GOVT. POLYTECHNIC, AMRAVATI.

(An Autonomous Institute of Govt. of Maharashtra)

TERM END EXAMINATION

WINTER - 2018

Write Identity Code

PROGRAMME: DIPLOMA IN CE / ME / EE / EC / CM / IF / PP ENGINEERING

COURSE CODE & ITS TITLE : CC561 ENTREPRENEURSHIP DEVELOPMENT

Time Allowed : 02 Hrs **Marks: 50**

Instructions:

1. Write your Identity Code Number on question paper.
2. All questions are compulsory.
3. Illustrate your answers with neat sketches wherever necessary.
4. Use of non-programmable calculator is permissible.
5. Figures to the right indicate full marks.
6. Assume suitable additional data, - if necessary and state the assumptions made.
7. Each sub-question in a question carries equal marks unless otherwise specified.

Marks

Q.1. Attempt any **SEVEN.** **14**

a) Define 'Partnership' according to Indian partnership act, 1932.
b) State any four types of co-operative organisation.
c) State any four factors influencing entrepreneurship.
d) Explain following entrepreneurship competencies –
(i) Creativity (ii) Need for independence.
e) State any four advantages with respect to 'Need for promotion of entrepreneurship'.
f) Highlight the importance of market survey for an entrepreneurship.
g) State utility of project report.
h) Give the meaning of term - (i) solvent (ii) insolvent.
i) State any four channels of distribution for the produced goods.
j) State any four criteria for selection of product.

Q.2. Attempt any **TWO.** **12**

a) Compare between partnership and joint stock companies with respect to following points -
(i) Risk (ii) Maximum number of members (iii) Legal formalities (iv) Capital raised
(v) Life of organisation (vi) Rate of growth.
b) State any six guidelines for development of entrepreneurship attitude.
c) What is profit and loss account? State the particulars in it, by giving one example.

Q.3. Attempt any **TWO.** **12**

a) What is risk situation? State types of risk takers. Which risk a new entrepreneurship should prefer and why?
b) Give the details of market information to be collected regarding existing manufacturer.
c) State the contents of business plan format. Explain with suitable example in short.

Q.4. Attempt any **THREE.** **12**

a) Give two examples of strength and two examples of weakness of a company with reference to 'SWOT'.
b) State any four assumptions in project report.
c) What do you understand by financial viability of project report?
d) State need for marketing orientation.
e) Define 'sales management'.

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TERM END EXAMINATION
WINTER - 2018

PROGRAMME: DIPLOMA IN CE/ME/EE/EC/CM/IF/PP ENGINEERING

COURSE CODE & ITS TITLE : CC 1401 ENGLISH

Time Allowed : 03 Hrs | Marks: 70

Instructions:
1. Write your Identity Code Number on question paper.
2. All questions are compulsory.
3. Illustrate your answers with neat sketches wherever necessary.
4. Use of non-programmable calculator is permissible.
5. Figures to the right indicate full marks.
6. Assume suitable additional data, - if necessary and state the assumptions made.
7. Each sub-question in a question carries equal marks unless otherwise specified.

Marks

Q.1. Attempt any THREE — 06

a) State the antonyms of the following words

i) Pessimistic

ii) Ascent

b) Form words by using following affixes

i) ---------- ion

ii) un----------

c) Give one word substitution for the following

i) A speech delivered without any previous preparation.

ii) One who looks on the dark side of things.

d) Write the meaning of the following words and use it in your own sentence.

i) Stationary - Stationery

Q.2. Attempt the following

a) Rewrite the following sentences into indirect speech (any two) — 04

i) He said, "Honesty is the best policy"

ii) "Sit down"' she told Mahesh.

iii) Deepak said' "Friends, "I will wait for you at the temple,"

b) Identify the efforts and correct the following sentences (any two) — 04

i) When I reached, my boss have left the office.

ii) I think India win the World Cup

iii) I had just finished my home work.

c) Change the voice (any Two) — 02

i)They pluck flowers

ii) A gift will be given to you by me

iii) He gave me a thousand rupees note.

d) Fill in the blanks with proper conjunctions (any two) — 02

i) We love ------ honour him.

ii) ------ he is not eligible, he got the post.

iii) ----- you work hard, you can not achieve success.

e) Change the tense (any two) — 02

i) I spoke to her in the afternoon (make it past continuous tense)

ii) He will go to Mumbai. (make it future continuous tense)

iii) We shall bring gifts for your daughter (make it simple past tense)

f) Insert appropriate prepositions in the blanks (any two) 02

i) He cut an apple ----- a knife.

ii) Ganesh will travel ----- a train.

iii) The river is ----- the bridge.

Q.3. a) Attempt any THREE. 06

i) Explain the term – Grind mind set

ii) Write the full form of abbreviation CAT

iii) Name the peaks climbed by Arunima Sinha.

iv) Explain the term Entrepreneurship.

b) Attempt any Three 12

i) Narrate the success story of Mr.Lal

ii) Explain the steps that students can take to avoid e-waste pollution

iii) 'Having a dream is only half a battle won'. Justify the statement

iv) Summarize the struggle of Shiva.

