वटा बुँदा टिपोट गर्नुहोस् । (४)

४. 'वातावरण प्रदुषण र यसको न्यूनीकरण' शीर्षकमा १०० शब्दसम्मको अनुच्छेद लेख्नुहोस् । (४)

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५. कुनै एक शीर्षकमा २०० शब्द सम्मको निबन्ध लेख्नुहोस् । (८)

क) कोभिड महामारी र रोकथाम

ख) प्रविधिको विकास र त्यसको दुरुपयोग

ग) राजनीतिले निम्त्याएको नितिकरण

६. 'बढ्दो सावारी दुर्घटना' शीर्षकमा १५० शब्दसम्मको संवाद तयार पार्नुहोस् । (५)

अथवा

आफ्नो नवनिर्माण भवनमा विद्युत मिटर जडान गरी पाउँ भनी विद्युत कार्यालयलाई निवेदन लेख्नुहोस् ।

७. "भूकम्पबाट सुरक्षित रहन गर्नुपर्ने पूर्व तयारी" शीर्षकको कृति परिचय दिनुहोस् । (५)

अथवा

इन्जिनियरिङ्ग नेपाली शीर्षक पुस्तिकाको समीक्षा गर्नुहोस् ।

!! समाप्त !!

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Regular/Back Exam-2078, Bhadra

Program:	Diploma in Engineering All	Full Marks: 60
Year/Part:	I/I (New + Old)	Pass Marks: 24
Subject:	Engineering Chemistry I	Time: 3 hrs

*Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.*

Attempt All questions.

1. a) What do you mean by Eq. wt. of element? Prove that ; [1+4]
Molecular wt. = 2 x Vapour density.
b) How is Dalton's atomic theory modified in the light of [5]
Modern Knowledge? (website :- arjun00.com.np)
2. a) State and explain Faraday's First law of electrolysis. [2+3]
Calculate the mass of copper deposited by electrolysis
on passing 2.5A current for 45 minutes through the
solution of CuSO_4 . (At. wt. of Copper = 63.5)
b) State drawback of Rutherford's atomic model. What are [2+3]
the basic postulates of Bohr's atomic Model?
3. a) State Dulong's and Petit's law. 0.444 gram of Metal when [1+4]
dissolved in dilute HCl gave 177 ml of dry hydrogen at
 10°C and 750 mm Hg pressure, the specific heat of the
metal is 0.107. Calculate exact atomic wt. of metal.
b) State Mendeleev's periodic law? Explain Mendeleev's [1+2+2]
periodic table in brief. Also mention it's anomalies.
4. a) What is redox reaction? Balance the following chemical [1+4]
Equation by oxidation number method.
$$\text{Cu} + \text{HNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + \text{NO} + \text{H}_2\text{O}$$

b) What do you mean by acid and base according to [3+2]
Arrhenius concept? Also mention it's limitations.
5. a) What are the significance of given chemical Equation? [3+2]
$$\text{CaCO}_3 + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2 \uparrow$$
 Also, Mention
the limitations of chemical Equations.

Cont.....

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b) How can you determine the Equivalent weight by indirect oxide formation method. [5]

6. Write short notes on : **(Any Five)** [5x2=10]

a) Radical

b) Covalent bond

c) Hund's rule

d) Titration

e) Normality

f) Primary standard substances

Good Luck!

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Program:	Diploma in Engineering All	Full Marks: 40
Year/Part:	I/I (New + Old)	Pass Marks: 16
Subject:	Communication English	Time: 1.5 hrs

*Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.*

Attempt All questions.

1. Put the following words into alphabetical order : diabolism [3]
diabetic, diachrony, diabolize, diable, diabase .
2. Write a job application for the post of Junior Engineer (Civil / [6]
Computer/ Mechanical / Electrical / IT / Electrical and
Electronics). The vacancy announcement was published
recently in The Everest daily.
3. a) In Which quarter of dictionary do the following words occur [2]
in dictionary?
i) Chalk ii) Stupid iii) Large iv) Zebra
- b) Count the following British Spelling or American Spelling. [5]
i) neighbor ii) Paralyze iii) Leukemia
iv) Paediatric v) estrogen
4. Write an essay on : **(Any One)** (website :- arjun00.com.np) [8]
a) Role of Engineers in the National Development
b) The effect of Covid-19.
5. Define the following : **(Any Three)** [6]
a) Phonology b) morphology
c) lexicology d) semantics
6. What do the following communicative expressions use for? [2]
a) Shall I open the window for you?
b) How can I ever thank you?
c) May I go out?
d) I am fond of reading novel.
7. Present a seminar on the topic of " Use and Misuse of Modern [8]
Technology."

Good Luck !

