

**IET, DAVV 1st Test Feb 2018
Applied Physics APR2C2 (CS A & B branch)**

Time: 70 min

All questions are compulsory. Attempt any one part from each question.

Max. Marks: 20

- Q1 I (a)** Explain formation of Newton's ring fringes in reflected light and derive the expression show that the radius of dark fringes is directly proportional to the square root of natural number. **08**
- (b)** Explain why Michelson's fringes are circular? **04**

OR

- II(a)** What is diffraction? Explain the diffraction with the grating and derive the expression for the principal maxima. **08**
- (b)** The diameter of the first ring of a zone plate is 1mm. If the plane waves of the wavelength 5000 Å fall on the plate, then find where a screen should be placed so that light is focused on the brightest spot. **04**

- Q2 I(a)** What is Double refraction? Explain the working and construction of Nicol prism. **06**
- (b)** What is Brewster's Law? A beam of light is incident on a glass plate at an angle of 58° and the reflected beam is completely plane polarized. Find the refractive index of glass **02**

OR

- II(a)** Explain production of circularly and elliptically polarized light with the help of mathematical equations. **06**
- (b)** Calculate the thickness of a half wave plate when the wavelength of light is equal to 6000 Å, $\mu_0 = 1.55$ and $\mu_e = 1.54$. **02**

Class Test -I (FE~~B~~. - 2018)
AMR2C1- Applied Mathematics -II
(CS A, B & CIVIL)

Time: 70 min.

Maximum Marks: 20

Note: Attempt any four questions. All questions carry equal marks. Questions must be solve at one place.

Q.1 Find the rank of the matrix converting it into the normal form, where 04

$$A = \begin{bmatrix} 8 & 1 & 3 & 6 \\ 0 & 3 & 2 & 2 \\ -8 & -1 & -3 & 4 \end{bmatrix}$$

Q.2 Find the eigen value and eigen vectors the matrix $A = \begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$. 04

Q.3 Test for consistency and solve 04

$$5x + 3y + 7z = 4; 3x + 26y + 2z = 9; 7x + 2y + 10z = 5.$$

Q.4 Solve $(\cos x - x \cos y)dy - (\sin y + y \sin x)dx = 0$ 04

Q.5 Solve $\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 4y = 3\sin x + 4\cos x$, $y(0) = 1$ and $y'(0) = 1$. 04

B.E. I Computer Engineering(A&B)

Test-1 Computer Programming in C++ : COR2C5

Duration:70 minutes

Max Marks:20

Note: Attempt any four questions.

Q1. Write an algorithm to swap two variables using 5

- i) Third variable and ii) without using third variable.

Q2 What are the conditional statement and loop structure supported by C++, write syntax of all of them. 5

Q3. Draw flowchart to generate Fibonacci series upto **nth** terms. 5

Q4. Write a program to print factorial of a given number using function. 5

Q5. Write the output of following code and justify your answer:- 5

i) int x = 100;
void fun();
int main()
{ fun();
cout<<x<<endl;
}
void fun()
{ x+=83;
cout<<x<<endl; }

ii) int main()
{ float arr [4] = { 20.5,90.3,50.4,60.5};
int b=40, y=80;
for(int i=0 ;i<4 ; i++)
{ cout <<arr[i]<<b++<<y++;
cout<<b<<y; } }
20.5 40 80 41 81 90.3 41 81 42 82 50.4 42 82 43 83
60.5 43 83 44 84

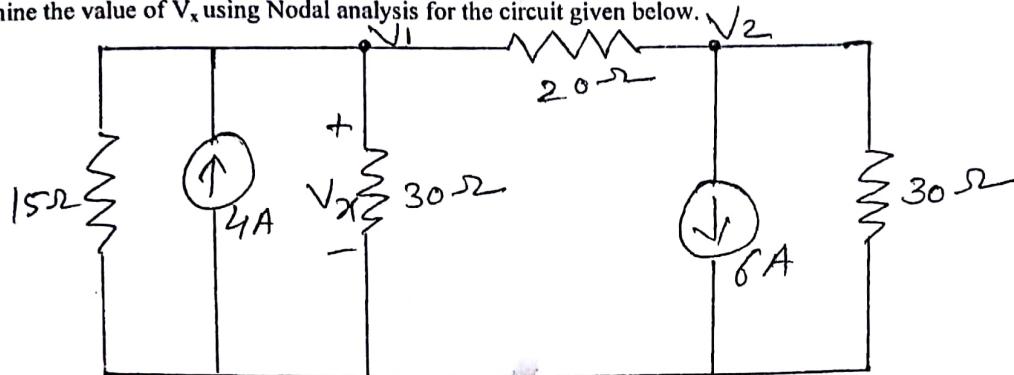
B.E. I Yr. (CS[A+B] / Civil)
Mid Test-I
Sub: Electrical Engineering (EIR2C4)

Time: 70 min

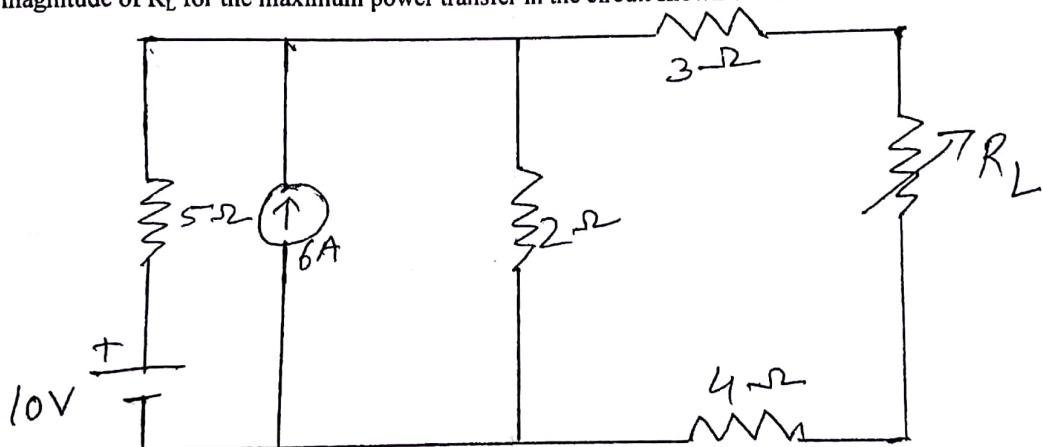
Mark: 20

Note: All questions carry equal marks.