Q.4. Attempt any TWO 06

a) Draft a farewell speech by the employee on the occasion of his/her retirement ceremony.

b) Prepare a vote of thanks on the occasion of annual day function.

c) Draft a speech introducing the chief guest invited for 'yoga day' programme.

Q.5. Attempt any TWO 12

a) Write a paragraph on 'uses and misuses of cell phone'

b) Prepare a dialogue between an ex-student who comes to the institute to inform the principal about her progress.

c) Prepare a dialogue between two friends about how they plan to spend their vacations.

Q.6. Read the following passage and answer the questions given below :

As a small boy, Edison had his laboratory in the cellar of his father's house. It contained two hundred bottles and they were all marked 'POISON' to keep people away. When he needed money to buy more chemicals, he managed to persuade his parents to let him seek a job. With remarkable enterprise, he obtained permission to sell newspapers on the railway train between Port Hyron and Detroit.

This opportunity was made to help in three further ways. First, he was able to put in a great deal of time reading at the Detroit Public Library between trains. Secondly, he thought he would start a newspaper of his own, printing it on the train and making it from the bits of local information picked up on the line. Thirdly, without asking anyone's permission, he set up a laboratory in the Van, one day, when the train was rounding a piece of badly laid track a stick of phosphorous fell on the floor and set the van on fire. The fire was extinguished, but the angry crowd hit Edison on the ear, causing his deafness from which he suffered afterwards

a) Why did Edison mark all the bottles in his laboratory 'poison' ? 02

b) What job did he get when he needed money 02

c) Where did Edision print his newspaper? 02

d) What did the angry crowd do? 02

e) Give the meaning of the words 02

i) cellar ii) persuade

f) Use the following phrases in the sentences of your own 02

i) to seek a job

ii) to ask for permission

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TERM END EXAMINATION
WINTER - 2018

PROGRAMME: DIPLOMA IN CE/ME/EE/EC/CM/IF/PP ENGINEERING

COURSE CODE & ITS TITLE : CC1404 BASIC MATHEMATICS

Time Allowed : 03 Hrs **Marks: 70**

Instructions:
1. Write your Identity Code Number on question paper.
2. All questions are compulsory.
3. Illustrate your answers with neat sketches wherever necessary.
4. Use of non-programmable calculator is permissible.
5. Figures to the right indicate full marks.
6. Assume suitable additional data, - if necessary – and state the assumptions made.
7. Each sub-question in a question carries equal marks unless otherwise specified. Marks

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Q.1. (a) Attempt any **TWO.** **04**

(i) Simplify, $\frac{\log_5^{27}}{\log_5^3} - \frac{\log_7^4}{\log_7^2}$

(ii) Find x, if $\log_3(x-2) + \log_3 x = 1$

(iii) Simplify, $2\log\left(\frac{16}{15}\right) + \log\left(\frac{25}{24}\right) - \log\left(\frac{32}{27}\right)$

(b) Attempt any **TWO.** **06**

(i) Resolve into partial fractions, $\frac{x+5}{(x+4)(2x-1)}$

(ii) Resolve into partial fractions, $\frac{9}{(x+1)(x+2)^2}$

(iii) Resolve into partial fractions, $\frac{x}{x^3+1}$

Q.2. Attempt any **THREE.** **12**

a) Find the area of the quadrilateral whose vertices are (3,2) , (-2,4) , (-3,-5) , (4,-6).

b) Solve by Cramer's rule, $x + y + z - 6 = 0$; $2x + y + 2z + 2 = 0$; $x + y - 3z + 6 = 0$.

c) Verify that, (AB) C = A (BC) if $A = \begin{bmatrix} 1 & -2 \\ -3 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 4 & 2 & -5 \\ 1 & 0 & 3 \end{bmatrix}$ & $C = \begin{bmatrix} 6 & -7 & 0 \\ -1 & 2 & 5 \\ 1 & 0 & 3 \end{bmatrix}$

d) Solve the following equations by matrix method -
$x + 3y + 2z = 6$; $3x - 2y + 5z = 5$; $2x - 3y + 6z = 7$.

Q.3. (a) Find; $\sin 105^0$ by using sin(A+B) **02**

(b) Attempt any **TWO.** **06**

(i) Prove that ; $\dfrac{\cos 3A + 2\cos 5A + \cos 7A}{\cos A + 2\cos 3A + \cos 5A} = \cos 2A - \sin 2A.\tan 3A$

(ii) Show that; $\cos^{-1}\left(\dfrac{4}{5}\right) + \cos^{-1}\left(\dfrac{12}{13}\right) = \cos^{-1}\left(\dfrac{33}{65}\right)$, for principle values.

(iii) Show that; sin2A + sin2B + sin2C = 4 sinA sinB sinC for Δ ABC.