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Program: Diploma in Engineering All
Year/Part: I/I (New + Old)
Subject: Engineering Physics I

Full Marks: 60
Pass Marks: 24
Time: 3 hrs

*Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.*

Group 'A'

Attempt All questions.

[3x6=18]

- 1 State parallelogram law of vector addition. Derive the expression for magnitude and direction of resultant vector [6]

OR

What is simple harmonic motion? Show that motion of a simple pendulum is simple harmonic in nature. Derive the expression for its time period.

2. Stating the postulate of kinetic theory of gas, derive the relation $p = \frac{1}{3} \rho c^2$, where the symbols have their usual meanings. [6]
3. Define magnetic field intensity. Derive magnetic field intensity of bar magnet at a point on equatorial line. [6]

Group 'B'

Attempt Any Six questions. (website :- arjun00.com.np) **[6x3=18]**

- 4 Define g. How does g vary with depth?
5. Define moment of inertia. Obtain the expression for rotational kinetic energy of a rigid body.
- 6 What is thermal conductivity? Derive formula for thermal conductivity.
- 7 Prove that, $C_p - C_v = R$ where symbols have their usual meanings.
- 8 Derive the mirror formula $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$ for convex mirror, where symbols have their usual meanings.

Cont.....

(website :- arjun00.com.np)

9. State and explain coulomb's law in magnetism.
10. What is magnetic hysteresis? Explain it with hysteresis curve.

Group 'C'

Attempt Any Six questions.

[6x4=24]

11. An iron block of mass 10kg. rests on a wooden plane at 40° to the horizontal. It is found that the least force parallel to the plane which causes the block to slide up is 100N, calculate the co-efficient of sliding friction between wood and iron. ($g = 10ms^{-2}$)
12. A motorcycle rider going with a velocity of 60 km/hr around a curve with radius of 50m must lean at an angle to the vertical, find the angle at which he leans. (u)
13. Calculate the amount of heat required to convert 1 kg of ice at $-5^\circ C$ to water at $100^\circ C$. Given, specific heat capacity of ice = 2100 J/kg K, specific heat capacity of water = 4200 J/kg K and specific latent heat of fusion of ice = 3.34×10^5 J/kg.
14. A glass flask of volume $800cm^3$ is just filled with mercury at $10^\circ C$. How much mercury will overflow when the temperature of system is raised to $80^\circ C$? (The coefficient of linear expansion of glass is $4 \times 10^{-6} \text{ } ^\circ C^{-1}$ and coefficient of cubical expansion of mercury is $1.8 \times 10^{-5} \text{ } ^\circ C^{-1}$.)
15. The refractive index of diamond is 2.47. Calculate the speed of light in diamond. (u)
16. Find the angle of prism if angle of minimum deviation is 38° and refractive index is 1.6. (2)
17. A bar magnet of magnetic length 10cm has a magnetic moment of $1.2 Am^2$. Calculate the magnetic intensity at a point 20cm from each pole. ($\mu_0 = 4\pi \times 10^{-7} TmA^{-1}$) (3.5) (4)
18. The horizontal component of earth's magnetic field is $3.4 \times 10^{-5} T$ and angle of true dip is 30° . find the total magnetic flux density of earth and the vertical component. (1)

Good Luck!

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Program:	Diploma in Engineering All	Full Marks: 80
Year/Part:	I/I (New + Old)	Pass Marks: 32
Subject:	Engineering Mathematics I	Time: 3 hrs

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Group 'A'

Attempt All questions.

[10x3=30]

- 1 a) Define in circle. In any triangle ABC, establish the relation [5]
 $r = \frac{\Delta}{s}$ where the symbols have their usual meanings.
- b) Find the general solution of $\cos\theta + \cos 3\theta + \cos 5\theta = 0$ [5]

OR

Prove that: $\tan^{-1}x - \tan^{-1}y = \tan^{-1}\frac{x-y}{1+xy}$

- 2 a) Define continuity of a function at a given point. Test the [5]
continuity of the function at a given point where

$$f(x) = \begin{cases} 3 + 2x & \text{for } -\frac{3}{2} \leq x \leq 0 \\ 3 - x^2 & \text{for } 0 < x \leq \frac{3}{2} \end{cases} \text{ at } x = 0$$

OR

Evaluate the limit of $\lim_{x \rightarrow \theta} \frac{x \sin \theta - \theta \sin x}{x - \theta}$

- b) Find from first principle the derivatives of $y = \tan x$ or [5]
 $y = e^{ax}$. (website :- <https://www.arjun00.com.np>)
- 3 a) What is homogenous equation of second degree? Prove [5]
that the homogenous equation of second degree represent
a pair of straight line through the origin.
- b) Find the equation of the straight line through the point (2, 3) [5]
and perpendicular to the line $5x - 2y = 8$.