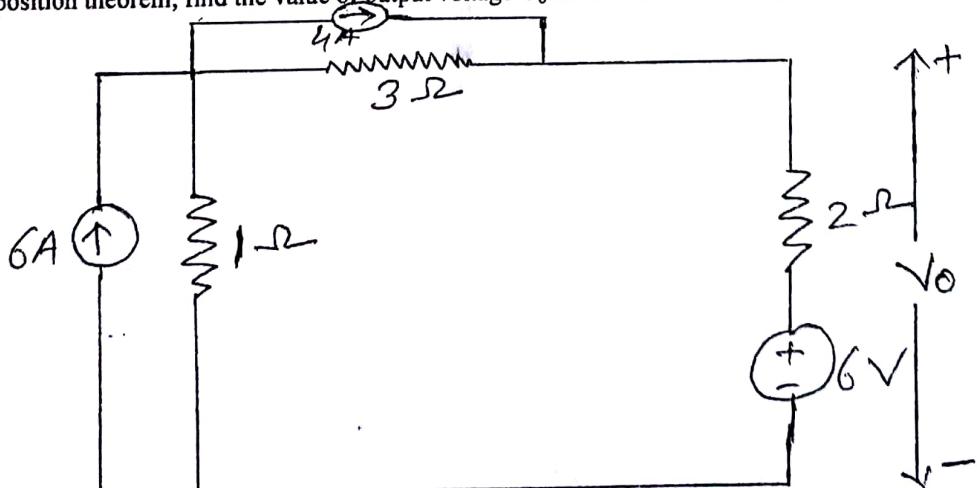
1. Define the following:- Potential, RMS Value, Electrical Power & its types, Peak Factor, Potential Difference.
2. Determine the value of V_x using Nodal analysis for the circuit given below.



3. Find the magnitude of R_L for the maximum power transfer in the circuit shown below. Also find out the maximum power.



4. Using superposition theorem, find the value of output voltage V_o in the circuit shown below.



IET DAVV INDORE

B.E I year Class Test I (CS, IT&CIVIL)

SSR2S2 - HUMANITIES

Time: 70 min

Max. Marks.20

Note: Attempt all the questions:

Q. 1. Explain Meslow's theory in detail and also explain if it can check crime .(10)

Q.2. Why one should go for collective growth over individual growth. Discuss. (05)

Q.3. How far Indian thinking is changing according to global culture? (05)

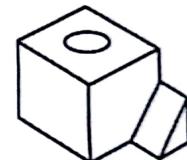
70 min

IET DAVV
MER2C3 Engineering Drawing Test I
BE I CS 'A'

Max Marks 20

Answer/draw any 4 questions

- 1 Define Representative Fraction of a scale. Also classify the different types of scales. 5
Draw a regular pentagon with each side of 20 mm length
Draw the following lines with 40 mm length (i) Leader or pointer line (ii) Center line
- 2 The major axis of an ellipse is 100 mm along and the foci are at a distance of 15 mm from its ends. Draw the ellipse one half of it by, concentric circle method and the other half by rectangle method. Determine the eccentricity of the ellipse 5
- 3 A circle of 40 mm diameter rolls inside the circumference of another circle of 80 mm diameter. Trace the locus of a point on the circumference of the rolling circle for one complete revolution. Also draw a set of tangent and normal on a suitable point on the curve 5
- 4 Sketch the orthographic projections (Front and top View) of the object shown 5
- 5 A point moves along a bar at a uniform speed. The bar rotates about its end O at a uniform speed. Name and construct the path of a point P starting from a position 20 mm away and Move up to 60 mm away from the fixed end of bar during its one revolution. Draw a tangent at a point 45 mm away from O



**BE 1st Year, 2nd Test March 2018
Applied Physics APR2C2 (CS A & B)**

Time: 70 min

Max. Marks: 20

All questions are compulsory. Attempt any one part from each question.

- Q1** I (a) What is Population inversion? Explain the construction, working and energy level diagram of CO₂ laser. 7
(b) What is acceptance angle? If the core refractive index is 1.48 and a numerical aperture is 0.649, calculate the cladding refractive index and critical angle. 2

OR

- II(a) Explain the absorption, spontaneous and stimulated emission of radiation. Obtain a relation between transition probabilities of spontaneous and stimulated emission. 7
(b) What is pumping? A graded index fibre has a core diameter of 0.05mm and NA of 0.22 at a wavelength of 8500Å. What are the normalised frequency and number of modes guided in the core? 2

- Q2** I (a) What is Maxwell's equations? Derive a wave expression for electric and magnetic field for dielectric medium. 7
(b) Derive an expression for the conservation of charge? 4

OR

- II(a) Derive the Maxwell's equation (i) $\nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}$ and (ii) $\nabla \cdot \vec{E} = \frac{\rho}{\epsilon_0}$. 7
(b) State and explain the Ampere's law. 4
-

Class Test -II (MAR. - 2018)
AMR2C1- Applied Mathematics -II
(CS A, B & CIVIL.)

Time: 70 min.

Maximum Marks: 20

Note: Attempt any four questions. Questions must be solved at one place. Each step should be well defined.

Q.1 Solve (i) $\frac{d^4y}{dx^4} - 4\frac{d^2y}{dx^2} + 4y = 0$. (ii). $\frac{d^4y}{dx^4} + 4y = 0$. 05

Q.2 Solve $\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = (1 - e^x)^2$ 05

Q.3 Form the partial differential equation (by eliminating the arbitrary functions) from 05
(i) $z = (x + y)\varphi(x^2 - y^2)$. (ii) $z = f(x + at) + g(x - at)$.

