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ENC1181 / ENB1181

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SEMESTER END EXAMINATIONS/ ARREAR AUGUST 2020

05/11/2020 FN

Programme & Branch	:	B. Tech.& All Branches			
Semester	:	I	Date & Session	:	14.10.2020 EN
Course Code & Name	:	ENC 1181/ENB 1181 English			
Duration	:	2 ½ Hours	Maximum Marks	:	80

PART A (10 X 2 = 20 MARKS)

ANSWER ANY TEN QUESTIONS

1. **Write the appropriate tense forms of the words given within brackets:** **(4x½=2)**
   i. His business -------- (run) into huge loss after the economic meltdown.
   ii. The principal ------- (address) the students yesterday.
   iii. The students ------- (rehearse) their dialogues for the cultural event now.
   iv. While he -------(water) the flowers , it began to rain.

2. **Fill in the blanks with suitable prepositions:** **(4x½=2)**
   i. The Principal congratulated him ------getting a scholarship.
   ii. I have bought some gifts -------- you.
   iii. She reached the office ----- 9 am.
   iv. Smallpox has been eradicated ------ India.

3. **Complete the following sentences by choosing the correct connectives given in brackets:** **(4x½=2)**
   i. Virat was extremely fit; ---------- he took a break from cricket. (nevertheless / on the other hand / as)
   ii. ---------- (Since / Even though / As) I have lived here for years I do not know the neighborhood yet.
   iii. People have become health conscious; ------- (However/ Hence/Since) there is a craze for organic products.
   iv. He got a promotion; ------- (nevertheless / although / even though) he was not happy.

4. **Fill in the blanks with the correct verb given in brackets:** **(4x½=2)**
   i. Sugar and flour ------ (is / are) needed for the recipe.
   ii. One of the books ------ (has / have) been missing.
   iii. None of my friends ------ (were / was) there.
   iv. Neither my dad nor my brothers ------- (know / knows) how to ski.

5. **Fill in the blanks with the correct phrasal verbs given in brackets:** **(4x½=2)**

i. You can -------words in a dictionary.(look up/look up to)
ii. Sorry I'm late. My car------- petrol (ran out/ ran out of)
iii. Be sure to------- (put on/ put out) a life jacket before getting into the boat.
iv. His father always taught him not to _____ (look up to / look down/l) on the less privileged.

6. **Write the correct modal verb in the blanks given** **(4x½=2)**

i. Take an umbrella with you when you go out. It ------- (might / should) rain in the evening.
ii. Hand me over the book, ------- (would / could) you?
iii. Life ------- (shall / should) not be all work and no play.
iv. Children ------- (must / might) do what their parents tell them to do.

7. **Change the statements into questions by using relevant 'Wh' Question words:** **(4x½=2)**

i. I live in Chennai.
ii. She is my sister
iii. The book written by his teacher was prescribed in the syllabus.
iv. I am living in Chennai.

8. **Complete the following sentences by using appropriate conditional clauses:** **(2X1=2)**

i. If you work hard _____
ii. If I had studied, _____

9. **Write a slogan for the products given below:** **(2X1=2)**

i. Volkswagen
ii. HP Computers

10. **Change the following sentences into passive voice:** **(2X1=2)**

i. Her uncle will look after her.
ii. Who wrote this speech?

11. **Change the following sentences into Active voice:** **(2X1=2)**

i. The town was destroyed by fire.
ii. The room will be cleaned by John every Saturday.

12. **Change the following sentences into impersonal passive voice:** **(2X1=2)**

i. They have installed a new computer in the accounts section.
ii. The farmers have gathered the harvest.

PART B (5 X 12 = 60 MARKS)

13. A **Write a paragraph in about 200 words on the topic, "Impact of Covid-19 in our life."** **(12)**

(OR)

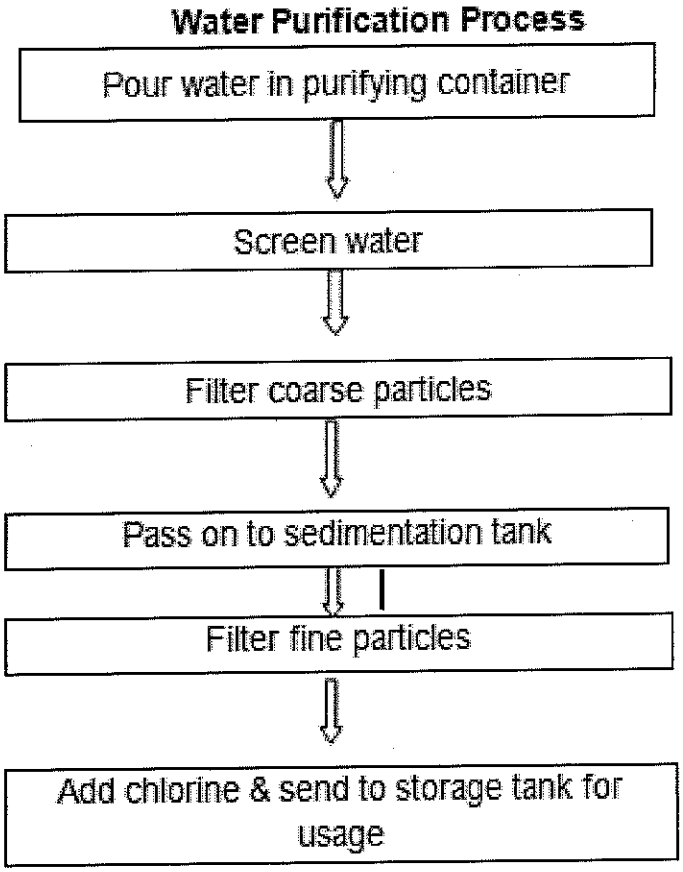
B **Write an argumentative essay in about 200 words on the topic, "Technology has created more problems than solutions."** **(12)**

14. A **Write a letter to the Editor of "The Hindu" complaining about the noise pollution in your locality. Also give suitable suggestions to control the problem.** **(12)**

(OR)

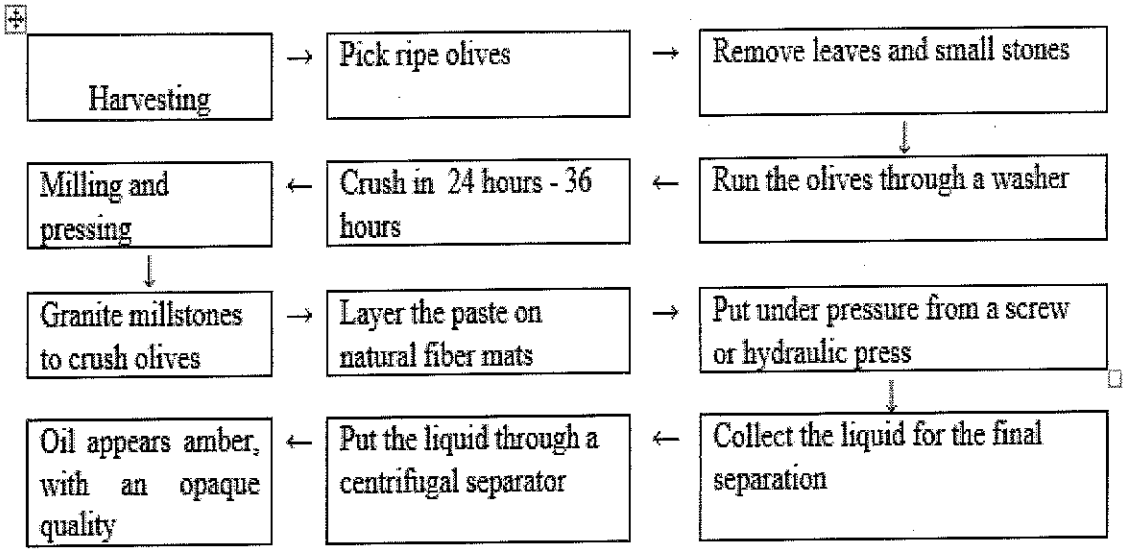
B **Write a letter to the Editor of "The Times of India" complaining about the wine shop in your locality and the nuisance it causes residents.** **(12)**

15. A **Describe the process involved in the purification of water that is being out pumped out and finally taken to the storage tank, by using the information given the flow chart. (12)**

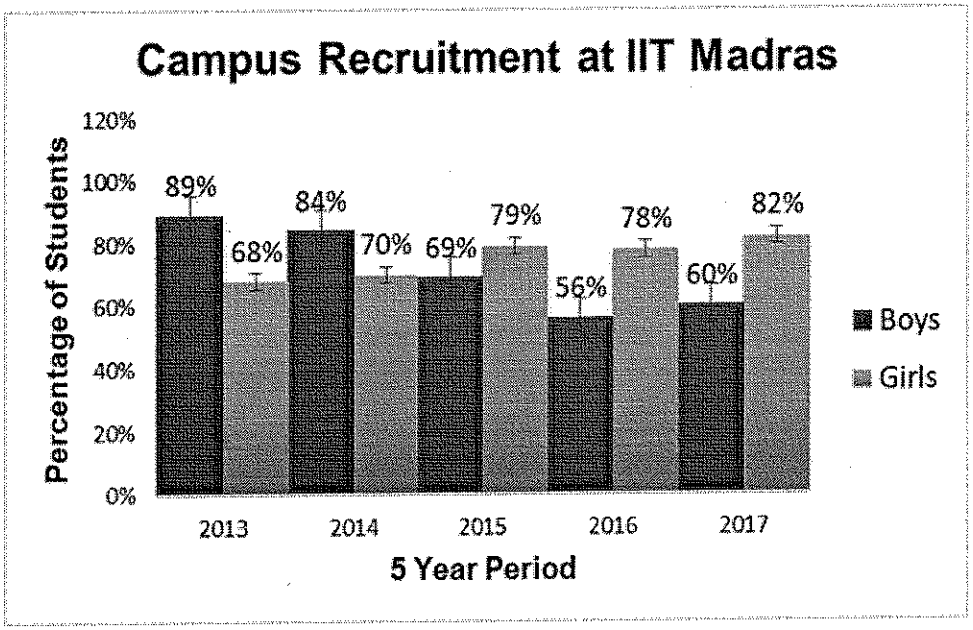


(OR)

B) **Describe the process of making 'Olive Oil' by using the information given in the flow chart:** **(12)**

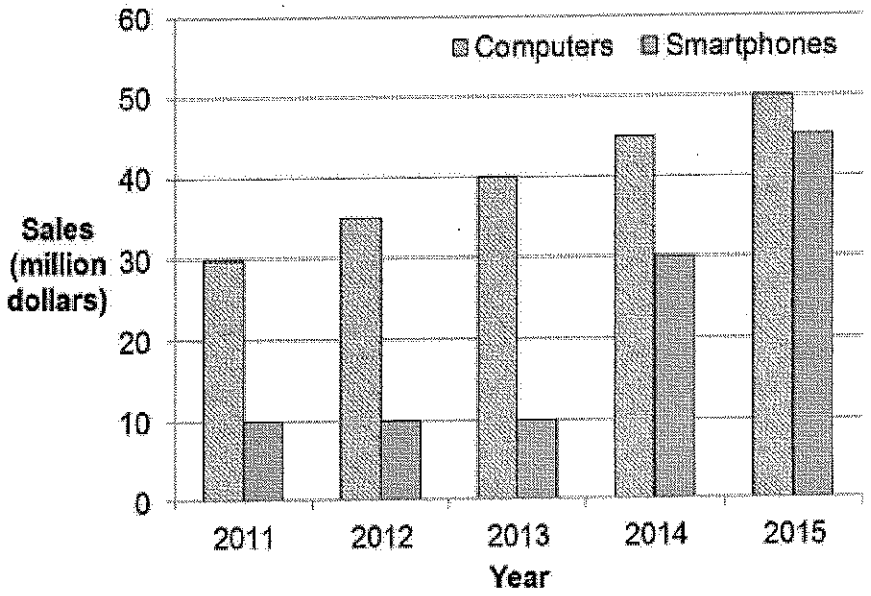


16. (A) **The graph below shows the percentage of boys and girls placed in campus recruitment at the Indian Institute of Technology, Madras between 1994 and 2007.Summarise the information by selecting and reporting the main features, and make comparisons where relevant.** **(12)**



(OR)

(B) **The bar chart presents the amount of money spent on two types of electronic items computers and smartphones in the years 2011, 2012, 2013, 2014 & 2015 in a country X. Interpret the bar chart in about 200 words by comparing the data and providing necessary details.** **(12)**



17. (i) **Read the following passage carefully and answer the questions given below:**

When you're thirsty or just craving a little afternoon pick-me-up, juice is probably one of the drinks you reach for. And why not? Not only is it tasty, it's nutritious, right? Well ... that depends. To make sure you're getting the full benefits of juice, you have to act like a detective. You need to ask the right questions and fathom how to read labels.

