

BE Polymer Engineering Sample Question Bank

Polymer Material & Compounding

Question Content	Option 1	Option 2	Option 3	Option 4
Usually the polymer resin is mixed with four to ten ingredients during the fabrication to impart useful properties to the finished articles. This is called mix.	TRUE	FALSE		
Plasticizers are used to get the _____ between the polymeric molecules.	Attraction	Freedom of movement	Sigma bond	Cure
_____ provides heat and corrosion resistance to polymers.	asbestos	Calcuim Carbonate	Lubricant	Plasticizers
_____ makes the polymers impermeable to x-rays.	Barium salts	Calcuim Carbonate	Lubricant	Plasticizers
The percentage of the fillers is up to _____ total moulding mixture.	20%	1%	0.50%	0.01%
Which of the following are used as the fillers?	Vegetable oils	Camphor	Ester of stearic acids	Wood flour
Which of the following are not used lubricants?	Oils	Waxes	oleates, stereates and soaps	Calcuim Carbonate
_____ is used to improve the thermal stability during polymerisation.	Accelerators	Colouring materials	Stabilizers	Lubricants
Which of the following is a stabilizer?	lead chromate	Waxes	Calcuim Carbonate	All of these
Fillers are used to reduce the cost of the polymers.	TRUE	FALSE		
Which of the following type of fillers are treated with chemicals to improve its attachment with polymers?	Calcuim Carbonate	Cao	Stearic acid-treated calcium carbonate	All of these
Which of the following additives are used in the least amount with polymer in general?	plasticizers	fillers	lubricants	All of these

Bleeding of an additive into an adjacent material occurs when	the additive has some a degree of solubility in both the polymer and in the adjacent material	the additive is equally soluble in the polymer and also in the adjacent material		
Trichloromethoxysilane is used as	cross-linking agents	stabilizers	Coupling agent	None of these
Azocarbonamides are	extenders	Fillers	Plasticizers	Blowing agent
Scale of scrutiny is defined as	minimum size of regions of segregation that would cause the mixture to be imperfect for intended purpose	minimum size of regions of aggregation that would cause the mixture to be imperfect for intended purpose	None of these	
Distribution of particles over a freshly developed surface is a form of diffusive mixing seen in	tumbler mixer	drum mixers		
Sigma blade mixers are used for	DMC	SMC	None of these	
Cavity mixers give	good mixingbut poor forwarding pumping	poor mixing good forward pumping	None of these	
For distributive mixing, the material should be subjected to high strains that are required in order to increase the interfacial area.	TRUE	FALSE		
Dispersive mixing involves	reduction of agglomerate size of minor constituents to its ultimate particle size	increase of the size of the minor component	None of these	
CRD stands for -----	Chris Rawendaal Dispersive Mixer	Development Mixer	Chain Reconstructing Dispersive Mixer	None of these
Drum tumble blender employs for	Solid solid mixing	Solid liquid mixing	None of these	

Sigma blades rotate at different speeds up to ratio of ---	03:01	01:01	10:01	All of these
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Polymer Nanotechnology

Question Content	Option 1	Option 2	Option 3	Option 4
Richard Feynman is often credited with predicting the potential of nanotechnology. What was the title of his famous speech given on December 29, 1959?	There is a tiny room at the bottom	Things get nanoscopic at the bottom	Bottom? What bottom?	There is plenty of room at the bottom
C60 has lattice structure	BCC	Triclinic	FCC	Monoclinic
Mass spectrum of fullerenes obtained by modified arc-discharge technique shows the most intensive peak with 820 a.u. The cluster / buckyball formed is referred as	C70	C60	C20	C80
Interlayer distance in graphite is Angstroms	2	3.4	4.4	3
..... CNT is more symmetric	Achiral	Chiral	Spherical	None of these
Which of the following represents an arm chair CNT?	(n,m)	(n,n)	(n,0)	(0,m)
Chiral angle is the angle between	Vector a1 and vector a2	Circumferential vector and Translational vector	Translational vector and vector a1	Circumferential vector and vector a1
In case of inert-gas condensation which of the following step does not occur	Atoms lose their energy when boiled off	Atoms collide with the inert gas	Supersaturation of the vapour	Production of uniform sized particles throughout the process
If free-jet expansion method is employed to manufacture 0-D materials, the evaporated atoms form clusters a few nanometers in diameter. This is due to	adiabatic expansion of the gas leading to sudden cooling	evaporated atoms are carried by a low-pressure helium gas stream	direct coupling of the acoustic field with the chemical species	None of these
During sonochemical processing, the ultrasound induces	passivation	propagation	cavitation	polycondensation
In PVD plating, a thin layer of a material, usually a metal,.....	is deposited from a vapor onto the object to be coated	is deposited from a liquid onto the object to be coated	is deposited from a solution onto the object to be coated	is deposited from a solid onto the object to be coated