Q.4 Solve $x^2(y - z)_P + y^2(z - x)_Q = z^2(x - y)$. 05

Q.5 Solve $r + s - 6t = y \cos x$. 05

I B.E Computer Engg(A & B).

Test –2 Computer Programming with C++ Sub code: COR2C5

Duration: 70 minutes

Max. Marks: 20

Note: Attempt any four questions. Answer should be precise.

Q1.What is dynamic memory allocation technique, and how allocation and deallocation is done?

Explain with example.

5

Q2. Write a program to print length of string using pointer and function.

5

Q3. Write a program to swap two variables(Invoking function by passing pointers.)

5

Q4. Explain basic concepts of OOP.

5

Q5. Write an object oriented program to print employee details such as :-ID, Name,

Salary .Use member function also in class template.

5

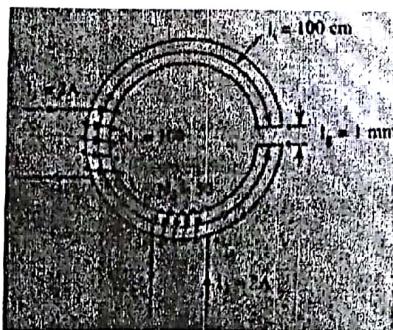
B.E. I Yr. (CS A, CS B, Civil)
Mid Test-II
Sub: Electrical Engineering (EIR2C4)

Time: 70 min

Mark: 20

Note: All questions carry equal marks. Attempt any Four (4).

- Explain Biot Savart law. Find magnetizing force on the axis of a circular coil carrying current using Biot Savart law.
OR
 Explain B-H curve or hysteresis loop with suitable diagram and what is its significance?
- An iron ring of mean length of an iron path of 100 cm and having a uniform cross sectional area of 10 cm^2 is wound with two magnetizing coils as shown. The direction of current flowing through the two coils is such that they produce flux in the opposite directions. The permeability of iron is 2000. There is a cut in the ring creating an air gap of 1 mm. calculate the flux available in the air gap.



OR

A steel ring of 25 cm mean diameter and of circular section 3cm in diameter has an air gap of 1.5 mm length. It is wound uniformly with 700 turns of wire carrying a current of 2 A. Calculate (1) MMF (2) flux density (3) magnetic flux (4) reluctance (5) Relative permeability of the ring. Assume that iron path takes 35% of the total MMF.

- Explain Faradays law of electromagnetic Induction. How EMF is induced in a coil. Also discuss its types in detail.

OR

Find the number of ampere turns necessary to produce a flux of 1mWb around an iron of 10cm^2 cross section and 50cm mean diameter. The air gap is 1.2mm. Assume μ_r of iron is 1000. Neglect leakage outside the air gap.

- What do you mean coefficient of coupling. Derive relation for it.

OR

Two air cored coils are placed close to each other so that 80% of the flux of one coil links with the other. Each coil has mean diameter of 2 cm and a mean length of 50cm. if there are 1800 turns of wire one coil; calculate the number of turns on the other coil to give a mutual inductance of 15mH.

- Define Half power bandwidth. A series R-L-C circuit consists of $R = 1000 \Omega$, $L = 100 \text{ mH}$, and $C = 10 \text{ pf}$. A variable frequency, 100V supply is given to the circuit. Find resonance frequency, Quality factor at resonance frequency, Half power frequencies and Half power bandwidth.

OR

Define RMS value and Average value of alternating current signal. Calculate the Average value, root mean square value; the form factor and the peak factor of a periodic current wave have the following values for equal time intervals 't' over half cycle as per following table;

Time 't'	0	$T/16$	$2T/16$	$3T/16$	$4T/16$	$5T/16$	$6T/16$	$7T/16$	$8T/16$
Current 'i(t)' Amp.	0	40	60	80	100	80	60	40	0



IET DAVV INDORE

B.E I year Class Test II (CS, IT&CIVIL)

SSR2S2 - HUMANITIES

Time: 70 min

Max. Marks.20

Note: Attempt all the questions:

Q. 1.What is the relation of engineers with Humanities. Explain with logical reasoning.(10)

Q.2. Define Personality. What is the difference in Extrovert and introvert personality. (05)

Q.3.Explain the concept of Human Behaviour. How far one's behaviour is governed by environment? (05)

Devi Ahilya University, Indore
Institute of Engineering and Technology
Class test II

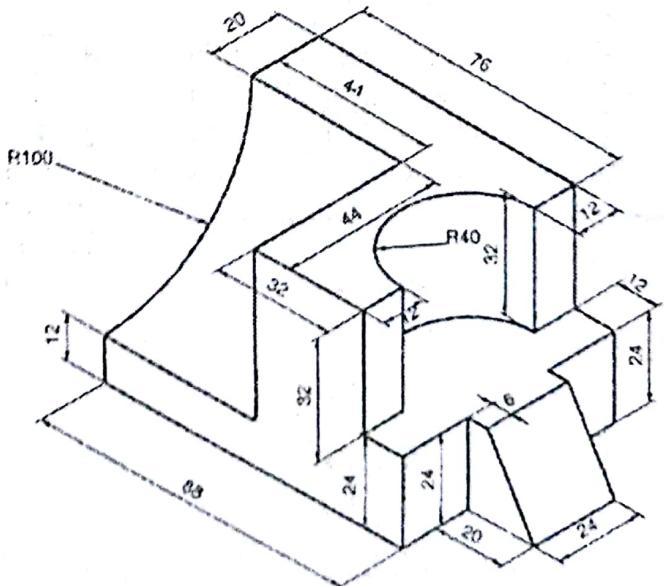
MER2C3 Engineering Drawing. (CS Section A)

Answer all FOUR questions. All carry 5 marks

Time 70 min

Max Marks 20

- 1 Define projections and classify it.
- 2 A rectangular plot of land measuring 1.28 hectares is represented on a map by a similar rectangle of 8 sq. cm. Calculate RF of the scale. Draw a diagonal scale to read single meter. Show a distance of 438 m on it.
- 3 A 65mm long line PQ, has an end P at 20mm above the H.P. and 30mm in front of the V.P. The line is inclined at 45 degree to the H.P. and Parallel to the V.P. Draw its projections and find the traces.
- 4 Draw the Orthographic projections (Front and Top Views) of the solid shown in figure
- 5 Draw the projections of the following points
A 20 mm from HP and 30 mm from VP
B 20 mm from HP and 70 mm from reference line
C 40 mm from VP and on HP



**IET, DAVV, 3rd Test April 2018
Applied Physics APR2C2 (CS A & B)**

Time: 70 min

Max. Marks: 20

All questions are compulsory. Attempt any one part from each question.