Only beverages that are 100 percent fruit or vegetable juice may actually be called juice. Others are fake with negative ramifications. A drink with anything less than 100 percent juice has been diluted. That means something else has been added, usually water and sugar. "The label '100 percent juice' is the key," says registered dietician and American Dietetic Association (ADA) spokesperson Marilyn Tanner-Blasiar. "Beverages labeled 'fruit drink,' 'fruit cocktail,' or 'fruit ade' may contain added sugars which replace that nutrition." In other words, you don't need to get out a calculator. If it's not 100 percent juice, the nutrition experts say, it's not really juice. Juices made of seedless fruits have nutritional value but they have health hazards.

At some point in the juice-making process, all the water has been removed from the fruit. What's left behind is frozen. That new substance—the concentrate—takes up a lot less space and is easy to move from one place to another. The concentrate still has all the vitamins and minerals from the original fruit. So if you buy a carton of orange juice from concentrate that means that water has been added *back* to the concentrate to make your juice. A food must have been produced without chemicals and chemical pesticides to truly be called organic. Organic products are generally better for the environment. But there is some debate as to

whether they're actually better for you. The most important thing is to choose 100 percent juice, whether it's organic or not.

100 percent juice already packs a nutritional wallop. Orange juice, for example, is loaded with vitamin C, folic acid, and potassium. Sometimes, a company will add vitamin C to a sugary fruit punch in order to make it seem healthier, Tanner-Blasiar points out. In reality it does more harm than good. But it's a much better idea to get your vitamins and minerals from foods that contain them naturally. In other words, get your calcium from low-fat milk or yogurt instead of relying on calcium-fortified juice. And don't be too impressed with juices that claim to have ingredients to help boost your immune system. "A proper diet, lots of activity, and plenty of sleep is what really helps keep a child's immune system strong," says registered dietician and nutritional consultant Keri Gans.Some fruits—such as cranberries—can be a little tart or have an overpowering flavour. So sometimes, instead of adding extra sugar, a company may add a sweeter or more mild-tasting juice to create a juice blend. Grape and apple juices are popular sweetening picks, Tanner-Blasiar says. That's OK! There's nothing wrong with juice blends as long as you're drinking 100 percent juice.

A **State whether the following statements are 'True' or 'False':** **(8X1=8)**

1. 100 percent juice can be made only with fruits.
2. Added sugars reduce the nutritional value of the juice.
3. A concentrate is equally good as a fresh juice.
4. The author says that the orange juice is the best drink.
5. A juice blend is made by adding two different juices.
6. According to the passage, organic food may not be good for you.
7. Juices made of seedless fruits have no nutritional value
8. Adding vitamin C to a sugary fruit punch has health benefits.

B **Choose the correct meaning for the words underlined in the sentences:** **(4x1=4)**

1. Fathom refers to a) confused b) understand c)negligent
2. In this passage ramifications mean a) limitation b) befits c) consequences
3. The closest meaning of hazard a) danger b) benefits c) essence
4. In the given passage wallop means a) encourage b) avoid c) smack

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SSB1181

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SEMESTER END EXAMINATIONS . AUGUST 2020

5/11/2020 FN

Programme & Branch	:	B. Tech. Common to all Branches			
Semester	:	I & II	Date & Session	:	12/10/2020 FN
Course Code & Name	:	SSB1181, INTRODUCTION TO ECONOMICS			
Duration	:	2 ½ Hours	Maximum Marks	:	80

PART A (10 X 2 = 20 MARKS)

Answer Any TEN Questions

1. How is an open economy different from closed economy?
2. Explain any two types of demand.
3. Write any two disadvantages of globalization in India.
4. Define barter system.
5. Differentiate between microeconomics and macroeconomics.
6. What is a Central bank?
7. Mention the types of internal trade with examples.
8. Write any two types of non-tax revenue with examples?
9. List out any two functions of Development banks.
10. Define government budget.
11. Write two differences between money market and capital market.
12. What are the objectives of introducing LPG in India in 1991?

PART B (5 X 12 = 60 MARKS)

Answer Any FIVE Questions

13.a	(i)	Explain any three sectors of the economy with appropriate examples.	(6)
	(ii)	Illustrate the law of demand with demand schedule and demand curve.	(6)
		(OR)	
b	(i)	Explain the law of supply.	(6)
	(ii)	Write the differences between fiscal policy and monetary policy.	(6)

14.a	(i)	Demonstrate the main causes of inflation in India.		(6)
	(ii)	What remedies would you suggest to control inflation in India?		(6)
		(OR)		
b	(i)	Write a short note on national income.		(6)
	(ii)	Explain the advantages of public sector.		(6)
15.a	(i)	Explain the four important functions of money		(6)
	(ii)	Assess the differences between commercial banks and central bank.		(6)
		(OR)		
b	(i)	Demonstrate the types of public expenditures with examples.		(6)
	(ii)	Define tax. Explain any four types of taxes with examples.		(6)
16.a	(i)	Why is calculating national income important for nations?		(6)
	(ii)	What are the difficulties of calculating national income in India?		(6)
		(OR)		
b	(i)	Identify the differences between economic growth and economic development.		(6)
	(ii)	Evaluate the measures that were taken to liberalize Indian economy in 1991.		(6)
17.a	(i)	Define trade. Explain the role of trade.		(6)
	(ii)	Explain the types of external trade with examples.		(6)
		(OR)		
b	(i)	Explain any three instruments of Monetary policy for credit control.		(6)
	(ii)	Discuss the objectives of Industrial Policy 1991.		(6)
18.a	(i)	Define Fiscal policy. What are the instruments of fiscal policy?		(6)
	(ii)	What do you mean by deficit financing? What are the various means of the government to finance a deficit budget?		(6)
		(OR)		
b	(i)	Globalization has positive impact on India. Discuss.		(6)
	(ii)	Write the negative impact of Privatization in India.		(6)

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SSB1182

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SEMESTER END EXAMINATIONS – AUGUST 2020

6/11/2020 FN

Programme & Branch	:	B Tech(Common to all branches)			
Semester	:	I& II	Date & Session	:	13/10/2020, FN
Course Code & Name	:	SSB1182,Sociology,Ethics &Human values			
Duration	:	2 1/2 Hours	Maximum Marks	:	80

PART A (10 X 2 = 20 MARKS)

Answer Any TEN Questions

1. Define the term Sociology.
2. What is Assimilation?
3. Define Social Stratification
4. List out any four agencies of socialization.
5. Define group.
6. Define Cooperation.
7. What is 'Ascribed status'?
8. What is modernisation?
9. List out any four factors responsible for social change
10. Define Child labour.
11. Define Innovation.
12. What is informal Social control? Give example.

PART B (5 X 12 = 60 MARKS)

Answer Any FIVE Questions

13.A (i) Explain the causes and impact of French Revolution. (6)

(ii) Describe the Role of family and Education in the process of socialization. (6)

(OR)

B (i) Define Society. Explain the characteristics of Society. (6)

(ii) Explain various means of social control with example. (6)

14.A	(i)	Compare and contrast Sanskritisation and Westernisation as processes of social change in Indian Society.	(6)
	(ii)	Explain the differences between Caste and class.	(6)
		(OR)	
B	(i)	Discuss family as a basic fundamental social institution with its primary functions.	(6)
	(ii)	"Women are not safe in Indian society".- Discuss this statement with various type of violence against women in India.	(6)
15.A	(i)	Explain primary and secondary groups with characteristics and examples.	(6)
	(ii)	Explain the types of planned and emergent groups with examples.	(6)
		(OR)	
B.	(i)	Explain the different types of Team in an industry.	(6)
	(ii)	Explain the types of Cooperation with examples.	(6)
16.A	(i)	Discuss the various features of Urbanization and its impact on the society.	(6)
	(ii)	Describe the various types of child labour.	(6)
		(OR)	
B.	(i)	Explain the process of whistle blowing.	(6)
	(ii)	Write down the causes of Modernization.	(6)
17.A	(i)	List the differences between Invention and Innovation with suitable examples.	(6)
	(ii)	Explain the concept of "Globalization" with any three advantages and disadvantages.	(6)
		(OR)	
B.	(i)	Discuss various characteristics of Social Exclusion.	(6)
	(ii)	Technological development has changed the face of India'- Comment.	(6)
18.A	(i)	'Joint family in modern Indian society is disintegrating' – Comment.	(6)
	(ii)	Critically examine how patriarchy affects the low status of Indian women. Evaluate the various indicators to assess the status of Indian Women	(6)
		(OR)	
B.	(i)	Critically explain the associative and dissociative social processes in the society.	(6)
	(ii)	Explain the role of engineers for sustainable development of the society.	(6)

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SEMESTER END EXAMINATIONS NOVEMBER 2020

Programme & Branch	:	**B.TECH COMMON TO ALL BRANCHES**		
Semester	:	**I**	Date & Session	: **09/11/2020 FN**
Course Code & Name	:	**PH101 PHYSICS - I**		
Duration	:	**3 HOURS**	Maximum Marks	: 80

PART - A (8x2 = 16 MARKS)

Answer Any EIGHT Questions

1. Draw the Miller Indices for the planes (1 0 1) and (1 1 1)
2. Define Schottky defect.
3. Calculate the least energy that an electron can possess in one dimensional potential box of width 0.5nm. Given m = 9.1 x 10^{-31} kg, h=6.626 x 10^{-34}Js.
4. Give the physical significance of the wave function (ψ).
5. Calculate the thickness of a half wave plate of quartz of wavelength of 500nm. Given μ_e= 1.553 and μ_o = 1.544.
6. Define photo elasticity.
7. Mention the characteristics of laser light.
8. What is total internal reflection?
9. State the working principle of ultrasonic flaw detection technique in NDT.
10. Bring out the difference between radiography and fluoroscopy.

PART - B (4 x 16 = 64 MARKS) - Answer Any FOUR Questions

11. (a) (i) Explain the terms atomic radius, co-ordination number and packing factor. **(6)**

(ii) Determine co-ordination number and packing density for a BCC and FCC structure with suitable sketches. **(10)**

(OR)

(b) What are the point, line and surface imperfections in solid materials? Illustrate these imperfections with suitable sketches. **(16)**

12. (a) Explain Compton effect and derive an expression for the wavelength of scattered photon with suitable illustration. **(16)**

(OR)

(b) (i) Derive Schrodinger time dependent and independent wave equation of matter waves. **(14)**

(ii) Calculate de Broglie wavelength associated with a proton moving with a velocity equal to 1/20th of the velocity of light. Given mass of the proton = 1.675 x 10^{-27}kg **(2)**

13. (a) With necessary theory explain how thickness of a thin wire can be determined by forming air-wedge. **(16)**

(OR)

(b) (i) Describe the plane, circularly and elliptically polarized light with necessary theory. **(10)**

(ii) Explain how a plane, circularly and elliptically polarized light can be produced. **(6)**

14. (a) (i) What is the effect of a stressed model in a plane polariscope? Explain with a suitable theory. **(10)**

(ii) Discuss in detail the working principle of photoelastic bench with suitable diagram. **(6)**

(OR)

(b) Explain the principle, construction and production of ultrasonic waves using piezoelectric method with a neat sketch. **(16)**

15. (a)(i) Elucidate the construction and working of CO_2 laser with a neat diagram. **(12)**

(ii) Give four important applications of laser. **(4)**

(OR)

(b) (i) Derive expressions for numerical aperture and acceptance angle for an optical fiber. **(8)**

(ii) Illustrate in detail the classifications of optical fibre based on no.of modes of light and refractive index profiles. **(8)**

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Programme & Branch : **B. Tech Common to all Branches** 10/11/2020 FN
Semester : **I** Date & Session : **~~16/10/2020 EN~~**
Course Code & Name : **PHB 1181 Physics**
Duration : 2 ~~3~~ 1/2 **Hours** Maximum Marks 80 ~~100~~ **AUGUST 2020**

ANSWER ANY TEN ~~EIGHT~~ QUESTIONS

PART - A (12 x 2 = 24 MARKS)

1. State Hooke's law in elasticity.
2. Define coefficient of viscosity.
3. Name the seven crystal systems.
4. Chromium at 25°C exhibits BCC structure. If the atomic radius is 1.3 Å, calculate its lattice constant.
5. Define Rayleigh-Jeans law.
6. What is de-Broglie wavelength?
7. In an air-wedge experiment, the distance between the point of contact of the glass plate and the thin wire is 4 cm. The wavelength of light used is 589 nm. If 200 fringes are formed, find the thickness of the thin wire.
8. Distinguish between Fresnel and Fraunhofer diffraction.
9. Write any four characteristics of laser.
10. Draw the structure of an optical fiber and label it.
11. Are the ultrasonic waves electromagnetic waves? Give proper reason.
12. Write a note on SONAR.

