B.Tech(1ST SEM)
Examination – 2021
PHYSICS
Paper Code – BT101

Time Allowed: 3 Hours   Maximum Marks: 70

Section-A
(Short answer type question)

Answer any five questions.   5X5=25

Q.01 What is laser? Write the difference between Spontaneous emission and Stimulated emission?

Q.02 Write the principle of optical fiber?

Q.03 Define the terminology

Insulator, Conductor, Semiconductor, Valence band, Conduction band

Q.04 Give the general properties of Nucleus?

Q.05 If S= S(x,y,z)= x^2+y^2-XYZ than find the value of Grad S at the point (2.3,-3)

Q.06 Define the term

        Phase velocity

        Group Velocity

Q.07 Write the difference between Zener and Avalanche Breakdown?

Section-B
(Long answer type question)

Answer any three questions.   3X15=45

Q.01 Explain the working principle of HELIUM-NEON LASER with diagram?

Q.02 write the P-N junction diode also explain the Depletion Region with suitable diagram?

Q.03 (A) Calculate the number of photon emitted in 15 hours by a 50W sodium lamp (λ=5893Å)

    (B) Explain the Compton Scattering and Compton Effect?

Q.04 Explain the Population Inversion and the process of population inversion with Diagram?

Q.05 Write the wave function and its properties?

B.Tech (1ST SEM)
Examination – 2021
ENGINEERING MATHEMATICS
Paper Code – BT102

Time Allowed: 3 Hours

Maximum Marks: 70

Section-A
(Short answer type question)

Answer any five questions.

5X5=25

Q.01 Write the statement of Maclaurin's Theorem and Taylors theorem?

Q.02 Expand e^x by the Maclaurin's Theorem?

Q.03 Find the Maximum and minimum value for the function

$F(x,y,z)=$ $x^2 + y^2 + z^2 - xy + x - 2z$

Q.04 If U= $\dfrac{x^2+y^2}{x+y}$ ___Apply Euler's theorem

to find the value of **XdU/dx +YdU/dy**

Q.05 Solve the equations by matrix form

X+3Y-2Z=0

2X-Y+4Z=0

X-11Y+14Z=0

Q.06 Find the Divergence of the function $(x,y,z) =xY^2\hat{\imath} + 2X^2yZ\,\hat{\jmath}-3YZ^2\,\hat{k}$ at the point

(1, -1 ,1)

Q.07 Trace the curve $a^2y^2=x^2(a^2-x^2)$

Section-B

Answer any three questions. 3X15=45

Q.01 Varify Cayley -Hamilton theorem for the following matrix and hence find A^{-1}

$$A= \begin{pmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{pmatrix}$$

Q.02 Find the Rank of the matrix A by Echelon from where

$$A= \begin{pmatrix} 2 & 3 & 4 \\ 4 & 3 & 1 \\ 1 & 2 & 4 \end{pmatrix}$$ and also find its nullity of A

Q.03 (A) Solve differential equation $(1+x^2) dy = (1+Y^2) dx$

(B) Solve $(X^2 -1) dy/dx +2xy = 1$

Q.04 Derive the Relation between Beta and Gamma Function?

Q.05 Write the Fourier Series for Even and Odd function and also make Graph of even and odd function and derive its formula?

BTECH (1st SEM) Examination, 2021
ENGLISH COMMUNICATION
Paper-BT103
Time Allotted: Three Hours
Maximum Marks: 70

SECTION-A

Note: *1. Attempt any 4 question from 1 to 8 and each question carry 7 marks.*
प्रश्न 1 से 8 तक कोई 4 प्रश्न हल करना हैं तथा प्रत्येक प्रश्न पर 7 अंक दिए जायेंगे | 4X7=28

1) What is Communication? Explain the process of Communication with the help of a diagram.
2) What is Para Language in Communication?
3) State the difference between Listening and Hearing.
4) What are the essentials of good writing?
5) What are the components of Non Verbal Communication? Write in detail.
6) What is Intrapersonal Barrier? Mention some ways to reduce Intrapersonal barriers.
7) What is Communication Environment?
8) Write short notes on the following:
        a) Kinesics and Proxemics.
        b) Electronic Communication.