- Q1 I(a)** What is wave function? Derive the time dependent and time independent Schrödinger 8 wave equation for a particle.
- (b)** What is Heisenberg's uncertainty principle for energy and time? A nucleon is confined to 4 nucleus of radius 5×10^{-12} m. Calculate the minimum uncertainty in the momentum of the nucleon.

OR

- II(a)** What is Compton effect? Derive the expression for the Compton shift. 9
- (b)** What is Matter waves? What is the energy of gamma ray having a de-Broglie wavelength 3 of 1\AA ?

- Q2 I(a)** What are X-rays? Explain characteristic and continuous X-ray spectrum with diagrams. 7

- (b)** Find the Miller indices of a set of parallel planes which make intercepts in the ratio 1 2a:1b on the x and y-axes and are parallel to z-axis.

OR

- II(a)** Derive the expression for the interplanar spacing? Draw the (100) plan of the BCC 6 crystal.
- (b)** What is Fermi energy level? 2
-

F-104 (38)

I B.E Computer Engg(A & B).

Test -3 Computer Programming with C++ Sub code: COR2C5

Duration: 70 minutes

Max. Marks: 20

Note: Attempt any four questions. Answer should be precise.

- Q1. Write the characteristics of constructor, and explain types of constructors? 5
- Q2. Explain constructor overloading with the help of program. 5
- Q3. Write the rules for operator overloading, Write a program to overload decrement operator(--). 5
- Q4. Define inheritance and its types ,also explain effect of inheritance on the visibility of member with diagram. 5
- Q5. Write an object oriented program to explain multilevel inheritance. 5

**B.E. I Yr. (CS A, CS B, Civil)
Mid Test-III**

Sub: Electrical Engineering (EIR2C4)

Time: 70 min

Mark: 20

Note: All questions carry equal marks. Attempt any 4 questions.

1. Write short note on Open circuit and Short circuit test performed on a single phase transformer.
2. A 200 KVA 1000/250V, 50HZ, single phase transformer gave the following test results during no load and short circuit test:
No load test: 250V, 18A, 1300W Short circuit test: 80V, 200A, 2400W
Calculate All day efficiency if the transformer is loaded as follows during the day:
8Hours- full load at 0.8 pf lagging, 10 hours- half load at unity pf, 6 hours- no load.
3. Why single phase Induction motors are not self started. Explain it with the help of double revolving field theory. Enlist different starting methods (write name only).
4. Derive EMF equation for a D.C. machine. A six pole lap wound armature has 840 conductors and flux per pole is 0.018 wb. Calculate the generated emf when machine is working at 600 rpm.
5. A parallel circuit has two branches. One branch contains a resistance of 8 ohm and an inductance of 19.1 mH in series and the other branch contains a resistance of 9 ohm and a capacitor of capacitance of 601.55 μ F in series. This parallel circuit is connected across a supply voltage of 240 V, 50 Hz. Determine (1) current drawn by each branch (2) total current drawn ~~by~~ from mains (3) P.f. of the whole circuit. Solve using Admittance method of parallel circuit.

10 N²
60

IET DAVV INDORE
B.E I year Class Test III (CS, IT&CIVIL)
SSR2S2 - HUMANITIES

Time: 70 min

Max. Marks.20

Note: Attempt all the questions:

- Q. 1.What are the features of Democracy? How far democracy is useful for a developing country? (10)**
- Q.2What is the difference in Capitalism and Socialism? Compare in points. (05)**
- Q.3.What is Marxist theory of governance? Explain in detail. (05)**
-

IET-DAVV
MER2C3 Engineering Drawing
Test III (1 Yr CS A)

Time 70 min Attempt any 4 our questions

Max Marks 20

- 1 Draw the isometric view of an object having a sphere resting on a cube having sides equally inclined to vertical plane 5
- 2 Draw front view, top view and side view of square nut and a hexagonal nut, given nominal diameter as 24 mm 5
- 3 Draw *projections* of a pentagonal pyramid 40 mm base side and 50 mm height lying on the ground on one of its edges of the base and the face containing that edge is perpendicular to horizontal plane and inclined 30° to vertical plane. 5
- 4 A cone, base 75 mm diameter and axis 75 mm long, has its axis parallel to the Vertical Plane (VP) and inclined 45° to Horizontal Plane (HP). A horizontal cutting plane passes through the mid-point of the axis. Draw the *front view*, the *sectional top view*, *true shape of cut-section* and *development of lateral surface*. 5
- 5 Draw the projection of a horizontal cylinder (diameter 50 mm height 75) intersecting a vertical cylinder of same dimensions bisecting each other's axis. 5

Class Test -III (APRIL - 2018)
AMR2C1- Applied Mathematics –II
(CS A, B & CIVIL)

Time: 70 min.

Maximum Marks: 20

Note: Attempt any four questions. Questions must be solved at one place. Each step should be well defined.

