Hall Ticket Number :										

R-19

Code: 19AC22T

I B.Tech. II Semester Supplementary Examinations August 2021

Applied Physics

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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UNIT–I

1. a) What is interference? Mention the conditions to get interference. 6M
   b) Explain the formation of Newton's rings with experimental arrangement. 8M

OR

2. a) Explain the interference in thin films by reflection 10M
   b) A parallel beam of light of 6000Å is incident on thin glass plate of refractive index 1.5 such that the angle of refraction into the plate is 50^0. Find the least thickness of the glass plate which will appear dark by reflection. 4M

UNIT–II

3. a) Explain the ferroelecrtricity and its applications 7M
   b) Describe the origin of magnetic moment in magnetic materials 7M

OR

4. a) Define and derive local field in dielectrics. 10M
   b) A paramagnetic material has 10^{28} atomes per m^3. Its susceptibility at 350 K is $2.8X10^{-4}$. Calculate susceptibility at 300 K. 4M

UNIT–III

5. a) Define Attenuation and explain attenuation losses in optical fibers 9M
   b) Derive expression for numerical aperture of an optical fiber 5M

OR

6. a) What is acceptance angle? Derive expression for acceptance angle of an optical fiber 10M
   b) Calculate the acceptance angle of given optical fiber if the refractive indices of core and cladding are 1.563 and 1.498 respectively. 4M

UNIT–IV

7. a) Explain classification of solids based on energy bands 8M
   b) Summarize applications of Semiconductors 6M

OR

8. a) State and explain Hall effect in semiconductors and derive expression for hall coefficient 10M
   b) Write the applications of hall effect 4M

UNIT–V

9. a) State and explain Meissner effect in superconductors 7M
   b) Mention the applications of superconductors 7M

OR

10. a) Describe DC and AC Josephson effects in superconductors 8M
    b) Describe BCS theory of superconductivity 6M

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Hall Ticket Number :										

R-19

Code: 19A221T

I B.Tech. II Semester Supplementary Examinations August 2021

Basic Electrical and Electronics Engineering

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	State the Ohm's law and explain with example.	7M	CO1	L1
	b)	Find the total current passed through the circuit consisting of three resistors connected in series across the supply of 20 V. Where R1=10Ω, R2=5 Ω, R3=12 Ω. Also find the current passed through individual resistances R1, R2 and R3.	7M	CO1	L3
		OR			
2.	a)	Obtain the equivalent inductance of three parallel connected inductors of value 10mH.	7M	CO1	L3
	b)	Derive the expression for the equivalent inductance of series combination of three inductances L1, L2 and L3 respectively each.	7M	CO1	L3
		UNIT-II			
3.		Draw the constructional diagram of DC machine and explain the main parts.	14M	CO2	L3
		OR			
4.	a)	Explain the operation & principle of dc motors.	8M	CO2	L2
	b)	A 6 pole, lap wound armature has 840 conductors and flux per pole of 0.018wb. Calculate the emf generated when the machine is running at 1500rpm.	6M	CO2	L3
		UNIT-III			
5.	a)	Derive the EMF equation of single-phase transformer.	8M	CO3	L3
	b)	A transformer supplies a load of 32 A at 415 Volts. If the primary voltage is 3320 volts, find the primary current, primary volt-ampere and secondary volt-ampere.	6M	CO3	L3
		OR			
6.	a)	Discuss the principle of operation of 3Φ Induction motor.	7M	CO3	L2
	b)	What is voltage regulation? Explain about synchronous impedance method of finding regulation.	7M	CO3	L2
		UNIT-IV			
7.	a)	What is PN junction diode? Draw the symbol of it? Explain the V-I characteristics of it?	7M	CO4	L3
	b)	Discuss the operation of NPN and PNP transistors	7M	CO4	L2
		OR			
8.		Explain the operation of Full wave rectifier with relevant diagrams.	14M	CO4	L2
		UNIT-V			
9.	a)	Explain about dielectric heating with relevant diagrams.	8M	CO5	L2
	b)	List out the applications of induction heating.	6M	CO5	L1
		OR			
10.		Draw the block diagram of CRO? Explain the working principle of CRT in detail?	14M	CO5	L3

END

Hall Ticket Number :										

R-19

Code: 19AC21T

I B.Tech. II Semester Supplementary Examinations August 2021

Differential Equations and Vector Calculus

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Solve $(D^2+5D+6)y=e^x$	7M	CO1	L3
	b)	Solve $(D^2+4)y=\cos x$	7M	CO1	L3
		OR			
2.		Solve $\frac{d^2y}{dx^2}+4y=\tan 2x$ by using method of variation of parameters.	14M	CO1	L3
		UNIT-II			
3.		Solve $(2x-1)^2\frac{d^2y}{dx^2}+(2x-1)\frac{dy}{dx}-2y=8x^2-2x+3$	14M	CO2	L3
		OR			
4.		Solve $(1+x)^2\frac{d^2y}{dx^2}+(1+x)\frac{dy}{dx}+y=2\sin[\log(1+x)]$	14M	CO2	L3
		UNIT-III			
5.	a)	Form the partial differential equations by eliminating arbitrary functions from $z=f(x+at)+g(x-at)$	7M	CO3	L3
	b)	Solve $pyz+qzx=xy$	7M	CO3	L3
		OR			
6.		Using the method of separation of variables, solve $\frac{\partial u}{\partial x}=4\frac{\partial u}{\partial y}$ *where* $u(0,y)=8e^{-3y}$	14M	CO3	L3
		UNIT-IV			
7.	a)	Find *grad* f where $f=x^3+y^3+3xyz$	7M	CO4	L2
	b)	Find the directional derivative of $¤=x^2-2y^2+4z^2$ at (1,1,-1) in the direction of $2\bar{i}+\bar{j}-\bar{k}$.	7M	CO4	L2
		OR			
8.		Prove that $\nabla^2(r^n)=n(n+1)r^{n-2}$	14M	CO4	L2
		UNIT-V			
9.		Using Green's theorem evaluate $\oint_C(2xy-x^2)dx+(x^2+y^2)dy$, where C is the closed curve of the region bounded by $y=x^2$ *and* $y^2=x$.	14M	CO5	L3
		OR			
10.		Use Stoke's theorem to evaluate $\int_C[(x+y)dx+(2x-z)dy+(y+z)dz]$ where C is the boundary of the triangle with vertices (2, 0, 0), (0, 3, 0) and (0,0,6).	14M	CO5	L3