PART - B (5 x 12 = 60 MARKS) ANSWER ANY FIVE QUESTIONS

13. a (i) Draw the stress-strain diagram and explain its significance. **(6)**

(ii) Explain the factors that affecting the elasticity. **(6)**

(OR)

b What is a cantilever? Obtain the expression for depression at the loaded end of the cantilever whose other end is fixed. **(12)**

14. a Calculate the atomic radius, coordination number and packing factor of BCC and FCC structures with necessary diagrams. **(12)**

(OR)

b (i) Illustrate how will you find out the Miller Indices of a plane in a crystal structure. **(6)**

(ii) Discuss in detail about the point defects in crystals. **(6)**

15. a Derive an expression for Planck's quantum theory of black body radiation and hence deduce the Wien's displacement law and Rayleigh-Jean's law. **(12)**

(OR)

b Apply the Schrodinger wave equation for a particle in a one dimensional box to obtain the eigen values and the corresponding eigen functions. **(12)**

16. a Describe the theory of Michelson interferometer and explain the formation of fringes in it. **(12)**

(OR)

b (i) Differentiate isoclinic and isochromatic fringes. **(4)**

(ii) Discuss about the photoelastic bench with the neat diagram. **(8)**

17. a Explain the principle, construction and working of CO_2 laser with a neat diagram. Write any two applications of CO_2 laser. **(12)**

(OR)

b (i) Explain the principle and propagation of light in optical fibers and hence derive an expression for the acceptance angle and numerical aperture of an optical fiber. **(10)**

(ii) Distinguish between step index fiber and graded index fiber. **(2)**

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PART - C (1 x 16 = 16 MARKS)

18. a (i) Describe the principle, construction and production of ultrasonic waves by piezoelectric method and mention its merits and demerits. **(10)**

(ii) With a block diagram, explain the working principle of ultrasonic flaw detector. **(6)**

(OR)

b (i) Explain any two methods of detection of ultrasonic waves. **(6)**

(ii) Describe in detail how you can construct and reconstruct the 3D image using a hologram. **(10)**

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MAB 1181

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SEMESTER END EXAMINATIONS – AUGUST 2020

Programme & Branch : B.Tech (Common to All Branches Except BioTech) 12/11/2020
Semester : I Date & Session : ~~19/10/2020~~ FN FN
Course Code & Name : MAB 1181 – ALGEBRA, GEOMETRY AND CALCULUS

Duration : 2 ½ Hours Maximum Marks : 80

PART A (10 X 2 = 20 MARKS)

Answer Any TEN Questions

1. Find the sum and product of the eigenvalues of the matrix $\begin{bmatrix} 2 & 0 & 1 \\ 0 & 2 & 0 \\ 1 & 0 & 2 \end{bmatrix}$.
2. Express the quadratic form $f(x, y, z) = x^2 + 2yz$ in matrix form.
3. What is the unit normal vector at the point $(1, 2, 0)$ to the surface $2xz^4 - xy$?
4. If $\phi = x^2y^3z$, find $\nabla\phi$ at $(1, 1, 0)$.
5. Find the equation of sphere whose centre is $(1, 0, 1)$ and the radius is 2.
6. Find the equation of the plane passing through the point $(1, 2, 3)$, and parallel to the plane $3x + 4y - 5z = 0$.
7. Find the curvature and the radius of curvature of $y = 2x$.
8. Find the envelope of the family of straight lines $y = mx + \frac{a}{m}$, where m is the parameter.
9. If $x^3 + 3x^2y + 6xy^2 + y^3 = 1$, find $\frac{dy}{dx}$.
10. Find the stationary points of $f(x, y) = x^2 + 2y^2 - x$.
11. Find the particular integral of the differential equation $y'' + y = 1$.
12. Solve the differential equation $y'' - 6y' + 9y = 0$.

PART B (5 X 12 = 60 MARKS)
Answer Any FIVE Questions

13.a Verify the Cayley Hamilton theorem and hence find A^4, if (12)

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

(OR)

b Reduce the quadratic form $2xy+2yz+2zx$ to canonical form by orthogonal transformation. (12)

14.a (i) If $\vec{r}$ is the position vector of the point $P(x, y, z)$, then prove that (4)
$\nabla\left(r^n\right)=nr^{n-2}\,\vec{r}$.

(ii) Show that the vector (8)
$\vec{F}=(3x^2+2y^2+1)\vec{i}+(4xy-3y^2z-3)\vec{j}+(2-y^3)\vec{k}$ is irrotational and hence find the scalar potential.

(OR)

b (i) If $\phi=x^2+y^2+z^2$, then find $\nabla\times(\nabla\phi)$ and $\nabla.(\nabla\phi)$. (6)

(ii) Test whether the vector (6)
$\vec{F}=(x+3y)\vec{i}+(y-3z)\vec{j}+(x-2z)\vec{k}$ is solenoidal or irrotational or both.

15.a Find the image and foot of the point $(1, 3, 4)$ on the plane $2x-y+z+3=0$. (12)

(OR)

b Find the length and equation of shortest distance between the pair of straight lines, (12)

$$L_1:\frac{x-3}{3}=\frac{y-8}{-1}=\frac{z-3}{1}\quad \&\quad L_2:\frac{x+3}{-3}=\frac{y+7}{2}=\frac{z-6}{4}.$$

16.a Find the equation of the circle of curvature at the point $(3, 6)$ on the parabola $y^2=12x$. (12)

(OR)

b Find the evolute of the curve $x=ct,\ y=\frac{c}{t}$. (12)

17.a Use the Taylor's series to expand $e^x \sin y$ near the point $\left(0, \pi/2\right)$ (12)
up to the third degree term.

(OR)

b A rectangular box open at top is to have a capacity of **108** cu.ms. Find the dimensions of the box requiring least material for its construction. (12)

18.a (i) Solve the equation $2\frac{d^2y}{dx^2} + \frac{dy}{dx} - y = 16\cos 2x.$ (6)

(ii) Find the general solution of the differential equation (6)
$(D^3 - 3D^2 + 4D - 2)y = e^x.$

(OR)

b Solve the simultaneous ordinary differential equations (12)

$$\frac{dx}{dx} + 5x - 2y = t \; ; \quad \frac{dy}{dt} + 2x + y = 0.$$

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MA 101

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SEMESTER END EXAMINATIONS – SEP/OCT 2020

Programme & Branch	:	**B.Tech (Common to all Branches)**			
Semester	:	**I**	Date & Session	:	**17/11/2020 FN**
Course Code & Name	:	**MA 101 : Mathematics - I**			
Duration	:	**2 ½ Hours**	Maximum Marks	:	**80**

PART- A (8 × 2 = 16 MARKS)

Answer Any EIGHT Questions

1. The characteristics equation of a matrix $\mathbf{A}$ is $\lambda^2 - 2=0$. What is $\mathbf{A}^3$?

2. If 3 and 15 are two eigenvalues of $\begin{bmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$. What is the 3rd eigenvalue?

3. Check by direction cosines whether the points $\mathbf{P(1, -2, 3)}$, $\mathbf{Q(2, 3, -4)}$ and $\mathbf{R(-2, 4, 2)}$ are collinear.

4. Verify whether the two lines with direction ratios $\mathbf{(1, 2, -1)}$ and $\mathbf{(3, 1, 4)}$ are perpendicular to each other or not.

5. Find the radius of curvature on $y = e^x$ at the point where the curve cuts the y-axis.

6. Find the envelope of the family of straight lines given by $y = mx + \frac{a}{m}$, where m is the parameter.

7. If $u = \frac{y}{z} + \frac{z}{x} + \frac{x}{y}$, find the value of $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + z\frac{\partial u}{\partial z}$.

8. What are the stationary points of $f(x, y) = x^2 + y^2 - xy - 2x + y$?

9. Solve the ODE $(D^3 + 3D^2 + 3D + 1)y = 0$.

10. If $2, 2, 3i, -3i$ are the roots of an auxiliary equation of an ODE, then what is the complimentary function?

PART B (4 X 16 = 64 MARKS)

Answer Any FOUR Questions

11. A Verify the Cayley-Hamilton theorem and hence find A^{-1} and A^4, if (16)

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

(OR)

B Reduce the Quadratic Form (16)

$6x_1^2+3x_2^2+3x_3^2-4x_1x_2-2x_2x_3+4x_1x_3$ to Canonical Form by an orthogonal transformation. Also find the Rank, Index, Signature and Nature.

12. A Find the length and equations of the Shortest Distance between the pair of lines $\frac{x-3}{3}=\frac{y-8}{-1}=\frac{z-3}{1}$ and $\frac{x+3}{-3}=\frac{y+7}{2}=\frac{z-6}{4}$. (16)

(OR)

B i) Find the angle between the planes $3x-2y+2z+17=0$ and $2x+3y+6z+25=0$. (06)

ii) Show that the plane $2x-2y+z+12=0$ touches the sphere $x^2+y^2+z^2-2x-4y+2z-3=0$. Also find the point of contact. (10)

13.A Find the evolute of the hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$. (16)

(OR)

B Find the envelope of $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$, where a and b are parameters connected by the relation $a^2+b^2=c^2$. (16)

14.A Find the stationary points of $xy(3x+2y+1)$. Also, examine the extreme values. **(16)**

(OR)

B The temperature at any point (x, y, z) in space is given by $T = kxyz^2$, where k is constant. Find the highest temperature on the sphere $x^2 + y^2 + z^2 = a^2$. **(16)**

15.A Solve the ODE $(D^2 + 6D + 9)y = x^4 + \sinh x$. **(16)**

(OR)

B Solve the simultaneous ODEs $\frac{dx}{dt} + 5x - 2y = t$; $\frac{dy}{dt} + 2x + y = 0$. **(16)**

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GEB 1101

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SEMESTER END EXAMINATIONS (Arrear) – AUGUST 2020

16/11/2020 FN

Programme & Branch	:	B.Tech (All Branches)			
Semester	:	I	Date & Session	:	~~23/10/2020 EN~~
Course Code & Name	:	GEB 1101 – Engineering Graphics			
Duration	:	2 ½ Hours	Maximum Marks	:	80

(All Dimensions are in mm)

PART A (10 X 2 = 20 MARKS)

Answer Any TEN Questions

1. How do you obtain a hyperbola from a right regular cone?
2. How do you obtain a parabola from a right regular cone?
3. Sketch the layout of first angle projection.
4. Sketch the symbol of first angle projection.
5. Draw the projections of a point 'M' which is 15 mm in front of VP and 20 mm above HP.
6. Why the 2nd and 4th angle projection methods are not in common use?
7. What is frustum?
8. What is a hexahedron?
9. Name the methods of development of lateral surface of solids.
10. List few applications of development of surfaces
11. The isometric view of a circle is_____.
12. The size of perspective view depends on _____.

PART B (5 X 12= 60 MARKS)

Answer Any FIVE Questions

13.A. Trace and name the locus of a moving point P, having the ratio of eccentricity 2/3 and the distance between the fixed point focus to directrix is 50 mm. **(12)**

(OR)

13.B. Construct a hypocycloid generated by a rolling circle of diameter 50 mm which rolls inside a base circle of diameter 150 mm. **(12)**

14.A. Make free hand sketch of front, and right side view of the object shown in the figure 1. **(12)**

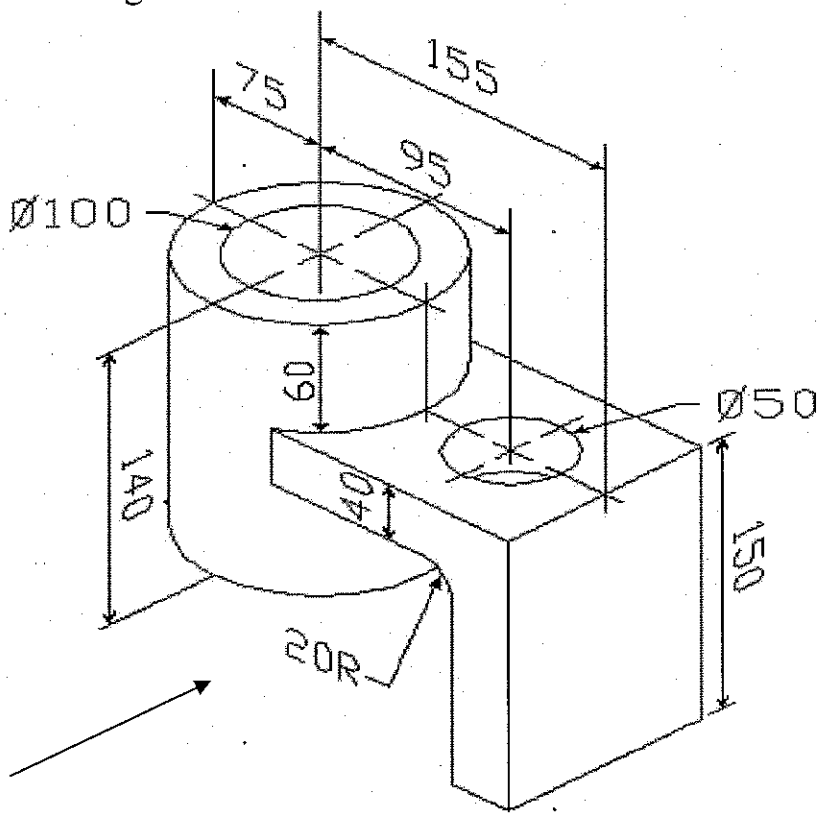

Figure 1

(OR)