Cont.....

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Group 'B'

Attempt All questions.

[10x5=50]

- 4 Sum to n terms of $7+77+777+\dots$
- 5 From a group of 6 gentlemen and 4 ladies, a committee of 5 is to be formed. In how many ways can this be done so as to include at most 2 lady?
- 6 Find the middle term (s) in the expansion of $\left(1 + \frac{x}{2}\right)^{15}$.
- 7 Prove that every quadratic equation cannot have more than two roots.
- 8 Find the equation of the circle through the intersection of the circles $x^2 + y^2 - 8x - 2y + 7 = 0$ and $x^2 + y^2 - 4x + 10y + 8 = 0$ and passes through the point $(-1, -2)$.
- 9 Find $\frac{dy}{dx}$: **(Any One)** (website :- <https://www.arjun00.com.np>)
(a) $x^3 + y^3 = 3xy^2$ (b) $x = \tan t, y = \sin t \cos t$
- 10 Integrate : **(Any One)**
i) $\int x^2 \sin x \, dx$ ii) $\int e^{ax} \cos bx \, dx$
- 11 Find the vertex, focus, equation of directrix and length of latus rectum of the parabola : $y^2 - 4y - 4x - 8 = 0$.
- 12 Let $f: R \rightarrow R$ and $R \rightarrow R$ be defined by $f(x) = x^3 + 1$ and $g(x) = x + 5$, find (i) $f \circ g(x)$ (ii) $g \circ f(x)$

OR

If $\frac{\log x}{y-z} = \frac{\log y}{z-x} = \frac{\log z}{x-y}$, prove that $x^2 \cdot y^y \cdot z^z = 1$.

- 13 Prove that the angle between two straight lines $y = m_1x + c_1$ and $y = m_2x + c_2$ is $\tan \theta = \pm \left(\frac{m_1 - m_2}{1 + m_1 m_2} \right)$. Also, prove that

the two lines are parallel and perpendicular to each other if $m_1 = m_2$ and $m_1 \times m_2 = -1$ respectively.

Good Luck!

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Program:	Diploma in Computer Engineering	Full Marks: 80
Year/Part:	I/I (2018 New Course)	Pass Marks: 32
Subject:	Computer Programming in C	Time: 3 hrs

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt Any Five questions.

- 1 a What is programming language? Explain assembler, compiler and interpreter in brief. [2+6]
b Define the terms Variable, Constant, keyword and pre-processor directive. [8]
2. a What is data type? Explain any four basic data types along with its memory size and range. [2+6]
b What do you mean by operator? Explain various types of operators used in C on the basis of operation. [2+6]
- 3 a Write a program to find roots of quadratic equation. [8]
 $(ax^2 + bx + c = 0 \quad r_1 r_2 = (-b \pm \sqrt{b^2 - 4ac})/2a)$
b Differentiate between while and do-while loop. Write a program to find sum of digits of given number. [3+5]
4. a What is array? Explain any four string handling functions in brief. [2+6]
b Write a program in C to arrange any ten numbers in ascending order. [8]
(website :- <https://www.arjun00.com.np>)
5. a Explain call by value and call by reference with suitable examples. [8]
b Define the terms function and recursion. Write a program in C to find the factorial of an entered number Using recursion [2+6]
- 6 a Differentiate between structure and Union with example. [8]
b Write short notes on : **(Any Two)** [2x4=8]
i) File opening modes
ii) Formatted Input / Output function
iii) Pointer

Good Luck !

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Program:	Diploma in Computer Engineering	Full Marks: 80
Year/Part:	I/I (2018 New Course)	Pass Marks: 32
Subject:	Computer Fundamental	Time: 3 hrs

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt Any Ten questions.

- 1 What do you mean by Generation of computer? Explain different generation of computer with an example. [2+6]
- 2 Classify the computer on the basis of size and explain each of them with an example. [8]
- 3 Draw the block diagram of computer. Explain its working mechanism. [3+5]
- 4 Define output device. Differentiate between Hardware and software. [2+6]
- 5 Define macros. Write down the steps to create a macro. Why is it useful? [2+4+2]
- 6 Write down the features of word processing package and spreadsheet in brief. [4+4]
- 7 Define Internet. Explain different types of computer network. [2+6]
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- 8 What do you mean by operating system? Write down its function and explain them. [2+6]
- 9 What are the application of multimedia? List out the components of multimedia. [6+2]
- 10 What do you mean by computer virus and antivirus? How can we prevent our computer from computer virus? [3+5]
- 11 Write short notes on : **(Any Two)** [2x4=8]
 - a Differentiate between RAM and ROM
 - b Internal command of DOS
 - c CPU

Good Luck !

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