(c) Attempt any **TWO.** **08**

(i) Solve the Δ ABC if a = 53 cm, b = 40 cm, c = 72 cm

(ii) Find the area of Δ ABC if a = 25 cm, b = 51 cm, c = 52 cm also find the value of sin (A/2).

(iii) Prove that ; a sin (B-C) + b sin(C-A) + c sin(A-B) = 0 for any Δ ABC.

Q.4. (a) Attempt any **ONE.** **04**

(i) Find the equation of line passing through the point of intersection of lines 2x + 3y=13 and 5x – y = 7 and perpendicular to the line 2x – 5y + 9 = 0

(ii) Find the equation of line which passes through (-3,8) and if sum of the intercepts made by the line on the co-ordinate axes is 7.

(b) Attempt any **TWO.** **06**

(i) Find the acute angle between the lines 3x- 2y + 4 = 0 and 2x – 3y – 7 = 0

(ii) Find the distance between the lines 3x + 4y + 5 = 0 and 6 x + 8 y = 25

(iii)Find the equation of a straight line whose perpendicular distance from origin is 3 and inclination of perpendicular is 30°.

Q.5. Attempt any **THREE.** **12**

a) Find the cost of white washing the walls at the rate Rs.1/M^2 of the hall having 45 m long, 35 m broad and 15 m high and it has two doors 8 m x 5 m and 6 windows 5 m x 4 m.

b) How long it will take to fill to a depth of 5 m a cylindrical tank of 5 m in diameter if water flows at the rate of 3 km/hour through a circular pipe of internal diameter 20 cm.

c) Find the total surface area and volume of frustum of cone with radii of the circular ends are 14 cm and 8 cm height 8 cm.

d) Find the diameter and volume of hemisphere having total surface area 1848 cm^2 (Take $\pi = 22/7$).

Q.6. (a) Attempt any **ONE.** **02**

(i) Calculate mean from the following data

xi	1	2	3	4	5	6
Fi	5	9	12	17	14	10

(ii) Find the range and coefficient of range of the distribution.

Marks	10-19	20-29	30-39	40-49	50-59	60-69
No.of students	6	10	16	14	8	4

(b) Attempt any **TWO.** **08**

(i) Compute the mean deviation from mean for the following frequency distribution

Production of chikoos (in quintals)	4-8	8-12	12-16	16-20	20-24	24-28	28-32	32-36	36-40
Number of chikoo trees	5	8	18	25	15	12	10	5	2

(ii) Which of the batsman is move consistent if the runs scored by two batsman A and B in five one-day matches is given as follows.

A	48	50	39	46	37
B	50	52	60	55	53

Compare their coefficients of variance.

(iii) Find variance and coefficient of variance of the following data

Class intervals	0-10	10-20	20-30	30-40	40-50
Frequency	14	23	27	21	15

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TERM END EXAMINATION
WINTER - 2018

PROGRAMME: DIPLOMA IN CE/ME/EE/EC/CM/IF/PP ENGINEERING

COURSE CODE & ITS TITLE : CC1901 ENGLISH

Time Allowed : 03 Hrs **Marks: 80**

Instructions:

1. Write your Identity Code Number on question paper.
2. All questions are compulsory.
3. Illustrate your answers with neat sketches wherever necessary.
4. Use of non-programmable calculator is permissible.
5. Figures to the right indicate full marks.
6. Assume suitable additional data, - if necessary and state the assumptions made.
7. Each sub-question in a question carries equal marks unless otherwise specified.

Marks

Q.1. Answer the following questions in one sentence (Any Ten) **20**

a) What resolution did shaw carry out ?

b) What is essential for the happiness, peace and prosperity of a nation?

c) Why did Herman stay with his mother?

d) What does Gandhiji object to?

e) What does the term NASA stand for?

f) Which areas did Kiran prefer to work in?

g) Whom did Gardiner meet on the street?

h) Where was shaw's best speech delivered at ?

i) What do the following stand for

i) ICT ii) GDP

j) How does Thurber describe the look of the reporter?

k) What is the principle of Ruskin Bond's book 'Unto this Last'?

l) Who inspired Kalpana Chawla?

m) What is unintelligible to Gardiner?

Q.2. Answer the following questions in four/five sentence (Any **THREE.**) **12**

a) Describe the incident at St.James Hall?

b) How did grandfather treat the cop who found the zither ?

c) How was the singer sewing machine invented?

d) How are the astronauts prepared for water survival?

e) How does Gardiner elaborate the beauty of sunrise and sunset?

Q.3. a) Answer the following questions in about 150 words (Any One) **08**

i) How did Bernard Shaw become a public speaker?

ii) State the qualities of a magnetic leader

b) Classify the following words under the given heads **04**

(Adjective, Adverb, Verb, Noun)

Surpass, Maturity, Obviously, Continual

Q.4. a) Do as directed (Attempt any **SIX).** **06**

i) Many students are participating in this programme (Add question tag)

ii) This picnic spot is very attractive.