B. Make free hand sketch of front and top view of the object shown in the figure 2. **(15)**

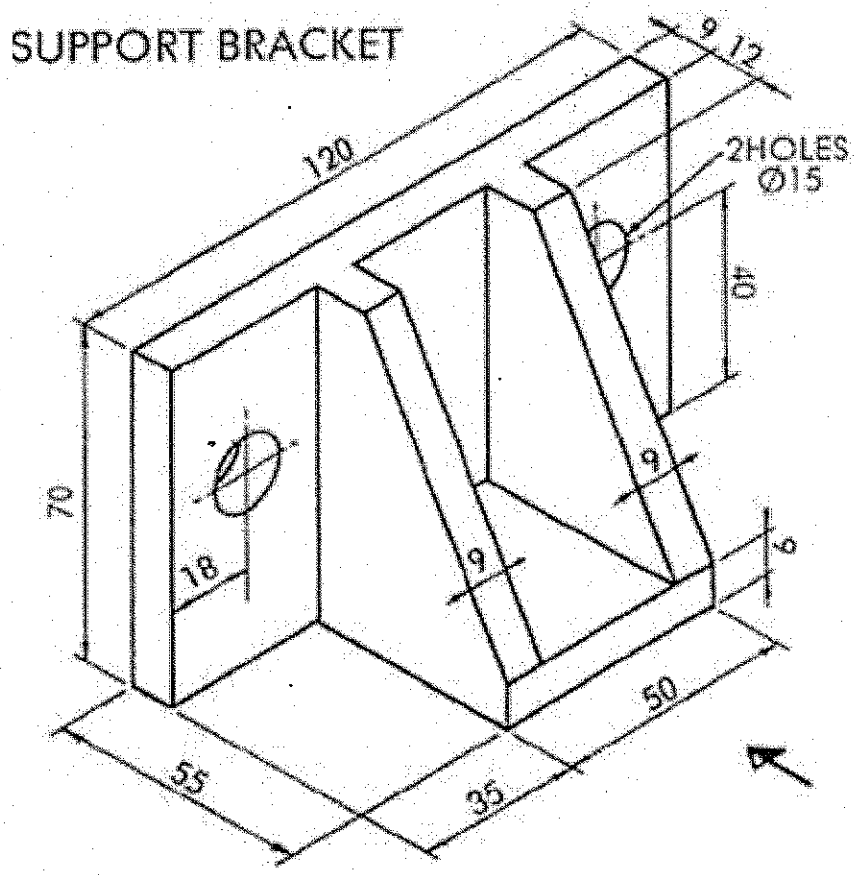

Figure 2

15.A. A line MN, 60 mm long has its end M 30 mm above HP and 25 mm in front of VP. The top view and front view measure 40 mm and 55 mm respectively. **(12)**

(OR)

B. A pentagon plate of side 25 mm rests on the ground on one of its corners with the sides containing the corner being equally inclined to the ground .The side opposite to the corner on which it rests is inclined at 25° to VP and is parallel to HP. The surface of the pentagon makes 45° with the ground. Draw its projections. **(12)**

16.A. A pentagonal pyramid of base side 25 mm and axis height 65 mm is resting on HP on one of its triangular faces with axis parallel to VP. Draw its projections. **(12)**

(OR)

16.B. A pentagonal prism of base side 25 mm and axis 70 mm long is resting on HP with one of its rectangular side face in such a way that the axis is inclined at 40° to VP. Draw its projections. **(12)**

17.A. A cylinder of diameter 50 mm and height 60 mm is having its axis vertical. It is cut by a plane perpendicular to VP and inclined at 30° to HP. The plane bisects the axis of the cylinder. Draw its front view, sectional top view. **(12)**

(OR)

B. A hexagonal pyramid of base side 25 mm and height 60 mm rests vertically on HP with one of its base sides parallel to VP. A string is wound round the surfaces of the pyramid from the left extreme corner on the base and ending at the same point. Find graphically the shortest length of the string required. **(12)**

18.A. A cylinder of diameter 30 mm and axis height 60 mm is mounted centrally on the top of a square slab of side 60 mm and thickness 20 mm. Draw the isometric view of the combination of solids. **(12)**

(OR)

B. Draw the perspective view of a cube of 45 mm side rests on ground plane (GP) on a face such that a vertical face is parallel to and 10 mm in front of the picture plane (PP). The station point is 40 mm in front of the PP, 55 mm above the GP and lies in the central plane which is 65 mm to the right of the center of the cube. **(12)**

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GE 101

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SEMESTER END EXAMINATIONS (Arrear) – November 2020

Programme & Branch	:	B.Tech (All Branches)			
Semester	:	I	Date & Session	:	03/11/2020 FN
Course Code & Name	:	GE 101 – Engineering Graphics			
Duration	:	2 ½ Hours	Maximum Marks	:	80

(All Dimensions are in mm)

PART A (8 X 2 = 16 MARKS)

Answer Any EIGHT Questions

1. What is reduction scale in engineering drawing?
2. Define – Eccentricity.
3. Draw the layout of first angle projection.
4. Draw the projections of a point 'A' which is 15 mm behind VP and 10 mm below HP.
5. Define trace of a plane surface.
6. What is a hexahedron?
7. The true shape of section of a cut sphere is always a .....
8. What is the lateral surface development of a cone?
9. Why do we section a solid?
10. Station point in perspective projection will lie on .....

PART B (4 X 16= 64 MARKS)

Answer Any FOUR Questions

11.A. Construct an epicycloid generated by a rolling circle of diameter 50 mm which rolls over a base circle of diameter 150 mm. Also draw tangent and normal at any point on the curve. **(16)**

(OR)

11.B. Make free hand sketch of front, top and left side view of the object shown in the figure 1. All dimensions are in mm. **(16)**

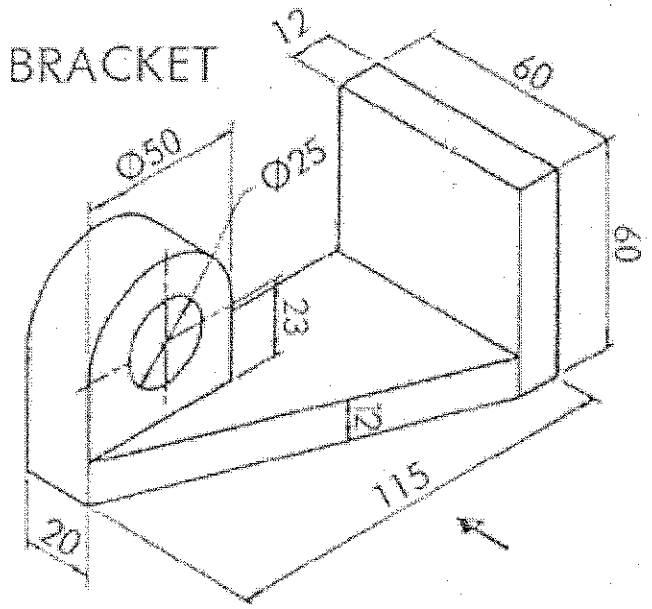

Figure 1

12.A. A line PQ, 70 mm long has its end P, 10 mm above HP and 15 mm in front of VP. The other end Q is 65 mm above HP and 50 mm in front of VP. Draw the projection of the line and mark its traces. **(16)**

(OR)

B. A pentagon plate of side 25 mm rests on the ground on one of its corners with the sides containing the corner being equally inclined to the ground .The side opposite to the corner on which it rests is inclined at 25° to VP and is parallel to HP. The surface of the pentagon makes 45° with the ground. Draw its projections. **(16)**

13.A. A hexagonal prism of base side 30 mm and axis height 75 mm is resting on HP with one of its base corners in such a way that the axis of the solid is inclined at 30° to HP and parallel to VP. Draw its projections. **(16)**

(OR)

13.B. A cylinder of base diameter 60 mm and axis 80 mm long is resting on HP with one of its generators in such a way that the axis is inclined at 40° to VP. Draw its projections. **(16)**

14.A. A cone of diameter 50 mm and height 60 mm is having its axis vertical. It is cut by a plane perpendicular to VP and inclined at 30° to HP. The plane bisects the axis of the cone. Draw its front view, sectional top view, true shape of section. **(16)**

(OR)

B. A lampshade which is formed from a cut cone of base 50 mm diameter and height 65 mm. The first cutting plane which is perpendicular to the axis and parallel to the base, cut the cone 15 mm away from the apex. The second cutting plane cuts the cone in a manner 25° inclined to its base and passing through one of the extremities of the base. Draw the lateral surface development of the lampshade. **(16)**

15.A. Draw the isometric view of a hopper which is in the form of a frustum of a cone having a base diameter 400 mm and top base diameter 800 mm. The height of the hopper is 500 mm. Use Scale 1:10. **(16)**

(OR)

B. Draw the perspective view of a square pyramid of base side 25 mm and height 50 mm, when it rests on the ground plane (GP). A edge of the base is parallel to and 5 mm behind the picture plane (PP). The station point is situated at a distance of 60 mm in front of the PP, 60 mm above the GP and lies in the central plane which is 45 mm to the right of the axis. **(16)**

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SEMESTER END EXAMINATIONS- AUGUST 2020

Programme& Branch	:	B.Tech (Common to all branches except Bio-Tech)			
Semester	:	II Semester	Date & Session	:	~~15/10/2020~~ FN 9/11/2020 FN
Course Code & Name	:	MAB 1282 – Advanced Calculus			
Duration	:	2 ½ Hours	Maximum Marks	:	80

PART A (10 X 2 = 20 MARKS)

Answer Any TEN Questions

1. Evaluate $\int_0^{\frac{\pi}{2}} \int_0^{\frac{\pi}{2}} cos(x+y)\, dx\, dy$
2. Draw the rough sketch of the region $\int_0^1 \int_0^x f(x,y)\, dy\, dx$
3. Evaluate $\int_0^\infty e^{-2x}\, x^2 dx$ using Gamma integrals.
4. Find the value of $\beta(5,4)$.
5. Find $\nabla X\, \vec{F}$ at $(1,0,1)$ if $\vec{F} = x^2\vec{i} + y\vec{j} + xz\vec{k}$
6. State Gauss Divergence theorem.
7. State any two properties of analytic function.
8. Find the critical points of transformation$w^2 = (z-\alpha)(z-\beta)$. (space sir)
9. Evaluate $\int_C \frac{1}{z-3}\, dz$ where $C: |z| = 4$
10. Find the residues of $f(z) = \frac{1}{(z+2)(z-1)}$
11. Solve: $p^2 + q^2 = pq$.
12. Find the particular integral of $(D^2 - DD')z = e^y$

PART - B (5 X 12 = 60 MARKS)

Answer Any FIVE Questions

13.a Change the order of integration $\int_0^1 \int_{x^2}^{2-x} xy\, dy\, dx$ and hence evaluate. (12)

(OR)

13b Evaluate $\int_0^\infty \int_0^\infty e^{-(x^2+y^2)} dxdy$ in polar coordinates and then evaluate it. (12)

14.a Evaluate $\int\int\int \frac{1}{(1+x+y+z)^3}\, dx\, dy\, dz$ taken over the volume bounded by the planes $x = 0, y = 0, z = 0$ and $x + y + z = 1$ (12)

(OR)

14.b Using Beta and Gamma integrals to evaluate $\int\int \sqrt{xy}\, dxdy$ over the region bounded by the lines $x = 0, y = 0$ and $x + y = 1$. (12)

15.a Verify Green's theorem for $\int_C (xy + y^2)dx + x^2 dy$ where C is the boundary of the region defined by $x = y$ & $y = x^2$. (12)

(OR)

15 b Verify Gauss Divergence theorem for $\vec{F} = (x^2 - yz)\vec{i} + (y^2 - xz)\vec{j} + (z^2 - xy)\vec{k}$ taken over the rectangular parallelepiped $x = 0, x = a, y = 0, y = a, z = 0$ and $z = a$. (12)

16.a Prove that the function $u = 3x^2y + x^2 - y^3 - y^2$is harmonic. Also find the imaginary part v and express $u + iv$ as an analytic function f(z). (12)

(OR)

16b (i) Find the image of the circle $|z + 1| = 1$ under the bilinear mapping $w = \frac{1}{z}$. (6)

(ii) Find the bilinear transformation which maps $1, i, -1$ of the z-plane in to $i, 0, -1$ of the w-plane. (6)

17.a (i) Evaluate $\int_C \frac{\cos \pi z^2 + \sin \pi z^2}{(z+1)(z+2)} dz$ using Cauchy integral formula, where C: $|z| = 3$ (6)

(ii) Using Cauchy residue theorem to evaluate $\int_C \frac{1}{(z-1)(z+2)^2} dz$ where C: $|z| = \frac{3}{2}$ (6)

(OR)

17b Evaluate $\int_0^{2\pi} \frac{1}{2+\cos\theta} d\theta$ using complex integral method. (12)

18.a (i) Solve: $(1 + p^2 + q^2)z^2 = 1$ (6)

(ii) Solve: $(D^2 + 2DD' + D'^2)z = e^{x-2y}$ (6)

(OR)

18b (i) Solve: $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$ (6)

(ii) Solve: $(D^2 + DD' - 20D'^2)z = cos(x+y)$ (6)

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SEMESTER END EXAMINATIONS – AUGUST 2020

Programme & Branch	:	B.Tech & Common to all branches except B.Tech Biotech			
Semester	:	II	Date & Session	:	11/11/2020 FN
Course Code & Name	:	GEB1211 Basic Engineering Mechanics			
Duration	:	2 ½ Hours	Maximum Marks	:	80

Assume any missing data suitably

PART A (10 X 2 = 20 MARKS)

Answer Any TEN Questions

1. State Parallelogram law of forces.
2. How sine formula is used to determine the magnitude of an unknown force?
3. Write the following cross products of unit vector.
   a) i x i b) j x j c) k x k d) i x j
4. For the force vector 10i+15j+30k, determine any two direction cosines.
5. What do you mean by equilibrium of a particle?
6. List the types of supports and the reactions offered by it.
7. Give the centroid of the following sections by assuming suitable dimensions a) Semi circle b) Right angle triangle
8. Where the parallel axis theorem is applied?
9. A block is placed over a horizontal rough surface. It is being pulled by a force P. Show graphically, how the frictional force is varied with the increase in the magnitude of applied force P?
10. What is angle of repose?
11. State De Alembert's principle.
12. Differentiate between kinetics and kinematics.