- | | |
|--|----|
| Q.1 An urn I contains 3 white and 4 red balls and an urn II contains 5 white and 6 red balls. One ball is drawn at random from one of the urn and is found to be white. Find the probability that it was drawn from urn I. | 05 |
| Q.2 Define Poission Distribution and prove that mean and variance are equal in poission distribution. | 05 |
| Q.3 Calculate coefficient of correlation between the marks obtained by 8 students in Mathematics & Statistics. | 05 |

Roll. No.	1	2	3	4	5	6	7	8
Marks(Mathematics)	25	30	32	35	37	40	42	45
Marks(Statistics)	08	10	15	17	20	23	24	25

- | | |
|---|----|
| Q.4 Solve by Cardan's method $x^3 + x^2 - 16x + 20 = 0$. | 05 |
| Q.5 Define union and intersection for two fuzzy set. And also find $A \cup B$ and $A \cap B$, where two fuzzy sets A and B are | 05 |

$$A = \{(x_1, 0.3), (x_2, 0.6), (x_3, 0.8), (x_4, 1)\}$$

$$B = \{(x_1, 0.5), (x_2, 1), (x_3, 0.4), (x_4, 0.3)\}.$$

BE-I EXAMINATION APRIL-MAY'2018

COMP./CIVIL BRANCHES (RE)

AMR2C1: Applied Mathematics-II

Max.Marks:60

Duration: 3Hrs.

Note: Attempt any two parts from every question. Questions should be solved at one place. All questions carry equal marks. Any assumption made answering the questions should be stated. Assume suitable data whenever necessary.

UNIT -I

- Q.1** (a) Find two non-singular matrices P and Q such that PAQ is in the normal form 06
 for the matrix $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & -1 & -1 \\ 3 & 1 & 1 \end{bmatrix}$ and hence find the rank of the matrix A . 2
- (b) Find all eigen values and eigen vectors of the matrix $A = \begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$. 06
- (c) Find the values of α and β for which the equations 06
 $x + 2y + 3z = 4$, $x + 3y + 4z = 5$, $x + 3y + \alpha z = \beta$ have
 (i) no solution, (ii) an unique solution, and (iii) an infinite number of solutions.

UNIT -II

- Q.2** (a) Solve $(x^2y^3 + xy^2 + y)dx + (x^3y^2 - x^2y + x)dy = 0$. 06
- (b) Solve $3\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 5y = e^x - 2e^{2x} + 3e^{3x}$. 06
- (c) Solve the simultaneous equations: $\frac{dx}{dt} + 5x - 2y = t$, $\frac{dy}{dt} + 2x + y = 0$. 06

UNIT -III

- Q.3** (a) Form partial differential equations from the following : 06
- (i) $z = f(x + it) + g(x - it)$, where $i = \sqrt{-1}$. (ii) $z = yf(x) + xg(y)$.
- (b) Solve $r - s = \cos 2y(\sin x + \cos x)$. 06
- (c) Use the method of separation of variables to solve $\frac{\partial^2 u}{\partial x \partial t} = e^{-t} \cos x$ with 06
 $u(x, 0) = 0$ and $u_t(0, t) = 0$.

(P.T.O.)

UNIT -IV

E10531

- Q.4** (a) Define Poisson distribution and prove that mean and the variance of the poisons distribution are each equal to the parameter λ . 06
- (b) Calculate Karl Pearson's coefficient of correlation from the following data, using 20 as working mean for price and 70 as working mean for demand. 06

Price	14	16	17	18	19	20	21	22	23
Demand	84	78	70	75	66	67	62	58	60

- (c) Fit a straight line for the given data by the method of least squares: 06

x	1	2	3	4	5	6	7	8	9
y	9	8	10	12	11	13	14	16	5

UNIT -V

- Q.5** (a) Solve the equations 06
- (i) $x^3 - 7x^2 + 36 = 0$, given that one root is double of another.
- (ii) $x^3 + 6x + 20 = 0$, one root being $1 + 3i$.
- (b) Solve by Cardan's method $x^3 - 6x^2 + 6x - 5 = 0$. 06
- (c) Verify the Commutative laws for the fuzzy sets given by 06

$$X = \{x_1, x_2, x_3, x_4\}$$

$$A = \{(x_1, 0.2), (x_2, 0.5), (x_3, 0.7), (x_4, 1)\}$$

$$B = \{(x_1, 0.6), (x_2, 1), (x_3, 0.4), (x_4, 0.3)\}.$$

Roll No.....

BE I EXAMINATION April 2018
BRANCHES [CS A & B]
APPLIED PHYSICS APR2C2

18301

Duration: 3 hrs.

Max. Marks: 60

NOTE: All questions are compulsory. Out of two parts in each question attempt any one part.

- 1 I (a) Explain the formation of Newton's fringes in reflected light and also show that the spacing between fringes decreases with increasing the order. 08

- (b) What is zone plate? If the diameter of the central zone is 2.5mm and a point source of light ($\lambda=7.5 \times 10^{-5}$ cm) is placed 5m away from the zone plate, find the position of the primary image. 04

OR

- II(a) Discuss Fraunhofer diffraction of light at double slit and derive the expression for the intensity of secondary maxima. 08

- (b) Explain the use of the compensating plate in Michelson's interferometer. If 200 fringes cross the field of view when the movable mirror is displaced by 0.589mm in Michelson's interferometer. Calculate the wavelength of light used. 04

- 2 I (a) What is plane polarized light? Derive the expression for the production of the plane, circularly and elliptically polarized light. 08

- (b) What is single and multimode fiber? Calculate NA of optical fiber of refractive indices for core and cladding is 1.55 and 1.50 respectively. 04

OR

- II(a) Explain the working, construction and energy level diagram of CO₂ Laser. Also explain the function of He gas in this laser. 08

- (b) What is a polarimeter? If the refractive index of water is 1.33 than calculate the angle of polarization. 04

- 3 I (a) What is lattice plane? Derive the expression for the spacing between planes. 08

- (b) What are Miller indices? Draw the (110) plane. 04

OR

- II(a) Explain the working of npn transistor in common base mode with input and output characteristics. 08

- (b) What is Bragg's Law? The spacing between the principal planes of NaCl crystal is 2.82 Å. It is found the first order Bragg reflection occurs at an angle of 10°. Calculate the wavelength of x-rays. 04

- 4 I(a) Using the Maxwell's equation deduce an expression for the electric and magnetic field dielectric medium. Also show that the velocity of propagation of a plane electromagnetic wave in a dielectric medium is less than the vacuum. 08

- (b) Derive time independent charge continuity equation. 04

OR

- II(a) Derive and explain the Maxwell's equations (i) $\nabla \cdot \vec{B} = 0$, and 08

$$(ii) \nabla \times \vec{B} = \mu_0 (\vec{J} + \epsilon_0 \frac{\partial \vec{E}}{\partial t}).$$

- (b) State Ampere's law and show that it also satisfied the steady state continuity equation. 04

- 5 I(a) A photon of frequency ν interacts with an electron at rest. Obtain an expression 08 for change of wavelength in terms of scattering angle.