(Make exclamatory)

iii) Health is better than wealth (Change the degree)

iv) It is difficult for them to survive in colder regions (Make Negative)

v) The player was too tired to continue the match (Remove too & rewrite the sentence)

vi) Answer my question (Change the Voice)

vii) All that glitters is not gold (make a complex sentence)

viii) The box was very heavy. I could not lift it (use conjunction)

b) Attempt any One **04**

I) Give the antonyms of the following.

i) ancient ii) nervous iii) artificial iv) arrival

II) Give the synonyms of the following.

i) polite ii) postpone iii) respect iv) pride

c) Attempt any One **02**

I) Fill in the blanks with appropriate Homophones.

i) Education plays an important ------ in man's life (role/roll)

ii) The body dies, but the -------- is immortal (sole, soul)

II) Give the homophones for the following words

a) Cheque b) Steal

Q.5. Attempt any **TWO.**

a) I) Punctuate and rewrite the following sentences **04**

i) he said what a beautiful picture it is

ii) the problem is this which came first the hen or egg?

II)Insert appropriate articles **02**

i) The old man was -------- honest man

ii) She is --------- artist married to a European Engineer.

b) I) change the following into indirect speech **04**

i) He said, " what a fool Gopal is !"

ii) The doctor said to me, "stop smoking"

II) Correct the errors in the following sentences **02**

i) One should love his country.

ii) He is working in this office since three years.

c) I) Insert appropriate preposition **04**

(in, with, at, from)

i) The street is ---------- a shocking state

ii) Where did all these letters come ----- ?

iii) He came walking ------- a heavy milk can.

iv) Send for the mayor -------- once.

II) Change the tense of the following sentences **02**

i) The principal selected the teacher (change into past perfect tense)

ii) The tiger killed the deer. (Change into present continuous tense)

Q.6. Attempt any **TWO.**

a) Develop a well organized paragraph in about 75 words **06**

Time management.

b) Read the passage carefully and answer the questions given below.

Some things we do because we have to do. Some things we do because we like to do. Things which attract and sustain our attention spontaneously are our interests. What we do during our moments of leisure reveal our interests. If our likes are developed along their natural channels leading on to allied occupations, our work will be an ever growing source of pleasure to us. Then the distinction between work and play vanishes and work becomes real play. It is convenient for the purpose of vocational guidance to classify human interest under a few headings such as intellectual, practical, social athletic and aesthetic interests.

i) What according to the writer are interests? **01**

ii) When does the distinction between work and play vanish? **02**

iii) How are our interest revealed? **01**

iv) How are human interest classified? **01**

v) Give a suitable title to the passage **01**

c) Find the following text and using contextual clues supply the missing words from the list given below **06**

(Artistic, full, soul, depicts, old, paintings)

Modern art sometimes appears to be ------ when we compare ------ of great masters of ------ times, with this art, we fail to get------ amount of------pleasure. Most of the paintings ------ confused state of mind.

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TERM END EXAMINATION
WINTER-2018

PROGRAMME:DIPLOMA IN CE/EC/EE/ME/PP/CM/IF ENGINEERING

COURSE CODE & ITS TITLE: CC1902 BASIC PHYSICS

Time Allowed : 03 Hrs **Marks: 80**

Instructions:

1. Write your Identity Code Number on question paper.
2. All questions are compulsory.
3. Illustrate your answers with neat sketches wherever necessary.
4. Use of non-programmable calculator is permissible.
5. Figures to the right indicate full marks.
6. Assume suitable additional data, - if necessary – and state the assumptions made.
7. Each sub-question in a question carries equal marks unless otherwise specified.

Marks

Q.1. Attempt any **TEN.** **20**

a) State any two fundamentals physical quantities along with respective SI units.

b) Define stress and strain.

c) State the effect of soluble impurity and temperature on surface tension.

d) Calculate velocity gradient for a metal plate having thickness 0.0002 m moving with velocity 0.06 m/s.

e) Define the terms – i) Periodic time ii) Frequency.

f) Find velocity of the wave moving with frequency 100 Hz and having wavelength 10 m.

g) State law of thermal conductivity along with its mathematical equation.

h) The coefficient of volume expansion is 99×10^{-6} per °C. Find the coefficient of linear expansion.

i) Write formula to calculate refractive index of prism, and also write the meaning of each term used in formula.

j) Define the terms : i) Diffraction of light ii) Dispersion of light.

k) State any two assumption of Huygen's wave theory of light.

l) State the principle of LASER.

m) A X-ray tube work's on 40 KV. Calculate the minimum wavelength of X-ray emitted it.

n) State Plank's hypothesis. Also write the equation for energy of photon.