PART B (5 X 12 = 60 MARKS)

Answer Any FIVE Questions

13.a (i) Two forces P and Q are applied at point 'A' of hook support as shown in figure 1. Knowing that P=75 N and Q=125 N, determine the magnitude and direction of the resultant. **(06)**

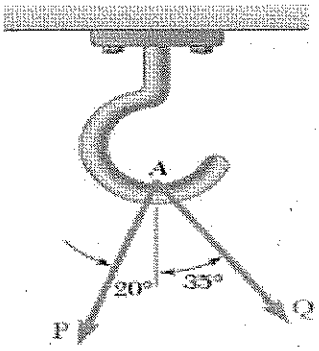

Figure 1

(ii) Two cables are tied together and are loaded as shown in figure 2. Determine the tension in cable AC and in BC. **(06)**

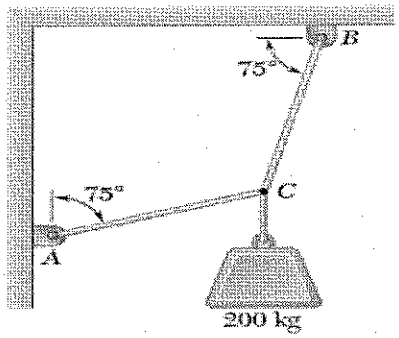

Figure 2

(OR)

b Determine the maximum mass of the lamp supported by the cords if the cord AC develops a tension of 400 N as shown in figure 3. **(12)**

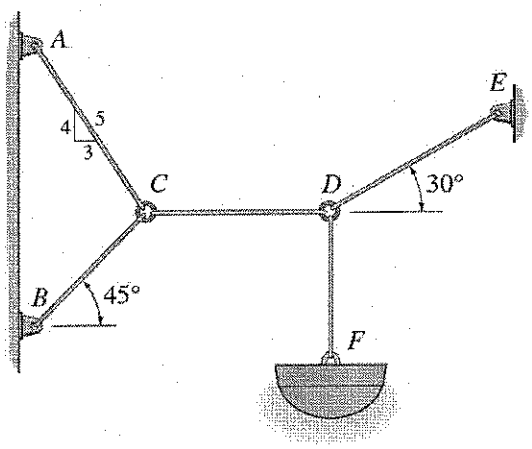

Figure 3

14.a The Lamp has a mass of 15 kg and is supported by a pole AO and cables AB and AC as shown in figure 4. If the force in the pole acts along its axis, determine the forces in AO for equilibrium. **(12)**

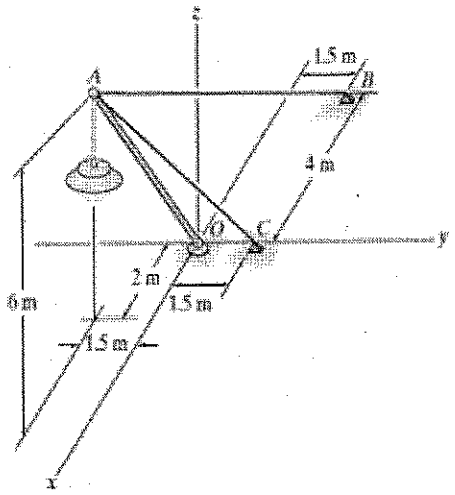

Figure 4

(OR)

b (i) A 200kg cylinder is hung by means of two cables AB and AC that are attached to the top of vertical wall. A horizontal force 'P' perpendicular to the wall holds the cylinder in the position shown in figure 5. Determine the magnitude of 'P'. **(12)**

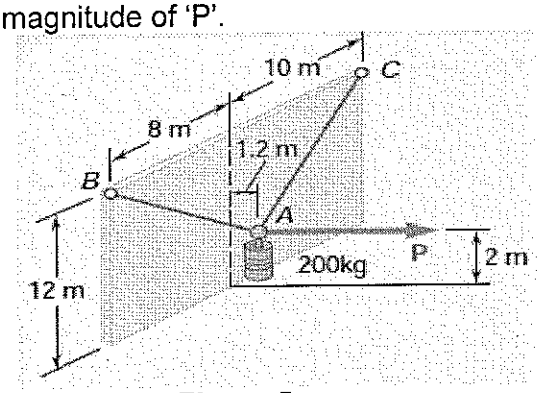

Figure 5

15.a Two crates, each of mass 350 kg, are placed in the bed of a 1400-kg pickup truck as shown in figure 6. Determine the reactions at each of the two (a) rear wheels A, (b) front wheels B. **(12)**

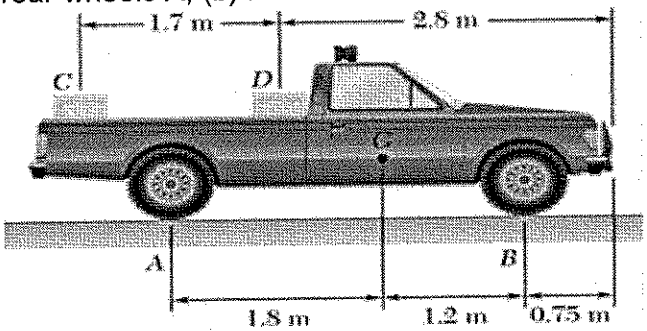

Figure 6

(OR)

b Determine the reactions at support 'A' and 'B' for the beam shown in figure 7. **(12)**

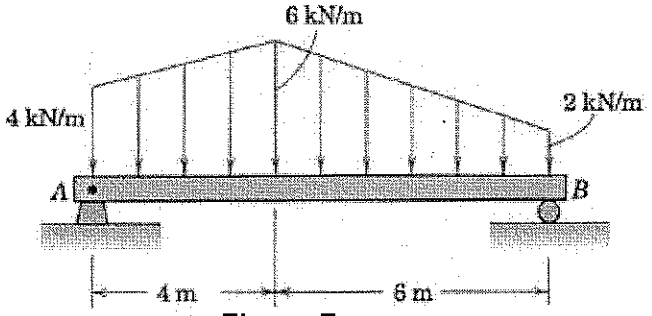

Figure 7

16.a Determine the centroid of the composite section shown in figure 8. **(12)**

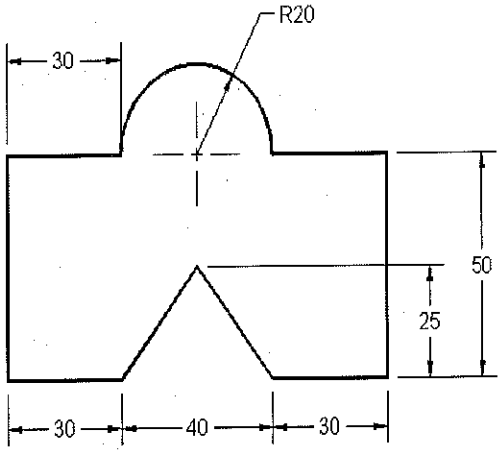

Figure 8

(OR)

b (i) Find the moment of Inertia about the centroidal axes for the section shown in figure 9. **(12)**

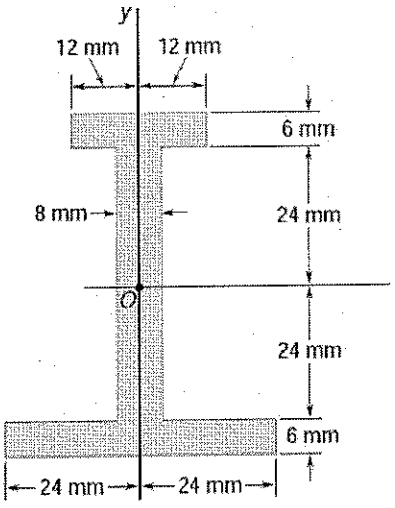

Figure 9

17.a A system consisting of two blocks connected by a cable is as shown in figure 10. The masses of the block A and block B are 7.5 kg and 25 kg respectively. Determine the magnitude of minimum force and its inclination with reference to the horizontal, to be applied on block B. The block have impending motion towards the right. Take the coefficient of friction at all contact surfaces to be 0.28. **(12)**

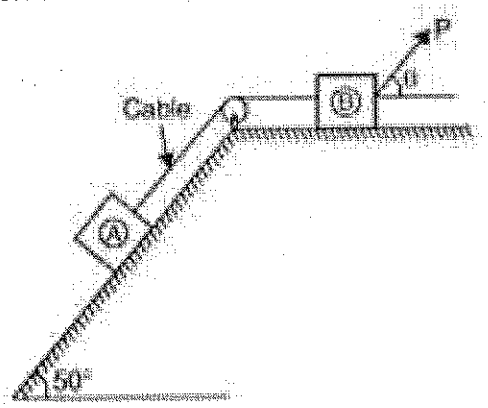

Figure 10

(OR)

b A ladder shown in figure 11 is 4 m long is supported by a horizontal floor and vertical wall. The co-efficient of friction at the wall is 0.3 and at the floor is 0.5. The weight of the ladder is 200 N, considered concentrated at G. The ladder supports a vertical load of 1000 N at C. Determine reactions at A and B, and compute least value of 'α' at which the ladder may be placed without slipping to right. **(12)**

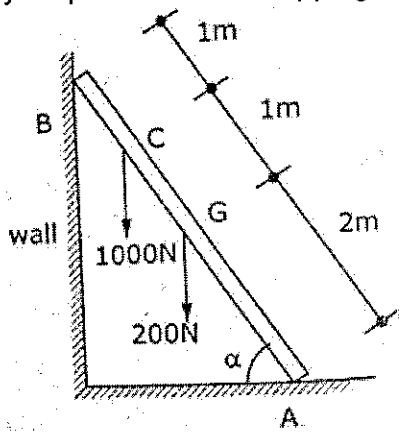

Figure 11

18.a A body weighing 30 kg slides up a 40° inclined plane under the action of an applied force of 500N acting parallel to the plane. The co-efficient of friction is 0.28. If the body moves from rest. Determine Acceleration of the body, Distance travelled in 5 s, Velocity of body after 5 s, Kinetic energy of the body after 5 s, Work done on the body after 5 s, Momentum of the body after 5 s and Impulse applied in 5 s. **(12)**

(OR)

b Determine the tension in the strings and accelerations of two blocks of mass150 kg and 50 kg connected by a string and a frictionless and weightless pulley as shown in figure 12. **(12)**

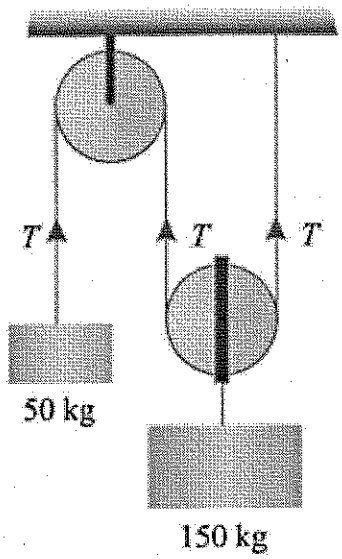

Figure 12

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SEMESTER END EXAMINATIONS, NOVEMBER 2020

Programme & Branch	**: B.Tech (Common Mech, Civil, EEE, E&I, Polymer, Aero and Auto)**		
Semester	**: II**	**Date & Session**	**: 12 .11.20 FN**
Course Code & Name	**: PH 103, Physics-II**		
Duration	**: 3 Hours**	**Maximum Marks**	**: 80**

PART-A (8 x 2 = 16 MARKS)

Answer Any EIGHT Questions

1. Mention any two important assumptions of the classical free electron theory.
2. Copper has electrical conductivity at 300K as 6.4 x 10^7 mho/m. Calculate the thermal conductivity of copper. Lorentz number L = 2.45 x 10^{-8} $W\Omega K^{-2}$.
3. Differentiate between n-type and p-type semiconductors.
4. State Hall Effect.
5. Define the dielectric constant.
6. What are polar molecules? Give examples.
7. Give any two examples of superconducting materials with T_c.
8. What is the Meissner effect?
9. Distinguish between conduction and convection of heat.
10. Define thermal diffusivity.