- (b) State the Heisenberg uncertainty principle for energy and time. An excited state of a hydrogen atom has a life time of 2.5×10^{-15} s. What is the minimum error possible in the measurement of energy of this state? 04

OR

- II(a) Obtain eigen function with the help of Schrödinger's wave equation, for a particle 09 enclosed in a box and prove that the energy eigen values of the particle are discrete.

- (b) State the de-Broglie hypothesis of matter wave? What is the wavelength of electron 03 if the 100V voltage must be applied?

I Year B.E. Examination April-May 2018
Branch – Computer Science and Civil (RE/ CBCS)
EIR2C4 Electrical Engineering

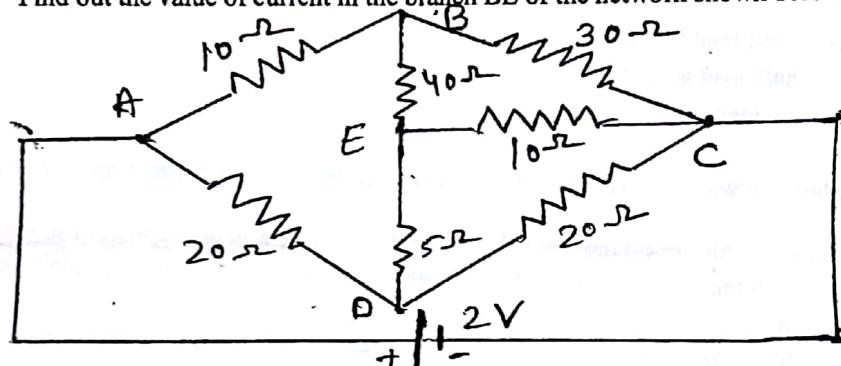
Time 3 Hours

Max. Marks: 60

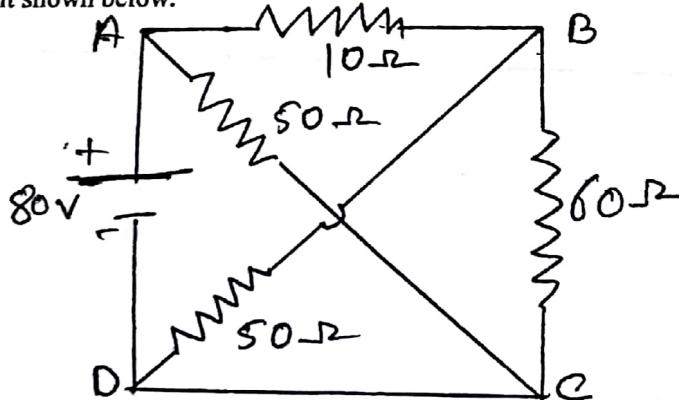
Note: Attempt any two parts from each question.

- Q.1** a) Define the terms Form factor and Peak factor. An alternating current of frequency 50 Hz has a maximum value of 100 A. Calculate; (i) how much seconds after the instant of zero current (and increasing thereafter) it will attain the value 86.6 A? and (ii) the value of current 1 / 600 seconds after the instant the current is zero and decreasing thereafter? 2+2+2
- b) Explain the terms, Active, Reactive and Apparent power with respect to a series R-L circuit. The potential difference measured across a coil is 4.5 V, when it carries a direct current of 9A. The same coil when carries an alternating current of 9A at 25 Hz, the potential difference is 24 V. Find the current, the power and the power factor when it is supplied by 50V, 50 Hz supply. 3+3
- c) Explain with phasor diagram Two Wattmeter method to measure total power (KW) in three phase Star or Delta system. Draw necessary circuit diagram also. 6

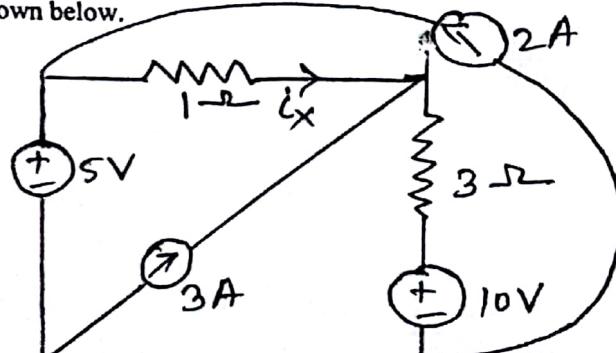
- Q.2** a) Find out the value of current in the branch BE of the network shown below. 6



- b) Find the value of current in 60 ohm resistance using Thevenin's theorem for the circuit shown below. 6



- c) Find current through 1 ohm resistance (i_x) using superposition theorem for the circuit shown below. 6