Q.2. Attempt any **THREE.** **12**

a) Define the term unit. State any three requirement of ideal unit.

b) Define the term Error. State types of error with suitable example, explain in brief Instrumental error.

c) Find the percentage error in the measurement of $V = \pi r^2 h$ if $r = 0.57 \pm 0.002$ cm and $h = 27.2 \pm 0.2$ cm.

d) Define terms – i) Deforming force ii) Restoring force iii) Modulus of elasticity.
iv) Young's modulus of elasticity.

e) A wire extends by 0.02 cm when loaded with 2 kg. Find Young's modulus if its length is 2 m and diameter 0.1 cm.

Q.3. Attempt any **THREE.** **12**

a) i) Define surface tension and angle of contact.

ii) Write the physical significance of angle of contact.

b) Water rises to height of 2.5 cm in a capillary tube of diameter 1 mm. Find the surface tension of water [Given – Density of water – 10^3 kg/m^3, g = 9.81 m.s^2]

c) With four points, distinguish between streamline flow and turbulent flow.

d) Calculate critical velocity for a liquid of viscosity o.5 NS/m^2 flowing through pipe of diameter 12 cm if the density of liquid is 1.2 x 10^3 kg/m^3 (Given R = 2000)

e) Define the terms, related to wave motion.

i) Wave length ii) Amplitude iii) Phase iv) Wave velocity.

Q.4. Attempt any **THREE.** **12**

a) Define three coefficient of expansion in solids and state relation between them.

b) How much heat will be conducted in 1 hour through a layer of ice 5 cm thick covering area 20 m^2, if temperature of water is 0°C and temperature of air is - 10°C.

(For Ice K = 5 x 10^{-4} Kcal/m °C S.

c) With four points distinguish between transverse wave and longitudinal wave.

d) Write any four requirements of good acoustics.

e) A resonance is observed when tuning fork of frequency 512 Hz is used when resonating length of air column is 17 m, calculate velocity of sound in air neglecting end correction.

Q.5. Attempt any **TWO.**

a) i) With suitable diagram explain the total internal reflection of light. **04**

ii) Define the term – i) Dispersive power ii) Polarization of light. **02**

b) i) With four points, differentiate between constructive and destructive interference of light. **04**

ii) For certain point in interference pattern, the path difference is 51.5 λ. Is the point be bright or dark? Justify your answer. **02**

c) i) In Young's experiment, Interference bands are produced on screen 1.5 m from two slits 0.15 mm apart and illuminated by light of wavelength 6500 A°. Find band width. **04**

ii) State Huygen's principle of propogation of wavefront. **02**

Q.6. Attempt any **TWO.**

a) With suitable diagram, explain the construction and working of Coolidge tube for production of X-rays. **06**

b) i) State Einstein's photoelectric equation with meaning of each term used in equation. **02**

ii) If the light of frequency of 0.75 x 10^{15} Hz is made incident on metal surface having work eV function 5 unit with the photoelectron be ejected or not? **04**

c) i) State any four properties of LASER. **04**

ii) Define – i) Population inversion ii) Optical pumping. **02**

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TERM END EXAMINATION
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PROGRAMME: DIPLOMA IN CE/EC/EE/ME/PP/CM/IF ENGINEERING

COURSE CODE & ITS TITLE: CC1904 BASIC MATHEMATICS

Time Allowed : 03 Hrs **Marks: 80**

Instructions:
1. Write your Identity Code Number on question paper.
2. All questions are compulsory.
3. Illustrate your answers with neat sketches wherever necessary.
4. Use of non-programmable calculator is permissible.
5. Figures to the right indicate full marks.
6. Assume suitable additional data, - if necessary – and state the assumptions made.
7. Each sub-question in a question carries equal marks unless otherwise specified.

Marks

Q.1. Attempt any **TEN** **20**

a) Prove that ; $\log(\log x^7) - \log(\log x^3) = \log(7/3)$

b) Resolve into partial fraction ; $\dfrac{1}{x^2+3x+2}$

c) Resolve into partial fraction ; $\dfrac{x}{(x-1)^3}$

d) Find the 7^{th} term of $\left(\dfrac{x}{2}+\dfrac{y}{3}\right)^{10}$

e) Solve ; $\begin{vmatrix} 2 & 3 & x \\ 1 & 0 & 3 \\ -2 & -1 & 0 \end{vmatrix} = \begin{vmatrix} -1 & 8 \\ 2 & 1 \end{vmatrix}$

f) Show that the points (1, 2) (2, 1) & (4, -1) are collinear.

g) If $A = \begin{vmatrix} 1 & -5 \\ 6 & 4 \end{vmatrix}, B = \begin{vmatrix} 1 & 0 \\ 0 & -1 \end{vmatrix}$, find the matrix AB – 2I. Where I is the unit matrix.

h) If $A = \begin{vmatrix} 2 & 1 \\ 0 & -1 \end{vmatrix}$; find X such that AX = I.

i) Find Sin 105° without using calculator.