PART-B (4x 16 = 64 MARKS) - Answer Any FOUR Questions

11. a. (i) State Wiedemann-Franz law. **(2)**

(ii) Derive an expression for the electrical conductivity of metals based on classical free electron theory. Assume the expression for thermal conductivity and derive Wiedemann-Franz law. **(14)**

(OR)

b. (i) Define Fermi energy. **(2)**

(ii) Deduce an expression for density of energy states and hence derive the expression for carrier concentration in metals. **(14)**

12. a. Derive the expressions for electron and hole concentrations of intrinsic semiconductor and hence deduce intrinsic carrier concentration. **(16)**

(OR)

b. (i) Obtain an expression for density of electrons in the conduction band of an n-type extrinsic semiconductor by using the Fermi Dirac distribution function **(10)**

(ii) With a neat diagram, describe an experimental setup to measure the Hall voltage. **(6)**

13. a. (i) What is meant by local field in a dielectric and how is it calculated for a cubic structure? **(12)**

(ii) Deduce the Clausius – Mosotti relation. **(4)**

(OR)

b. (i) Write down various polarization mechanisms. **(2)**

(ii) Derive the expression for electronic and ionic polarizabilities **(14)**

14. a. (i) Explain about the Type I and Type II Superconductors. **(8)**

(ii) Write short notes on Magnetic Levitation and SQUIDS. **(8)**

(OR)

b. (i) Illustrate the preparation and properties of Metallic glasses. **(8)**

(ii) Discuss in detail the characteristics of Shape - memory Alloys (SMA) and its applications. **(8)**

15 a. Explain the theory of the rectilinear flow of heat along with the bar and discuss the special cases. **(16)**

(OR)

b. (i) Derive an expression for the radial flow of heat in the cylindrical tube. **(10)**

(ii) Describe an experiment to determine the thermal conductivity of rubber using radial flow of heat. **(6)**

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SEMESTER END EXAMINATIONS – AUGUST 2020

Programme & Branch : **B. Tech & Common to AERO, EEE, ECE, CSE & IT**
Semester : **II** Date & Session : ~~**20/10/2020 FN**~~ 13/11/2020 FN
Course Code & Name : **PHB 1283 Physics of Engineering Materials**
Duration : **3 Hours** Maximum Marks : 80

ANSWER. Any TEN Questions

PART A (10 X 2 = 20 MARKS)

1. What is meant by electron ballistics?
2. Use Fermi distribution function to obtain the value of F(E) for $E-E_F$ = 0.015 eV at 200 K.
3. Distinguish between elemental and compound semiconductors.
4. Calculate the wavelength of radiation emitted by an LED made up of a semiconducting material with band gap energy 2.8 eV.
5. Define dielectric constant.
6. Calculate the electric polarizability of xenon. The radius of xenon atom is 0.158 nm. (Given $\varepsilon_o = 8.85 \times 10^{-12}$ Fm^{-1})
7. What is meant by Hysteresis?
8. Differentiate soft and hard magnetic materials.
9. What is meant by critical magnetic field?
10. Name any two high temperature superconductors with T_c.
11. What are color centers?
12. List out any four applications of LCD's.

PART B (5 X 12 = 60 MARKS) – Answer Any FIVE Questions

13.a Derive an expression for motion of an electron in a perpendicular electric and magnetic field. **(12)**

(OR)

b (i) List the postulates of classical free electron theory. **(4)**

(ii) Derive an expression for electrical conductivity of metals. Mention the drawbacks of classical free electron theory. **(8)**

14.a	(i)	Distinguish between drift and diffusion current.	(2)
	(ii)	Obtain the expression for Fermi energy and carrier concentration in a p-type semiconductor.	(10)
		(OR)	
b	(i)	Define Hall Effect.	(2)
	(ii)	Explain the theory of Hall effect and hence derive an expression for Hall coefficient.	(10)
15.a		Obtain the expression for internal field in a dielectric material.	(12)
		(OR)	
b		Discuss in detail about the different types of dielectric breakdown mechanisms.	(12)
16.a		Describe in detail about the properties of dia, para, ferro and antiferro magnetic materials.	(12)
		(OR)	
b	(i)	Explain in detail about the properties and applications of Ferrites.	(8)
	(ii)	Write a note on magnetic memory.	(4)
17.a	(i)	Classify the properties of type-I and type-II superconductors.	(4)
	(ii)	Discuss in detail about the different properties of superconducting materials.	(8)
		(OR)	
b		With a proper diagram, describe the working principle of SQUID's and magnetic levitation.	(12)
18.a	(i)	With a neat sketch, explain the preparation method of metallic glasses.	(8)
	(ii)	Explain the properties and applications of metallic glasses.	(8)
		(OR)	
b	(i)	Distinguish between electro optic effect and Faraday effect.	(4)
	(ii)	Explain the synthesis and properties of nanophase materials.	(12)

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MA 102

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SEMESTER END EXAMINATIONS – SEP/OCT 2020

Programme & Branch	:	**B.Tech (Common to all Branches Except CSE&IT)**		
Semester	:	II	Date & Session	: **18/11/2020 FN**
Course Code & Name	:	**MA 102 : Mathematics - II**		
Duration	:	2 ½ Hours	Maximum Marks	: **80**

PART A (8 X 2 = 16 MARKS)
Answer Any EIGHT Questions

1. Find the limits of a region which is bounded by the curves $y = x^2$ and $x = \frac{y}{2}$.
2. What is the value of $\int_0^1 \int_0^x \int_0^{\sqrt{x+y}} z\,dz\,dy\,dx$?
3. If $\vec{F} = curl\,\vec{A}$, then prove that $\iint \vec{F}.d\vec{s} = 0$.
4. State the Stoke's Theorem.
5. Is $f(z) = z^3$ analytic? Justify your answer.
6. Find the critical points of $w = z^2$.
7. Find the singularities of $f(z) = \frac{1}{1-e^z}$.
8. Obtain the residues of the function $f(z) = \frac{z+1}{z^2-2z}$ at its poles.
9. Find the Laplace transform of $\sinh at$.
10. Verify the initial value theorem of Laplace transforms if $f(t) = 2e^{-3t}$.

PART B (4 X 16 = 64 MARKS)

Answer Any FOUR Questions

11.A i) Change the order of integration and hence evaluate $\int_0^1 \int_x^1 \frac{x}{x^2+y^2}\,dx\,dy.$ (8)

ii) Use double integration to prove the area of a circle $x^2+y^2=4$ is $4\pi.$ (8)

(OR)

B i) Evaluate $\int_0^{2\pi} \int_0^{\pi} \int_0^{a} r^4 \sin\varphi \; dr\,d\varphi\,d\theta.$ (6)

ii) Express the region $x \geq 0,\ y \geq 0,\ z \geq 0$ & $x^2+y^2+z^2 \leq 1$ by triple integration. (10)

12. A State the Green's theorem and verify if $\int_C (3x^2-8y^2)dx+(4y-6xy)dy$ (16)

where C is the boundary of the region defined by $x=y^2,\ y=x^2.$

(OR)

B Verify Gauss Divergence theorem for $\vec{F}=(2x-z)\hat{i}+x^2y\,\hat{j}-xz^2\,\hat{k}$ over (16)

the cube bounded by $x=0, x=1;\ y=0, y=1$ & $z=0, z=1.$

13.A i) Show that $u=x^3-3xy^2+3x^2-3y^2+1$ is harmonic. (6)

ii) An electrostatic field in the xy-plane is given by the potential function (10)

$\varphi=3x^2y-y^3,$ find the steam function.

(OR)

B i) For what values of $a,\ b,\ c$ the function $F(z)=x-2ay+i(bx-cy)$ is (4)

analytic.

ii) Find the bilinear transformation which maps $1,\ i,\ -1$ of the Z–plane into (12)

$i,\ 0,\ -i$ of the W–plane. What are the invariant points of this transformation?

14. A i) Find the Laurent's series expansion of the function $F(z)=\dfrac{z^2-1}{(z+2)(z+3)}$ if $|z|<1$. (7)

ii) State Cauchy Residue Theorem and hence evaluate $\int_C \dfrac{\cos \pi z^2 + \sin \pi z^2}{(z-1)(z-2)} dz$, where C is the circle $|z|=3$. (9)

(OR)

B What is the contour integration? Use the complex integral methods to evaluate the real integral $\int_{-\infty}^{\infty} \dfrac{\cos x}{(x^2+a^2)(x^2+b^2)} dx$. (16)

15. A i) Find the Laplace transform of $te^{-2t}\sinh 3t$. (8)

ii) Find the inverse Laplace transform of the function $\tan^{-1}\left(\dfrac{s+a}{b}\right)$.. (8)

(OR)

B The currents i_1 & i_2 in connected loops satisfy the differential equations $\dfrac{di_2}{dt}-4i_1=e^{-t}$ and $\dfrac{di_1}{dt}+2i_2=0$. Find the currents i_1 & i_2 in terms of t by Laplace transform, if $i_1(0)=0=i_2(0)$. (16)

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ME 105

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SEMESTER END EXAMINATIONS – AUGUST 2020

Programme & Branch	:	B.Tech (Common for Mechanical, Aero & Auto)			
Semester	:	II	Date & Session	:	22/10/2020 FN
Course Code & Name	:	ME 105 & Engineering Design Concepts			
Duration	:	2 ½ Hours	Maximum Marks	:	80

PART A (16 X 1 = 16 MARKS)
Answer Any SIXTEEN Questions

1. The key to success in new product design is

   a. Innovation
   b. Modern tools
   c. Systems approach
   d. All the above

2. A predetermined sequence of operations leading to realizing a product is called

   a. Process
   b. Product development
   c. Product realization
   d. None of the above

3. Which of the following is correct order of product life cycle strategy

   a. Introduction, decline, maturity, growth
   b. Introduction, growth, decline, maturity
   c. Introduction, growth, maturity, decline
   d. Introduction, maturity, decline, growth

4. SOP stands for

   a. Subtract and operating process
   b. Subtract and operating plan
   c. Subtracting and operating procedure
   d. Subtract and operating of product

5. The main design requirement for rice cooker design is

a. Withstanding high temperature
c. Containing steam
b. Withstanding pressure
d. All the above

6. Customer satisfaction analyses can be done using
a. Maslow's chart
c. KANO chart
b. NANO chart
d. Performance chart

7. Sub-function is a component of
a. Single product
c. Product function
b. Assembled product
d. Product mechanism

8. Factor of safety of a product is always
a. Unity
c. Less than one
b. Greater than one
d. Infinity

9. Abstraction is a process of
a. Ignoring particular and incidental
b. Ignoring general and incidental
c. Ignoring general and essential
d. Ignoring particular and essential

10. Identify the material that can be used to make the body of electrical switch
a. Copper
c. Steel
b. PVC
d. Bakelite

11. Identify the material for wind turbine blade
a. Aluminum
b. Cast iron
b. Stainless steel
d. Fiber reinforced composite

12. Heart of bench marking process is
a. Information search
c. Plot of industry trend
b. Teardown process
d. All the above

13. The failure for tensile load is identified by
a. Ductile fracture
c. Brittle fracture

b. Cup and cone fracture d. None of the above

14. One of the Sources of information for concept development is
a. Market relation c. Economic analysis
b. Patent d. None of the above

15. In brainstorming session secretary will
a. Record all ideas c. Gives solution to the problem
b. Contributing idea d. Gives instant result of idea

16. 6-3-5 means
a. 6people, 3min, 5ideas c. 6min, 3ideas, 5people
b. 6ideas, 3people, 5min d. 6people, 3ideas,5min

17. Human comfort are satisfied by
a. Ergonomic design c. Embodiment design
b. Aesthetic design d. Design for strength

18. In fit & tolerance, lower case letters and number is described for
a. Hole c. Shaft
b. Bush d. Housing

19. Decision matrix technique is used in
a. Concept generation c. Concept selection
b. Concept testing d. Concept calculation

20. The customer requirements planning matrix is also known as
a. House of quality c. Quality function matrix
b. Customer desired flow d. Beta testing

PART B (4 X 16 = 64 MARKS)

Answer Any FOUR Questions

21.a Discuss the role and functioning of pawl and ratchet mechanism used in hoisting equipments. **(16)**

(OR)

b Discuss the basic approach in product design with a suitable example. **(16)**

22.a (i) What is Maslow's Hierarchy of need? **(8)**

(ii) Describe about Functional decomposition with an example. **(8)**

(OR)

b (i) What is voice of the customer? **(4)**

(ii) Briefly explain any two methods to collecting the voice of customer. **(12)**

23.a Perform FAST for a Emergency light. **(16)**

(OR)

b	Explain the different flows taking place in the functioning of fingernail clipper.	(16)
24.a	Explain the portfolio architecture with suitable example.	(16)

(OR)

b	Develop a concept of a product to store the solar energy.	(16)
25.a	Explain the concept of Hole based system in Fits and Tolerances with a suitable example.	(16)

(OR)

b	Explain any two methods of concept evaluation process in detail.	(16)

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MA 103

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SEMESTER END EXAMINATIONS – SEP/OCT 2020

Programme & Branch	:	B.Tech (Common to CSE & IT)			
Semester	:	II	Date & Session	:	06/11/2020 FN
Course Code & Name	:	MA 103 : Mathematics - II			
Duration	:	2 ½ Hours	Maximum Marks	:	80

PART A (8 X 2 = 16 MARKS)

Answer Any EIGHT Questions

1. If R is an integral region bounded by $x^2+y^2=4$ and $x+y=2$, then what are the limits of an integration $\iint_R f(x,y)\,dxdy$.