SECTION-B

Note: *Attempt any 3 question from 1 to 5 and each question carry 14 marks.*
प्रश्न 1 से 5 तक कोई 3 प्रश्न हल करना हैं तथा प्रत्येक प्रश्न पर 14 अंक दिए जायेंगे | 3X14=42

1. What is Communication Barrier? Explain the different types of Communication Barrier.

2. What are the components of Non Verbal Communication? Write in detail.

3. Write a CV applying for the post of Programmer at IBM Pvt Ltd with 5years of experience in the field of Java and Dot Net. Candidate having good communication skill gets advantage.

4. What is the role of fax and video-conferencing in communication? Explain the role of e-commerce in international communication.

5. You are a sales representative a software company. Write a letter to David Thompson of Contra Enterprises, introducing one of your new products or services. Be sure to give important details about your product/service.

B.Tech (1ST SEM)
Examination – 2021
Basic Electrical & Electronics Engineering
**Paper Code – BT104**

Time Allowed: 3 Hours

Maximum Marks: 70

Section-A
(Short answer type question)

4X7=28

Answer any four questions.

Q.1 Describe Fermi-Dirac distribution with suitable diagram.

Q.2 Explain with proper diagram different types of semi conductor.

Q.3 Explain with energy band diagram of a biased and unbiased p-n Junction diode.

Q.4 Explain with diagram the working principle of Full Wave Bridge Rectifier.

Q.5 Explain with circuit diagram the Thevnin's Theorem.

Q.6 Explain V-I characteristic of PN junction diode (In forward and reverse bias)

Q.7 Define Ohm's Law. Calculate the effective resistance of the following

Combination of resistance.
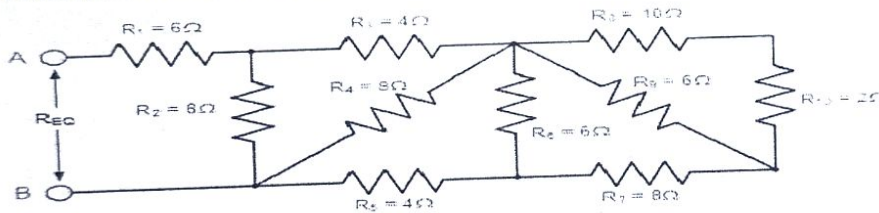
Section-B
(Long answer type question)

3X14=42

Answer any three questions.

Q.1 Explain and draw the Energy bang diagram of

    (a) Intrinsic Semiconductor.

    (b) P-type Semiconductor.

    (c) n-type Semiconductor.

Q.2 Define and prove with diagram the term mobility, current density,

Electrical conductivity of intrinsic, n-type & p-type semiconductor.

Q.3 Convert a star connection to delta with circuit diagram and

Corresponding equivalent resistance.

Q.4 Explain the working principle of transistor as an amplifier.

    Find the expression of Voltage gain current gain and power gain.

Q.5 Explain the working principle of Half wave rectifier. Find the expression of ripple factor and

efficiency.

B.Tech (1ST SSEM)
EXAMINATION-2021
ENGINEERING DRAWING
PAPER CODE-BT105

TIME ALLOWED: 3HOURS

MAX MARKS=70

SECTION –A
(SHORT ANSWER TYPE QUESTION)

Answer any 4 questions
4×7=28

1. Bisect a) 64mm long straight line b) an arc of any length.
2. Divide a 75 mm long line into a) Six equal divisions b) Nine equal divisions.
3. Construct a plain scale to read up to 40m when the R.F of the scale is 1/1400.
4. A point R is lying at a distance 30mm from the end P and 40mm from the end Q of a line PQ. Draw a line perpendicular to PQ from R. take PQ=55mm.
5. Construct a scale of chords showing 5° divisions on it.
6. Two points A and B are 76mm apart. Another point C is 45mm from both A and B. Draw a parabola passing through A, B and C.

SECTION –B
(LONG ANSWER TYPE QUESTION)

Answer any 3 questions
3×14=42

1. The distance between two city is 100 km and it is represented on a certain map by a line of 2.5 cm. Find the RF. Draw a scale showing single km and long enough to measure up to 600km. Indicate a distance of 473 km on it.
2. Construct an ellipse when its major and minor axes are 90mm and 60 mm respectively. Draw a normal and tangent to this ellipse at a point 25 mm above the major axes. Use arcs of Circles method.
3. Construct a scale of Chords Showing 6° divisions and with the help of this scale set off angles 60° and 120°.
4. Draw a Cycloid of a circle of diameter 42mm for one revolution. Also draw a tangent and a normal to the curve at a point 30mm above the base line.