j) Prove that ; $\sec^2\theta + \operatorname{cosec}^2\theta = \sec^2\theta . \operatorname{Cosec}^2\theta$

k) Evaluate ; $\dfrac{\tan 66^0 + \tan 69^0}{1 - \tan 66 \tan 69^0}$

l) If $\sin\alpha = 0.4$ then find $\sin 3\alpha$.

m)Find 'p' if vectors 2i+2j+pk and 3i-j+2k are at right angles.

n) Find $\bar{a}\times\bar{b}$ if $\bar{a} = \bar{i}+\bar{j}-\bar{k}$ and $\bar{b} = 2\bar{i}+2\bar{j}+3\bar{k}$

Q.2. Attempt any **THREE** **12**

a) Simplify ; $\frac{1}{log_2 15+1}+\frac{1}{log_3 10+1}+\frac{1}{log_5 6+1}$

b) If $\log\left(\frac{a+b}{2}\right)=\frac{1}{2}\log a+\frac{1}{2}\log b$; show that a = b

c) Resolve into partial fraction ; $\frac{x^2+x}{x^2-4}$

d) Resolve into partial fraction ; $\frac{x-5}{x^3+x^2-5x}$

e) Solve ; yz + 2xz + xy = 2xyz ;
3yz - 4xz - 2xy = xyz ; 2yz + 5 xz – 2xy = 3xyz by Cramer's Rule.

Q.3. Attempt any **THREE.** **12**

a) Solve, $\begin{vmatrix} 1 & 2x & 4x^2 \\ 1 & 4 & 16 \\ 1 & 1 & 1 \end{vmatrix}=0$

b) Find the term independent of x in the expansion of $\left(\frac{2x^3}{a}-\frac{b}{x}\right)^{16}$

c) If the middle term in $\left(\frac{k}{2}+2\right)^8$ is 1120 find k.

d) Show that, cot A + tan (180+A) + tan (90+A) + tan (360-A) = 0

e) Prove that, $\frac{\sin 8\theta\cos\theta-\cos 3\theta\sin 6\theta}{\cos 2\theta\cos\theta-\sin 3\theta\sin 4\theta}=\tan 2\theta$

Q.4. Attempt any **THREE.** **12**

a) Express the matrix A as the sum of a symmetric and a skew symmetric matrix, where

$$A=\begin{bmatrix} 4 & 2 & -3 \\ 1 & 3 & -6 \\ -5 & 0 & -7 \end{bmatrix}$$

b) Find x and y if $\left\{3\begin{bmatrix} 4 & 1 & 3 \\ 0 & -1 & -3 \end{bmatrix}-2\begin{bmatrix} 3 & 2 & 4 \\ -6 & 1 & -3 \end{bmatrix}\right\}\begin{bmatrix} 1 \\ 3 \\ -2 \end{bmatrix}=\begin{bmatrix} x \\ y \end{bmatrix}$

c) Find the inverse of the coefficient matrix of the equations , 2x + 3y – z + 3 = 0 ;
5x + y + 3z = 10, 4x + 3y – 2z +3 = 0 and hence solve them.

d) If $A=\begin{bmatrix} 2 & -3 \\ 1 & 5 \end{bmatrix}, B=\begin{bmatrix} 3 & -1 & 2 \\ 1 & 0 & 1 \end{bmatrix}$ verify that (AB)' = B' A'.

e) Prove that ; $\tan^{-1}\left(\frac{1}{4}\right)+\tan^{-1}\left(\frac{2}{9}\right)=\tan^{-1}\left(\frac{1}{2}\right)$

Q.5. Attempt any **TWO.** **12**

a) Prove that ; $\frac{\sin(A-B)}{\sin A \sin B}+\frac{\sin(B-C)}{\sin B \sin C}+\frac{\sin(C-A)}{\sin C \sin A}=0$

b) If A + B + C = 180° ; then prove that, sinA+sinB-sinC = 4sin A/2 sin B/2 cos C/2

c) If any Δ ABC prove that ; $\frac{\cos 2B-\cos 2C}{b+c}+\frac{\cos 2C-\cos 2A}{c+a}+\frac{\cos 2A-\cos 2B}{a+b}=0$

Q.6. Attempt any **TWO.** **12**

a) A particle is displaced from a point whose position vector is 5i-5j-7k to the point 6i+2j-2k under the action of the forces 10 i – j + 11 k ; 4i +5j + 6k ; - 2i + j – 9k, find work done.

b) Two forces $\overline{F_1}=2\bar{i}+\bar{j}-\bar{k}$ and $\overline{F_2}=\bar{i}+2\bar{j}-3\bar{k}$ acts at the point 3i – j – 2k. Find the moment of the force about the point 4i – j + k.

c) Find a vector of magnitude 7 units and perpendicular to both vectors 2i + j – 3k and i – 2j + k.

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GOVT. POLYTECHNIC, AMRAVATI.