- Q.3**
- a) Explain Biot Savart Law? How it is applied on a long straight current carrying conductor for finding its magnetic field strength. 2+4
 - b) Compare Electric and magnetic circuits on the basis of their similarities and dissimilarities. 3+3
 - c) Two magnetically coupled coils have a mutual inductance of 32mH . What is the average emf induced in one, if the current through the other changes from 3A to 15mA in 0.004 secs. Given that one coil has twice the number of turns in the other, calculate the inductance of each coil. 3+3
- Q.4**
- a) Define efficiency of a transformer. Derive condition for maximum efficiency of a transformer. 2+4
 - b) A 150 KVA single phase transformer working at unity power factor has an efficiency of 96% both at full load and 70% of full load. Find the load at which maximum efficiency occurs and also the value of maximum efficiency. 4+2
 - c) A 150KVA , $1000/10,000\text{ V}$, 50Hz , single phase transformer gave the following results:-
 NO load test- $3000\text{V}, 20\text{A}, 1500\text{W}$
 Short circuit test – $100\text{V}, 150\text{A}, 2500\text{W}$
 Calculate it's all day efficiency, if the transformer loaded as follows during a day:
 10 hrs – full load at 0.8 pf
 6 hrs – half load at unity pf
 8 hrs – no load. 6
- Q.5**
- a) Explain the working principle of D.C. Motor along with its constructional details. 3+3
 - b) Discuss double revolving field theory related to single phase induction motors. Enlist different starting methods of single phase induction motors. Explain any one with required circuit diagram. 3+2+2
 - c) Write short note on any two :- (1) Armature reaction (2) commutation process (3) Working of 3 phase synchronous machine. 3+3
-

Duration: 3 Hrs.

Max Marks: 60

Note: - Attempt any two parts from each question. Solve all the parts of a question in one place.
Each question carries equal marks.

- Q.1 (a) Write an algorithm and flowchart to print factorial of a number entered by user. (06)
(b) What are the token used in C++, explain them in short. Also write the rules to be followed for identifier. (06)
(c) i) Explain the meaning of modifiers used with data types. (03)
ii) What is reference variable and its syntax. Also explain type casting with example. (03)

- Q.2 (a) Write a program to print armstrong numbers upto 1000. (06)
(b) i) Define array and Pointer. How array is related to pointer, explain with example. (03)
ii) Write 3 differences between call by value and call by reference method. (03)
(c) i) Write a program to print lowest elements in an array using function. (03)
ii) Write the output of following code and justify your answer:- (03)

i) void fun();
int y=45;
int main()
{ int x=20;
fun();
cout<<x<<endl;
}
void fun()
{ y+=16;
cout<<y <<endl;
}

ii) int main()
{ int arr [2] [2]={ {10,12},{15,16} };
for(int i=0;i<2;i++)
for(int j=0;j<2;j++)
{ cout<<arr[i][j]+3;
}

- Q.3 (a) Write a program to read two strings and perform the following string manipulation functions: - Length of both strings, compare two strings and concatenate two strings. (06)

- (b) Write the output of following code fragments, and justify your answer. 02*3
i) int main()
{ int a[]={22,44,66,88};
for(int i=0;i<4 ;i ++)
{cout<<*(a+i)<< (a+i)<<endl ;
}
ii) int main()
{int a, *b, **c ,***d;
a=34; b=&a ;c=&b; d=&c;
cout<<a<<a+*b<<endl;
cout<<**c+***d; }
- iii) What is pointer to constant and constant pointer, explain with example.

- (c) i) Explain the difference between static and dynamic memory allocation techniques with example. (03)
- ii) Write a program to check whether entered string is palindrome or not. (03)
- Q.4 (a) Write an application and benefits of object oriented programming. (06)
- (b) What are static data members and its properties? Write a program to explain the concept of array of object. (06)
- (c) What is constructor and destructor in an object oriented programming. Write a program to explain constructor overloading. (06)
- Q.5 (a) What is operator overloading? Explain how to overload unary operator and binary operator. (06)
- (b) Write a program to overload unary(++) operator ,also write atleast 4 rules for operator Overloading. (06)
- (c) i) Explain different forms of inheritance using diagram. (03)
- ii) Explain the meanings of access specifiers in inheritance.Also write a program to illustrate the multiple inheritance. (03)

*****END*****

Roll No.

I BE Examination Apr-May, 2018

18192

Duration: 3 Hours

Computer Science and Engineering Section A

Max Marks: 60

MER2C3 Engineering Drawing

NOTE: Answer ALL FIVE questions given below. Any TWO out of THREE (a, b and c) parts given are to be answered in each question. Marks are equally distributed.

Line work, proper use of Instruments, conventional dimensioning, lettering and neatness will carry better marks.

- 1 a Construct a Scale to measure Decametre, Hectometre and kilometres. The Representative Fraction is taken as 1:5000 and maximum distance to be measured is 6 Kilometers. Show a + distance of 5.25 kilometres on it 3
Construct a scale of chords and construct a triangle of angles 30° , 45° and included side 50 mm 3
b Draw the locus of a small nail hammered on the rim of a wheel of a cart as it traverses a hill-top 6 having the radius of curvature as 7 meters. The wheel diameter is 2 meter. Name the curve and draw the tangent and normal at topmost point on hill top.
c Major axis of an ellipse measures 160 mm and the distance between two foci is 100 mm. Draw the upper half of the ellipse by concentric circle method and lower half by arcs of circle method. Draw tangent and normal on this ellipse at a point 40 mm from major axis 6
- 2 a Draw isometric View of the object whose orthographic view is shown here Fig 1 6
b Draw the orthographic projection of the object shown in fig 2. (All dimensions in mm) 6
c Classify types of projections. Compare first and third angle methods of projections. 6