****END***

Hall Ticket Number :										

R-19

Code: 19A324T

I B.Tech. II Semester Supplementary Examinations August 2021

Engineering Graphics & Design

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.		Construct a conic when the distance of its focus from its directrix is equal to 50 mm and its eccentricity is 2/3. Name the curve, mark its major axis and minor axis. Draw a tangent at any point, P on the curve.	14M	CO 1	L3
		OR			
2.	a)	Divide a straight line PQ of 55 mm long into seven number of equal parts.	07M	CO 1	L4
	b)	Inscribe a regular hexagon in a circle of radius 20 mm.	07M	CO 1	L3
		UNIT–II			
3.		Draw an epicycloid having a generating circle of diameter 50 mm and a directing curve of radius 100 mm. Also draw a normal and a tangent at any point M on the curve.	14M	CO 2	L3
		OR			
4.		Draw an involute of a circle 25 mm diameter. Also draw a normal and a tangent at any point on the curve.	14M	CO 2	L3
		UNIT–III			
5.	a)	Draw the projections of a i) point A lying on HP and 25mm in front of V.P. ii) point B lying on VP and 70 mm above HP.	07M	CO 3	L3
	b)	A line AB 40 mm long is parallel to VP and inclined at an angle of 30^0 to HP. The end A is 15 mm above HP and 20 mm in front of VP. Draw the projections of the line.	07M	CO 3	L3
		OR			
6.		A top view of a 75 mm long line AB measures 65 mm, while the length of its front view is 50 mm. Its one end A is in the H.P. and 12 mm in front of the V.P. Draw the projections of AB and determine its inclination with H.P. and the V.P.	14M	CO 3	L3
		UNIT–IV			
7.		A thin rectangular plate of sides 40 mm x 60 mm has its shorter edge on the H.P. and inclined at 30° to the V.P. Draw the projections of the plate when its view from above is a square of 40 mm side.	14M	CO 4	L3
		OR			
8.		A circular plate of diameter 70 mm has the end P of the diameter PQ in the H.P and the plane is inclined at 40° to H.P. Draw its projection when the top view of diameter PQ is inclined at 45° to XY line.	14M	CO 4	L3
		UNIT–V			
9.		A square prism with side of base 30 mm and axis 50 mm long has its axis inclined at 60° to HP on one of the edges of the base which is inclined at 45° to VP.	14M	CO 5	L3
		OR			
10.		Study the isometric view of the Figure 1 and draw the front, top and right side views.			

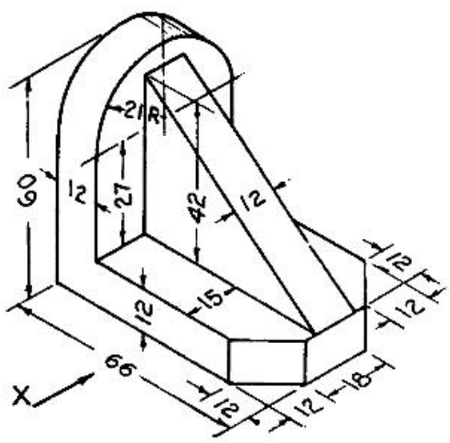

Figure 1 14M CO 5 L3

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Hall Ticket Number :										

R-19

Code: 19A521T

I B.Tech. II Semester Supplementary Examinations August 2021

Python Programming

(Common to CE, ME & CSE)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Who invented python? Write what you know about python programming.	7M	CO1	L2
	b)	List out arithmetic operators in python and illustrate them with examples	7M	CO1	L2
		OR			
2.	a)	Write a program using while statements in Python	7M	CO1	L3
	b)	Explain about membership operators	7M	CO1	L2
		UNIT-II			
3.		What is a list in python? Explain about list in detail.	14M	CO2	L2
		OR			
4.	a)	Write a Python program using programmer-defined functions	7M	CO2	L3
	b)	Explain the concept of parameter passing for functions	7M	CO2	L3
		UNIT-III			
5.	a)	What is exception handling?	4M	CO3	L2
	b)	How to Catch and handle exceptions in Python	10M	CO3	L2
		OR			
6.	a)	Relate local, global, and built-in namespaces in python.	7M	CO3	L4
	b)	List some string methods and explain them	7M	CO3	L3
		UNIT-IV			
7.	a)	What is object oriented programming? Explain about object oriented concepts.	7M	CO4	L2
	b)	Define class and explain it with suitable example	7M	CO4	L2
		OR			
8.		Write a Python class named Student with two attributes student_id, student_name. Add a new attribute student_class and display the entire attribute and their values of the class	14M	CO4	L5
		UNIT-V			
9.		What is stack? Demonstrate stack operations with the example.	14M	CO5	L3
		OR			
10.		Explain in detail about the built in types for queue in python.	14M	CO5	L3