(An Autonomous Institute of Govt. of Maharashtra)

Write Identity Code

TERM END EXAMINATION
WINTER-2018

PROGRAMME: DIPLOMA IN CE/ME/EE/EC/CM/IF/PP

COURSE CODE & ITS TITLE: CC1905 APPLIED MATHEMATICS

Time Allowed : 03 Hrs **Marks: 80**

Instructions:
1. Write your Identity Code Number on question paper.
2. All questions are compulsory.
3. Illustrate your answers with neat sketches wherever necessary.
4. Use of non-programmable calculator is permissible.
5. Figures to the right indicate full marks.
6. Assume suitable additional data, - if necessary – and state the assumptions made.
7. Each sub-question in a question carries equal marks unless otherwise specified.

Marks

Q.1. Attempt any **TEN.** **20**

a) Show that distance between the points A(3,4) and B(2,-1) is $\sqrt{26}$ units.

b) Find the slope and y-intercept of the line : $\frac{x}{4}-\frac{y}{3}=\frac{1}{2}$

c) Show that the lines $2x+3y-1=0$ and $3x-2y-5=0$ are perpendicular to each other.

d) Find the centre and radius of the circle $2x^2+2y^2+5x-6y+3=0$

e) If $f(x)=16^x+\log_4 x$; find $f(\frac{1}{2})$.

f) If $f(x)=x^3-3x^2+5$ find $f(0)+f(3))$

g) Evaluate $\lim_{x\to 2}\left[\frac{1}{x-2}-\frac{2}{x^2-2x}\right]$

h) Evaluate $\lim_{x\to 0}\frac{\sin x^0}{x}$

i) Evaluate $\lim_{x\to 0}\frac{a^x-b^x}{x}$

j) Evaluate $y=a^x+e^x+\log_{10} x+\log_a a$ find $\frac{dy}{dx}$

k) If $y=\sqrt{\frac{1-\cos 2x}{1+\cos 2x}}$ find $\frac{dy}{dx}$

l) If $y=(1+x^2)\tan^{-1} x$, find $\frac{dy}{dx}$

m) Find $\frac{d^2y}{dx^2}$ if $y=\tan^{-1} x$

n) At what point on the curve $y=e^x$, the slope is one.

Q.2. Attempt any **THREE.** **12**

a) In what ratio point $C(3,11)$ divides the line joining $A(1,3)$ and $B(2,7)$.

b) Show that the points $A(2,-2)$, $B(8,4)$ and $C(5,7)$ form a right angle triangle.

c) For what value of k, the points $(3,2),(1,-7)$ and $(k,3)$ are collinear.

d) Find the equation of line passing through the point $(3,4)$ and perpendicular to the line $3x+2y+5=0$

e) Find the equation of a line passing through the point $(5,6)$ and making equal intercepts on coordinate axes.

Q.3. Attempt any **THREE.** **12**

a) Find the angle between two lines : $2x+3y=13$ and $2x-5y+7=0$.

b) Find the equation of a line which is perpendicular bisector of the line joining two points $(8,-1)$ and $(6,4)$.

c) Find the equation of circle passing through the point $(2,3)$ and concentric with the circle $x^2+y^2-8x+4y+12=0$

d) Find the equation of circle whose centre is at the point of intersection of the lines $x+y=6$ and $x-y=8$ and passing through the point $(2,4)$

e) Find the equation of tangent and normal to the circle $x^2+y^2-8x-2y+12=0$ at $(3,-1)$

Q.4. Attempt any **THREE.** **12**

a) If $f(x)=\dfrac{1}{1-x}$, show that $f\{f[f(x)]\}=x$

b) If $y=f(x)=\dfrac{x-5}{5x-1}$ show that $f(y)=x$

c) Evaluate $\lim\limits_{x\to 3}\dfrac{x^3-27}{\sqrt{x^2+7}-4}$

d) Evaluate $\lim\limits_{x\to\frac{\pi}{4}}\dfrac{\sec^2 x-2}{\tan x-1}$

e) Evaluate $\lim\limits_{x\to 0}\dfrac{3^x+3^{-x}-2}{x^2}$

Q.5. Attempt any **THREE.** **12**

a) If $y=\dfrac{x}{2}\sqrt{a^2-x^2}+\dfrac{a^2}{2}\sin^{-1}(\dfrac{x}{a})$, show that $\dfrac{dy}{dx}=\sqrt{a^2-x^2}$

b) If $\tan^{-1}(\dfrac{x^2-y^2}{x^2+y^2})=a$ prove that $\dfrac{dy}{dx}=\dfrac{x(1-\tan a)}{y(1+\tan a)}$

c) If $x=a\cos^3\theta$ and $y=a\sin^3\theta$, find $\dfrac{dy}{dx}$ at $\theta=\dfrac{\pi}{3}$

d) If $x^y=e^{x-y}$ prove that $\dfrac{dy}{dx}=\dfrac{\log x}{(1+\log x)^2}$

e) If $y=e^{m\sin^{-1}x}$ prove that $(1-x^2)\dfrac{d^2y}{dx^2}-x\dfrac{dy}{dx}-m^2y=0$

Q.6. Attempt any **TWO.** **12**

a) Show that the equation of tagent to the curve : $(\dfrac{x}{a})^m+(\dfrac{y}{b})^m=2$ at point (a,b) is $\dfrac{x}{a}+\dfrac{y}{b}=2$

b) Find the maximum and minimum values of : x^3-9x^2+24x.

c) The distance moved by a particle in a straight line in time 't' is given by $s=3t^2+2t+4$, if 'v' is the velocity in time 't', show that $12(s-4)=v^2-4$

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GOVT. POLYTECHNIC, AMRAVATI.