2. Evaluate $\int_0^1 \int_0^1 \int_0^1 e^{x+y+z}\,dz\,dy\,dx$.

3. If $\vec{F} = curl\,\vec{A}$, then prove that $\iint \vec{F}.d\vec{s} = 0$.

4. Find the area of a circle $x^2+y^2=a^2$ using Green's theorem.

5. Find critical points of $w = z + \frac{1}{z}$.

6. Find the fixed points of the bilinear transformation $w = \frac{z-i}{iz+1}$.

7. What are the fundamental factors for analyzing an algorithm?

8. What are recursive and non-recursive algorithms?

9. State the conditions for existence of the Laplace Transformation.

10. If $f(t)=\cosh at$, then find $L\{e^{-t}f(t)\}$.

PART B (4 X 16 = 64 MARKS)

Answer Any FOUR Questions

11.A i) Evaluate $\int_0^{\pi} \int_0^{a(1+\cos\theta)} r^2 \cos\theta \, dr \, d\theta.$ (7)

ii) Change the order of integration and hence evaluate $\int_0^{\infty} \int_x^{\infty} \frac{e^{-y}}{y} \, dy \, dx.$ (9)

(OR)

B i) Evaluate $\int_0^{2\pi} \int_0^{\pi} \int_0^{a} r^4 \sin\varphi \; dr \, d\varphi \, d\theta.$ (6)

ii) Express the region $x \geq 0,\ y \geq 0,\ z \geq 0$ & $x^2 + y^2 + z^2 \leq 1$ by triple integration. (10)

12. A Verify Green's theorem in a plane with respect to $\int_C (3x^2 - 8y^2)dx + (4y - 6xy)dy$ where C is the boundary of the region defined by the lines $x = 0,\ y = 0$ & $x + y = 1.$ (16)

(OR)

B Verify Gauss Divergence theorem for $\vec{F} = (2x - z)\hat{i} + x^2 y\,\hat{j} - xz^2\,\hat{k}$ over the cube bounded by $x = 0, x = 1;\ y = 0, y = 1$ & $z = 0, z = 1.$ (16)

13.A i) Show that the function $u(x, y) = 3x^2 y - y^3$ is harmonic. (4)

ii) An electrostatic field in the XY-plane is given by the potential function $\phi = 3x^2 y + 2x^2 - y^3 - 2y^2$, find the steam function. (12)

(OR)

B i) For what values of a, b, c the function $F(z) = x + ay - i(bx + cy)$ is analytic. (4)

ii) Find the bilinear transformation which maps $\infty,\ 1,\ -1$ of the Z–plane into $1,\ -1,\ 0$ of the W–plane. What are the invariant points of this transformation? (12)

14. A i) Give brief notes on fundamental factors for analyzing an algorithm. (6)

ii) Explain the mathematical background to analyze an algorithm with two examples. (10)

(OR)

B Given two algorithms, how do you find the efficiency of each? Justify your answer with a suitable example. (16)

15. A i) Find the Laplace transform of $\frac{2(\sin 2t)(\sin t)}{t}$. (8)

ii) Find the inverse Laplace transform of the function $\log\left(1+\frac{a^2}{s^2}\right)$. (8)

(OR)

B Using Laplace transform solve the simultaneous equations (16)

$\frac{dy}{dt}+2x=\sin 2t$, $\frac{dx}{dt}-2y=\cos 2t$, where $x(0)=1$ & $y(0)=0$.

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MA 201

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SEMESTER END EXAMINATIONS – OCT 2020

Programme& Branch : **B.Tech – Common to ALL Branches**

Semester : **III** **Date** : **31/10/2020 FN**

Course Code & Name : **MA 201 – Mathematics III**

Duration : **2 ½ Hours** **Maximum Marks** : **80**

PART A (8 X 2 = 16 MARKS)

Answer Any EIGHT Questions

1 Form the PDE by eliminating the arbitrary function from $z = f(x^3 + y^3)$.

2 Solve $(D^3 + D^2D' - DD'^2 - D'^3)z = 0$.

3 Find the half range sine series for f(x) = x in $(0,l)$.

4 Obtain the R.M.S value for the function f(x)= x in $(0,\pi)$

5 Classify the PDE $4U_{xx}+4U_{xy} + U_{yy} + 2U_x - U_y = 0$.

6 A rod 60cm long with insulated sides has its ends A and B kept at 20° C and 80° C respectively. Find the steady state temperature distribution of the rod.

7 If F(s) is the Fourier Transform of f(x), write the formula for the Fourier transform of $f(x)\cos(ax)$ in terms of F(s).

8 Find the cosine transform of e^{-2x}.

9 Find Z[1].

10 Find the difference equation generated by $y_n = a + b3^n$.

PART B (4 X 16 = 64 MARKS)

Answer Any FOUR Questions

11. a (i) Form the PDE by eliminating the arbitrary functions f and g from $z = x^2 f(y) + y^2 g(x)$. **(8)**

(ii) Solve $z = px + qy + \sqrt{p^2 + q^2 + 16}$ **(8)**

(OR)

b (i) Solve $x(y-z)p + y(z-x)q = z(x-y)$ **(8)**

(ii) Solve $(D^2 + DD' - 6D'^2)z = y\cos x$. **(8)**

12. a Find the Fourier series expansion of $f(x) = \begin{cases} 1 + \frac{2x}{\pi}, & -\pi < x < 0 \\ 1 - \frac{2x}{\pi}, & 0 < x < \pi \end{cases}$ **(16)**

(OR)

b Find the first three harmonic of function f(x) of period 2π defined by means of the following table **(16)**

x	0	$\frac{\pi}{3}$	$\frac{2\pi}{3}$	π	$\frac{4\pi}{3}$	$\frac{5\pi}{3}$	2π
y	1	1.4	1.9	1.7	1.5	1.2	1

13. a A tightly stretched string of length $2l$ has its end fastened at x = 0 and x = $2l$, the midpoint of the string is then taken to a height 'h' and then released from rest in the position. Obtain an expression for the displacement of the string at any subsequent time. **(16)**

(OR)

b A rod of length 30cm has its ends A and B kept at temperatures 20^0 and 80^0 respectively, until steady state conditions prevails. If the temperature at each end is then suddenly reduced to 0^0 and maintained so, find the temperature distribution at a distance from A at time 't'. **(16)**

14. a Find the Fourier Transform of $(x) = \begin{cases} 1-x^2, & |x| \le 1 \\ 0 & , |x| > 1 \end{cases}$. Hence evaluate $\int_0^\infty \frac{\sin t - t\cos t}{t^3}\, dt$. **(16)**

(OR)

b Find the Fourier sine and cosine transform of e^{-ax} and hence evaluate $\int_0^\infty \frac{1}{(a^2+x^2)^2}\, dx$ and $\int_0^\infty \frac{x^2}{(a^2+x^2)^2}\, dx$ using Parseval's identity. **(16)**

15. a Find the inverse Z-transform of $\frac{z^3}{(z-3)(z+2)^2}$. **(16)**

(OR)

b Solve the difference equation using Z–transform $y_{n+2} + 2y_{n+1} + y_n = 2^n$ given that $y_0 = 0, y_1 = 0$. **(16)**

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SEMESTER END EXAMINATIONS – AUGUST 2020

Programme & Branch	:	B. Tech (Common to all Branches except Biotechnology)			
Semester	:	III	Date & Session	:	~~12/10/2020~~ AN 05/11/2020 AN
Course Code & Name	:	MAB2181 Transforms and Applications			
Duration	:	2 ½ Hours	Maximum Marks	:	80

PART A (10 X 2 = 20 MARKS)

Answer Any TEN Questions

1. Find $L[e^t \sin 3t]$.
2. State the convolution theorem for Laplace transforms.
3. Obtain the R.M.S value for $f(x) = x \; in \; (-l, l)$.
4. Write two significances of Fourier series.
5. Classify the partial differential equation
   $4U_{xx}+4U_{xy} + U_{yy} + 2U_x - U_y = 0$.
6. A rod 10cm long with insulated sides has its ends A and B kept at 40°C and 80°C respectively. Find the steady state temperature distribution of the rod.
7. Find the cosine transform of e^{-x}.
8. Find the Fourier transform of the function defined by
   $$f(x) = \begin{cases} 0, & x < a \\ k, & a < x < b \\ 0, & x > b. \end{cases}$$
9. Find $Z[n2^n]$.
10. Find $Z(1)$.
11. When the function is said to be even and odd function.
12. Find $L[e^{at} - \cos bt]$.

PART B (5 X 12 = 60 MARKS)

Answer Any FIVE Questions

13.a (i) Find $L[2+\sin 3t+t^2]$ **(6)**

(ii) Find $L[t\cos 2t]$ **(6)**

(OR)

b Find the Inverse Laplace transform using Partial Fraction **(12)**

$$\frac{1}{(z+1)(z-2)(z-4)}$$

14.a Find the Fourier series of $f(x) = x$ in the interval $(0, 2\pi)$. **(12)**

(OR)

b Compute first two harmonics of the Fourier series of f(x) given by the following table. **(12)**

x	0	$\pi/3$	$2\pi/3$	π	$4\pi/3$	$5\pi/3$	2π
y	0.8	0.6	0.4	0.7	0.9	1.1	0.8

15.a A string of length 'l' is fixed at both ends $x = 0$ and $x = l$. It starts vibrating from the position $y = kx(l-x)$ at $t = 0$ while the initial velocity is zero. Find the displacement function at any time t and at distance 'x'. **(12)**

(OR)

b A rod of length $30cm$ has its ends A and B kept at temperatures 20^0 and 80^0 respectively, until steady state condition prevails. If the temperature at each end is then suddenly reduced to 0^0 and maintained so, find the temperature distribution at a distance 'x' from A at time 't'. **(12)**

16.a Find the Fourier Transform of $f(x) = \begin{cases} 1, & |x| < 1 \\ 0, & |x| > 1 \end{cases}$ **(12)**

and hence evaluate $\int_0^\infty \frac{\sin x}{x}\,dx$ and $\int_0^\infty \left(\frac{\sin x}{x}\right)^2 dx$

(OR)

b Find the Fourier Transform of $f(x) = \begin{cases} a - x^2, & |x| \le a \\ 0, & |x| > a \end{cases}$. (12)

Hence evaluate $\int_0^\infty \frac{\sin t - t\cos t}{t^3}\, dt$ and $\int_0^\infty \left\{\frac{\sin t - t\cos t}{t^3}\right\}^2 dx$.

17.a Using convolution theorem find inverse Z-transform of $\frac{6z^2}{(2z-1)(3z+1)}$ (12)

(OR)

b Find the inverse Z - transforms of $\frac{z^2 + 2z}{(z+3)(z-4)}$. (12)

18.a Solve $y'' + 4y' + 4y = e^{-t}, y(0) = 0$ and $y'(0) = 0$ using Laplace transform. (12)

(OR)

b Solve the difference equation using Z–transform $y_{n+2} + 4y_{n+1} + 3y_n = 2^n$ given that $y_0 = 0$, $y_1 = 1$. (12)

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SEMESTER END EXAMINATIONS – AUGUST 2020

Programme & Branch : B.Tech (Common to Civil, Mech, Auto, Aero, EIE & Poly)
Semester : IV Date & Session : ~~13/10/2020 AN~~ 06/11/2020 AN
Course Code & Name : MAB 2283 – APPLIED NUMERICAL METHODS
Duration : 2 ½ Hours Maximum Marks : 80

PART A (10 X 2 = 20 MARKS)
Answer Any TEN Questions

1. Find the positive interval where the root lies for $x^3-3x^2+2.5=0$.
2. Solve by Gauss elimination the equations $x+y=2$; $2x+3y=5$.
3. Form the difference table for the following:

x	4	7	10	13
$f(x)$	-1	0	3	1

4. Take h to be the interval of differencing, find $\Delta^2(e^x)$.
5. What is the restriction on the number of intervals while using Simpson's 3/8 rule.
6. Find $\frac{dy}{dx}$ at $x=1$, if the function $y=f(x)$ is defined in tabular form as

x	0	1	3
y	1	-2	4

7. If $\frac{dy}{dx}=1-y,\ y(0)=0$ find $y(0.1)$ by Euler's method.
8. State the single step and multi step methods.
9. How many prior values are required to predict the next value in Milne's method?
10. Obtain the finite difference approximation of $\left(\frac{d^2y}{dx^2}\right)_{x=x_i}$.
11. Derive the boundary values of $u_t=u_{xx}$ subject to the conditions $u(x,0)=\sin(\pi x),\quad 0\le x\le 1,\quad 0\le t\le 3, u(0,t)=0=u(1,t),$ by taking $h=0.25$ and $k=1$.
12. Classify the partial differential equation $f_{xx}+2f_{xy}+f_{yy}=0$.