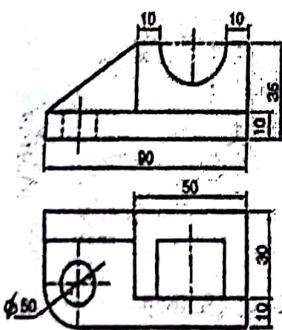


Fig 1

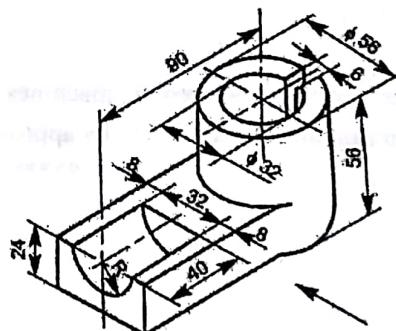


Fig 2

- 3 a A line AB is in first quadrant. Its end A and B are respectively, 30 and 70 mm in front of Vertical Plane (VP). The distance between the end projectors is 75 mm the line is inclined at 45° to the Horizontal Plane (HP) and its Horizontal Trace (HT) is 10 mm above XY. Draw the projections of AB and determine its true length and the VT 6
b Draw the projections of a plane rectangular lamina of side 50 mm and 25 mm when it lies on the ground on one of its vertices and longer diagonal containing that vertex is inclined 30° to ground and 45° to vertical plane. 6
c Draw the projections of the following points: 6
a. A 20 mm above HP and 50 mm behind VP
b. B 30 mm below HP and 60 mm from the line in intersection of VP and HP
c. C 40 mm below HP and on VP

Contd...

4 a Draw the projections (Elevation, Plan and left hand side view) of a right circular cone with a base diameter 50 mm and height 60 mm. It lies on the ground on its slant (lateral) surface with its axis inclined 60° to the VP. 6

b A solid is composed of half-pyramid and half-cone. It is cut by auxiliary inclined plane whose front view is inclined at 45° to the HP and bisecting the axis as shown. Draw the development of the lateral surface of the retained solid (Fig 3) 6

c A pyramid, base 30 mm side and axis 75 mm long, has its axis parallel to the Vertical Plane (VP) and inclined 45° to Horizontal Plane (HP). A horizontal cutting plane passes through the mid-point of the axis. Draw the front view, the sectional top view and true shape. 6

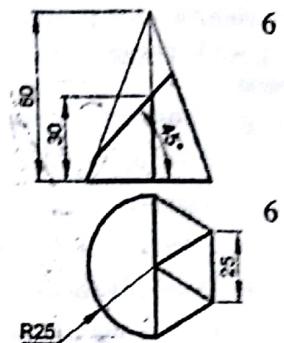


Fig 3

5 a A cone of base diameter 80 mm and axis 100 mm, is resting on its base on the HP. It is completely penetrated by a cylinder of base diameter 40 mm. The axes of the solids intersect each other at right angles, 30 mm above the base of the cone. Draw the projections of the combinations and show the curves of intersection 6

b Draw the different rivet heads. Draw the Front View and Top View of a single riveted butt joint with single cover strap 6

c Draw the different bolt heads used in machines. Draw the Front View and Top View of a hexagonal Headed bolt and nut assembly by approximate standards method 6



6 a A cube of side 40 mm is resting on its base on the HP. A vertical rectangular slot of size 20x10 mm is cut in the front face of the cube. The top edge of the slot is inclined at 45° to the horizontal. The top corner of the slot is rounded with a semi-circular arc of radius 10 mm. The top edge of the slot is placed in contact with a vertical plane which is inclined at 30° to the VP. The front edge of the slot is perpendicular to the VP.

b A square plate of side 60 mm is resting on its base on the HP. A semi-circular slot of diameter 20 mm is cut in the front face of the plate. The top edge of the slot is inclined at 45° to the horizontal. The top corner of the slot is rounded with a semi-circular arc of radius 10 mm. The top edge of the slot is placed in contact with a vertical plane which is inclined at 30° to the VP. The front edge of the slot is perpendicular to the VP.

c A square plate of side 60 mm is resting on its base on the HP. A semi-circular slot of diameter 20 mm is cut in the front face of the plate. The top edge of the slot is inclined at 45° to the horizontal. The top corner of the slot is rounded with a semi-circular arc of radius 10 mm. The top edge of the slot is placed in contact with a vertical plane which is inclined at 30° to the VP. The front edge of the slot is perpendicular to the VP.

d A square plate of side 60 mm is resting on its base on the HP. A semi-circular slot of diameter 20 mm is cut in the front face of the plate. The top edge of the slot is inclined at 45° to the horizontal. The top corner of the slot is rounded with a semi-circular arc of radius 10 mm. The top edge of the slot is placed in contact with a vertical plane which is inclined at 30° to the VP. The front edge of the slot is perpendicular to the VP.

e A square plate of side 60 mm is resting on its base on the HP. A semi-circular slot of diameter 20 mm is cut in the front face of the plate. The top edge of the slot is inclined at 45° to the horizontal. The top corner of the slot is rounded with a semi-circular arc of radius 10 mm. The top edge of the slot is placed in contact with a vertical plane which is inclined at 30° to the VP. The front edge of the slot is perpendicular to the VP.

IET (DAVV)
B.E.IST YEAR EXAM(APRIL-MAY 2018)
HUMANITIES(SSR2S2) (ALL BRANCHES)

Roll No:

CODE : 183031

Duration:3hrs

Max Marks:60

Q.1. Attempt any one of the following:

(a) What is contemporary Indian philosophy? Whether Indian thinking takes us back or makes us progressive?

Write your view in favour or against. (12) OR

(b) What are different Social institutions? How far social stratification affect them? Write in 10 points.(12)

Q.2. Attempt any one of the following:

(a) Write the positives and negatives of extrovert and introvert personality. Which personality brings you success and why?(12) OR

(b) Define the concept of Happiness? How does positive effect and contentment in life brings happiness? Give suitable Example.(12)

Q.3. Attempt any one of the following:

(a) How far the study of Humanities is good for improving the society be it doctor, engineer or a layman. Write in 10 points.(12) OR

(b) What is the relation of knowledge, science and technology with each other? Whether science shapes society or society invents technology? Give arguments. (12)

Q.4. Attempt any one of the following:

(a) What are the different types of Government? What is the role of different political parties. Discuss in detail. (12) (OR)

(b) How can the involvement of young generation change the political scenario? Write in points.(12)

Q.5. Attempt any one of the following:

(a) What is the concept of CSR? How far the urban planners follow this concept?(12) OR

(b) What is the concept of moral values and concepts? How far it is good for social development?(12)