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TERM END EXAMINATION

WINTER-2018

Write Identity Code

PROGRAMME: DIPLOMA IN CE / ME / EE / EC / CM / IF / PP ENGINEERING

COURSE CODE & ITS TITLE : CC1908 COMMUNICATION SKILLS

Time Allowed : 03 Hrs **Marks: 80**

Instructions:

1. Write your Identity Code Number on question paper.
2. All questions are compulsory.
3. Illustrate your answers with neat sketches wherever necessary.
4. Use of non-programmable calculator is permissible.
5. Figures to the right indicate full marks.
6. Assume suitable additional data, - if necessary and state the assumptions made.
7. Each sub-question in a question carries equal marks unless otherwise specified.

Marks

Q.1. Attempt any **TEN.** **20**

a) Define communication.
b) What is graphic communication?
c) Why is it important to seek feedback?
d) State the advantages of informal communication.
e) What is mechanical barrier?
f) What are the roles of sender and receiver in communication?
g) State formal written skills.
h) State the importance of 'Eye Contact'.
i) Define the term 'Encoding'.
j) What is 'Haptics'? Give one example.
k) Explain in short communication event with an example.
l) How can a language act as a barrier to communication?
m) State the importance of selecting proper channel.
n) Explain in short the need of communication skills for an engineering professional.

Q.2. Attempt any **THREE.** **12**

a) Explain the communication process with a neat diagram.
b) Define physical barrier. State any two examples of physical barrier.
c) Elaborate any four principles of effective communication.
d) Give the merits and demerits of oral communication.
e) Classroom communication is two way communication explain with example.

Q.3. Attempt any **THREE.** **12**

a) As the first year incharge, devise a memorandum for the students on the following points - Subject : Students remaining absent for theory lectures.
Purpose : To warn them about the minimum attendance requirement of 75%.
b) Draft a circular for the third year students, informing them about the campus interviews, to be held after their final exams. As a training and placement officer, mention the date, name of the companies, timing etc.
c) Write a circular [as per the specific format letter] for the company workers, directing them to maintain discipline, cleanliness and cordial social atmosphere among them for the betterment of the company.

d) Draft a notice as the manager of State Bank informing the staff members about the overtime schedule.

e) As a head of the department, draft a memorandum for the students, who have been found using mobile phones in the college premises, warn them of stern action.

Q.4. Attempt any **THREE.** **12**

a) Explain the following with one example each.
(i) Proxemics (ii) Chronemics.

b) Select the channel which will be the most suitable for sending the following information.
[Graph, Formal Letter, Poster, Telephone, Memo]
(i) To spread the message of water conservation among people.
(ii) To complain about the damaged books sent by the distributor.
(iii) To warn an employee for his frequent absence.
(iv) To speak to your relatives in your native village.

c) Explain any five remedies which are adopted to overcome the barriers to effective communication.

d) Device a bar graph to present the data tabulated below -
Incidence of fires in textile factories in Mumbai :

Causes	2001	2002	2003
Short-Circuiting	85	60	50
Smoking	50	40	65
Debris / Scrap Burning	25	30	20
Unknown	05	10	05
	165	140	140

e) The government received an aid from the World Bank for the welfare of people. The government spend 40% of the amount on building roads, 25% on education, 20% on health care and 15% for rural development. Draw a pie-chart representing the data.

Q.5. Attempt any **TWO.** **12**

a) Write a letter of application to Crompton Greaves Private India Ltd., Mumbai, for the post of Junior Engineer with Resume.

b) One of the students received burn injuries while performing a welding job in the workshop. Draft an accident report as the workshop In-charge to the head of the Institute.

c) A factory is manufacturing electrical goods , there is a sudden fall in the production during last three months. Submit a report to the General Manager giving reasons for the fall and suggest measures for increasing the production.

Q.6. Attempt any **TWO.** **12**

a) Describe in about 35 to 40 words : (i) Lap-top (ii) LCD Television.

b) Place an order to Tata McGraw Hill, Mumbai for the books on communication skills.

c) As a college laboratory incharge draft a letter of enquiry for "Messers Scientific Equipment Suppliers," asking about the availability of the following equipment, their cost, the terms and condition of sales.

Items : Vernier Callipers, Screw Gauge, Potentiometer, Ammeter, Voltmeter.

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