PART B (5 X 12 = 60 MARKS)
Answer Any FIVE Questions

13.a Solve by Gauss-Seidel method the equations (12)

$$28x + 4y - z = 32,\ x + 3y + 10z = 24,\ 2x + 17y + 4z = 35.$$

(OR)

b Set up a Newton Raphson's Iteration for computing the square root of a given positive number N and apply it to $N=11$. (12)

14.a From a set of experiments the values in the following Table have been obtained relating the volume (y) of a gas, to pressure (x). Determine from this data volumes of the gas at **1.75** pressures. (12)

x	0.5	1.0	1.5	2.0	2.5	3.0
y	1.62	1.00	0.75	0.62	0.52	0.46

(OR)

b (i) Using Newton's backward difference formula to find the annual premium at the age of **30** from the following table. (6)

Age	21	25	29	33
Premium	14.29	15.81	17.72	19.96

(ii) Use Lagrange's formula, fit a polynomial to the following data, (6)

x	0	1	2	4
$f(x)$	-12	0	6	12

15.a (i) Evaluate $\int_0^2 \frac{dx}{1+x^3}\,dx$, taking $h = 0.5$ by Trapezoidal rule. (6)

(ii) The following data gives the velocity of a particle for **20** seconds at an interval of **5** seconds. Find the initial acceleration using the entire data. (6)

Time (sec)	0	5	10	15	20
Velocity (m/sec)	0	3	14	69	228

(OR)

b Evaluate $\int_1^2 \int_3^4 \frac{1}{(x+y)^2}\,dx\,dy$, taking $h = 0.5$ and $k = 0.5$ by Simpson's rule. (12)

16.a Find $y(0.1)$ and $y(0.2)$ given $\frac{dy}{dx} = x^2 y - 1,\ y(0) = 1,$ using Taylor's series method. (12)

(OR)

b Given $\frac{dy}{dx} = \frac{y-x}{y+x},\ y(0) = 1$ compute $y(0.1)$ and $y(0.2)$ using the 4th order Runge-Kutta method. (12)

17.a Given that $\frac{dy}{dx} = \frac{1}{2}(1+x^2)y^2,\quad y(0) = 1,\quad y(0.1) = 1.06,\quad y(0.2) = 1.12,\quad y(0.3) = 1.21.$ Find $y(0.4)$ and $y(0.5)$ using Milne's method. (12)

(OR)

b Given that $\frac{dy}{dx} = x^2(1+y),\quad y(1) = 1,\quad y(1.1) = 1.233,\quad y(1.2) = 1.548,\quad y(1.3) = 1.979,$ evaluate $y(1.4)$ by using Adam Bashforth method. (12)

18.a Find the solution of the parabolic equation $u_{xx} = u_t$, when $u(0,t) = 0,\ u(1,t) = 0,\ u(x,0) = \sin \pi x$ in the range $0 < x < 1,$ taking $h = 0.25$ and $k = 1$. (12)

(OR)

b Use Liebmann's iteration method to solve the Laplace equation $u_{xx} + u_{yy} = 0$ in $0 \le x \le 4$ and $0 \le y \le 4.$. Given the boundary conditions as $u(0,y) = 0,\ u(4,y) = 12 + y,\ u(x,0) = 3x,$ and $u(x,4) = x^2.$ (12)

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<MSB4181>

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SEMESTER END EXAMINATIONS- AUGUST 2020

Programme& Branch	:	B.TECH – Auto, Mech, Civil, Aero, Polymer, EEE, ECE, EIE, CSE, IT			
Semester	:	V / VI	Date & Session	:	~~07/11/2020 FN~~ 2/11/2020 AN
Course Code & Name	:	MSB4181 LEADERSHIP AND CEO TRAINING			
Duration	:	2 ½ Hours	Maximum Marks	:	80

PART A (8 X 2 = 16 MARKS)

Answer Any EIGHT Questions

1. Define Leadership
2. Write about the trait realistic optimism of CEO
3. What do you mean by empowerment?
4. Give out two characteristics of an innovative leader
5. What are the traits of ethical leader?
6. What is meant by values and ethics in leadership?
7. Why presentation skills are important for an leader?
8. Brief verbal and non-verbal communication in leadership
9. What are the benefits of autocratic leadership?
10. What are the traits of participative leadership?

PART B (4 X 16 = 64 MARKS)

Answer Any FOUR Questions

All question carry equal marks

11.a (i) Explain the components of Leadership

(ii) Explain Trait theory and Style theory of leadership

(OR)

b (i) What are the different traits and characteristics of leadership? Explain any four of it.

(ii) Explain Transformational and Transactional leadership theories

12.a (i) Why Gandhiji is called a visionary style leader while Dhoni is called a coaching style leader?

(ii) Explain leadership communication. Being a leader how do you communicate during crisis?

(OR)

b (i) What would you like to be? A leader or a manager? Justify your answer

(ii) A leader should be a good negotiator – why?

13.a (i) Explain in detail the different roles played by an leader.

(ii) What are the skills required for effective leadership?

(OR)

b (i) Discuss the various traits required to be a CEO.

(ii) List out the challenges in leadership and give out measures to overcome it

14.a (i) What is bad leadership? Explain its symptoms, causes and impact

(ii) How a leader does transform an organization?

(OR)

b (i) Explain the role played by leaders as shaper and enabler in an organization

(ii) Explain leadership member exchange (LMX) theory

15.a (i) Explain Blue Ocean Leadership theory and its four pillars

(ii) Explain the steps in creating Blue Ocean Leadership theory and its importance

(OR)

b (i) What are the traits of successful CEO

(ii) Explain in detail 'the path to CEO'

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MSB 3181

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SEMESTER END EXAMINATIONS AUGUST 2020

Programme and Branch	:	**B.Tech (Common to all branches)**			29/10/2020 AN
Semester	:	**VI**	**Date and Session**	:	~~**20.10.2020/FN**~~
Course Code and Name	:	**MSB 3181 and Management of Business Organization**			
Duration	:	**2.5 Hours**	**Maximum Marks**	:	**80**

PART- A (8 X 2 = 16 MARKS)

Answer any eight questions

1. Define Management.
2. What do you mean by span of management?
3. Briefly explain Six Sigma.
4. Why is material planning important?
5. Mention the different types of stores.
6. Define Human Resource Management.
7. What is the purpose of performance appraisal?
8. Define Marketing.
9. Mention any four sales promotional tools.
10. Define Opportunity Cost.

PART- B (4 X 16 = 64 MARKS)

11. a. (i) Discuss in detail the functions of management.

(OR)

b. (i) Discuss in detail the different types of production.

12. a. (i) Explain the various types of inventory in an organization.

(OR)

b. (i) Enumerate the factors based on which you will select a location to establish a manufacturing facility.

13. a. (i) Elaborate the different types of costs incurred in an organization.

(OR)

b. (i) Explain the pricing strategies giving suitable example for each.

14. a. (i) Explain the different types of training and development methods in an organization.

(OR)

b. (i) Explain Break-even analysis with a neat diagram. What are its assumptions and uses?

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MSB 4182

RRN												

SEMESTER END EXAMINATIONS - ARREAR/REDO – (AUGUST 2020

Programme & Branch	:	B.Tech (Common to all Branches)			
Semester	:	VII	Date & Session	:	~~10.11.2020 AN~~ 4/11/2020 AN
Course Code & Name	:	MSB 4182- Social Entrepreneurship			
Duration	:	2 1/2 Hours	Maximum Marks	:	80

PART A (12 X 2 = 20 MARKS)
Answer Any TEN Questions

1. Are social entrepreneurs really extraordinary individuals? Justify.
2. Differentiate Causation and Effectuation.
3. If you create a food product for babies allergic to nuts, it is an example of which marketing strategy? Define.
4. What is segmentation?
5. Differentiate between solution demo and prototype.
6. What is the difference between Startup cost and Fixed cost in an entrepreneurial venture?
7. As an entrepreneur, which of the hiring best practices should you follow?
8. What do you mean by Unique Value Proposition?
9. Mention four steps to build a great company.
10. Identify the market type for the following:
    (i) Red Bus (ii) Uber (iii) Swiggy (iv)PizzaHut
11. Differentiate Blue Ocean and Red Ocean strategy.
12. Mention any four important characteristics of a leader.

PART B (5 X 12 = 60 MARKS)

Answer Any FIVE Questions

13.a (i) What is flow? How to achieve flow? **(6)**

(ii) Writer might experience their flow while working on a novel or a graphic designer might achieve flow while working on a website **(6)**

illustration. State and justify the above statements related to flow in workplace scenario.

(OR)

b (i) Kannan is planning to launch his own gaming company. For that, he first takes stock of his means and finds out exactly how much he can invest in his venture. He then goes for an in-depth risk analysis to ensure that he gets no unpleasant surprises when he eventually launches his venture. This action of Kannan's contradicts which effectuation principle used by several successful entrepreneurs? Discuss. **(06)**

(ii) Amudha runs a catering service from home, which is doing well. She now wants to expand her business and rents space in an office neighborhood. Since she cannot afford the rent, she goes looking out for external funding. Which principle of Effectuation is Amudha neglecting here? Discuss. **(06)**

14.a Answer the following: **(12)**

A. State Value Proposition Design.

B. The customer segment consists of people who are looking for a taxi in Manila, Philippines. These customers want to call a taxi, give directions, and pay. These customers get annoyed by the unpunctuality and overcharging before, during, or after getting the job done. These customers want fair price, punctuality, and professionalism as the outcomes and benefits of a taxi ride. To meet the demand of this customer segment, a Startup decides to start a "Call a taxi" service.

i. Design the Value Proposition Canvas (VPC) for the above mentioned scenario.

Choose the set/s that correctly define/s the Customer jobs, pains, and gains for this scenario.

(OR)

b (i) List the types of Market and Explain. **(06)**

(ii) Coca-Cola, the most well-known brand in the world, has always exemplified innovative thinking. Their market penetration and sales strategies have been quite unique and awe-inspiring for other budding entrepreneurs. They created a new product by adding some flavoured variants like Cherry-flavoured syrup to resell their product in the market in order to meet customer needs more closely and to outperform market competition. What type of market did Coca-Cola new product enter into? **(06)**

15.a What is Value proposition Canvas (VPC)? With neat illustration, explain VPC. **(12)**

(OR)

b The IPL (Indian Premier League) was launched in 2008 by the BCCI (Board of Control of Cricket in India). Inspired by the English Premier League, the BCCI tapped into the unexploited domestic market of Indian cricket by introducing a new 20-20 format of the game combined with thrilling entertainment. IPL revolutionized the world of Cricket by making the sport take a quantum leap in income generation and popularity, which shook the Cricketing world. It established India in a position of power, calling the shots at the ICC, until then dominated by Australia and England. **(12)**

A. State how Blue Ocean Strategy is adopted in IPL League.

B. Plot IPL strategy canvas with four action framework to redefine the value proposition design.

16.a For any new business, startup cost has to be reduced as much as possible. – Comment on the statement with proper explanations. **(12)**

(OR)

b (i) Explain in detail about various types of leadership styles with their relevant characteristics, benefits and downsides. **(6)**

(ii) Write short notes on job roles and hiring strategy. **(6)**

17.a Why customers buy and won't buy? Explain in detail about customer insights with the following: **(12)**

A. Psychological Biases

B. Switching Costs

C. Customer Acquisition

(OR)

b List any five types of channels available to reach the customers. Also, identify the advantages and drawbacks of them. **(12)**

18.a Explain in detail about phases of design thinking with relevant examples. **(12)**

(OR)

b Sarala, a retired school teacher kept her passion of teaching alive by starting a Coaching centre to teach Maths for students around her locality at a concessional rate. She started with 9 students in the beginning. In order to reach more students, she created a Facebook page with the same name as her venture, "Maths can be fun" and posted details about her classes. Apart from using Facebook as a social media to create awareness and thereby to attract customers, what else can she do to promote her business and increase enrolments? Discuss in detail. **(12)**

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