In CVD processing	reactant liquid mixture is brought into contact with the surfaces to be coated	reactant gas mixture is brought into contact with the surfaces to be coated	reactant liquid is brought into contact with the surfaces to be coated	reactant solution is brought into contact with the surfaces to be coated
A conventional CVD process operates at high temperatures of	100°C or more	300°C or more	400°C or more	800°C or more
Focused ion-beam (FIB) machining offers the greatest resolution, with the ability to make features as small as	5 nm	200 nm	20 nm	10 microns
SEM produces images by scanning the sample with a high-energy beam of	s-block ions	protons	electrons	p-block ions
Which is not a commonly used type of electron source for SEM?	Tungsten filament	Field emission gun	Lanthanum hexaboride crystal	helium
In AFM, image is formed using scanning pattern.	circular	raster	non-linear	normal
AFM uses assembly to interact with the sample.	electron	dropper	piezo-electric	cantilever
The role of shaker piezo in AFM is to	oscillate the probe at fixed set of frequencies	oscillate the probe at a wide range of frequencies	eject the electrons from outer shells	rotate the molecules present at the sample surface
AFM probe material typically consists of	silicon nitride	boron nitride	titanium dioxide	diamond
..... is a fundamental property of AFM probe governing the interaction between the AFM probe tip and the sample surface.	toughness	electric resistance	thermal conductivity	stiffness
Exfoliation is favoured at shear rates.	low	high	moderate	any of these
STM is ----	Scanning Tunneling Microscope	Scanning Electron Microscope	None of these	
Nanotechnology plays by different rules because of larger surface area relative to the volume of nanomaterials	TRUE	FALSE		

Polymer Thermodynamics & Blends

Question Content	Option 1	Option 2	Option 3	Option 4
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Vapour pressure = dew point = bubble point is true for _____	Unary system	Binary system	ternary system	any system
_____ is defined as the point at which the saturated liquid and saturated vapor states are identical.	Critical point	Triple point	melting point	bubble point
_____ is the measure of deviation of the intermolecular potential of the molecule from that of a spherical molecule.	bicentric factor	acentric factor	centric factor	None
A gas mixture that follows _____ law is called an ideal gas solution.	Fourier	Stanton	Amagat	Nusselt
The state at which solid, liquid and vapour coexist is called _____	Critical point	Triple point	melting point	bubble point
A constant volume process is called _____	isochoric	isobaric	isothermal	adiabatic
In a _____ process, heat transfer is zero.	isochoric	isobaric	isothermal	adiabatic
The term 'b' in the van der Waal's equation is called _____	co-volume	co-pressure	co-temperature	co-entropy
Entropy is a _____ property	Reference	Energy	Derived	None
Helmholtz energy represents the _____ work.	Maximum available	Net available	shaft	heat
Gibbs energy represents the _____ work.	Maximum available	Net available	shaft	heat
Clausius Clapeyron equation relates the vapour pressure with _____	temperature	entropy	density	mach number
Fugacity of a component in ideal solution is directly proportional to the mole fraction in solution. This is _____	Raoult's law	Lewis Randall rule	Henry's law	Dalton's law
In an ideal solution, the activity of a component equals its _____	Mole fraction	Fugacity at same temperature and pressure	Partial pressure	None of these
Pick out the wrong statement.	An ideal liquid or solid solution is defined as one in which each component obeys Raoult' law	If Raoult's law is applied to one component of a binary mixture; Henry's law or Raoult's law is applied to the other component also	Henry's law is rigorously correct in the limit of infinite dilution	None of these

LCST is -----	Lower Critical Solution Temperature	Upper Critical Solution Temperature	None of the above	
PVC formulations with heavily plasticizers are known as Flexible Formulations.	True	FALSE		
PVC formulations with elastomers and acrylics blends are known as rigid formulations	True	FALSE		
The Process of modification of the interfacial properties in an immiscible polymer blend, resulting in formation of the interphase and stabilization of the desired morphology, thus leading to the creation of a polymer alloy is called Compatibilization	True	FALSE		

Polymer Blends & Composites

Question Content	Option 1	Option 2	Option 3	Option 4
Plywood is a composite material made using thin sheets of timber. What are the thin sheets called?	Veneers	Verniers	Ventricles	Vernicies
Fiber glass is stronger than steel.	FALSE	True		
Brittle Composite materials means -----	bends easily	breaks if you bend it	Unbreakable	scratches easily
Quasi-isotropic laminate behaves similarly to an ----material	isotropic	non isotropic		
Various fibers used in advanced polymer composites are	Boron	graphite	Kevlar	All of these
Composite is a structural material that consists of ----	reinforcing phase material	matrix	Both reinforcing phase material and matrix	None of these
Wood is naturally found composites	True	FALSE		
Specific Strength is ratio between----	ratio between the strength and the density of the material	Product of the Young's modulus* (E)and the density(ρ) of the material	None of these	
Polyacrylonitrile is the most popular precursor and the process to manufacture graphite fibers	True	FALSE		

Carbon fibers are produced at 2400°F (1316°C), and graphite fibers are typically produced in excess of 3400°F (1900°C).	True	FALSE		
The two main types of aramid fibers are	Kevlar 29	Kevlar 49	All of these	
Disadvantages of Unsaturated polyester include ---	High shrinkage	Brittleness	Low service temperature	All of these
MMCs are	Ceramic matrix composites	Polymer Matrix composites	Metal Matrix composites	
In an Anisotropic material, material properties are different in all directions.	True	FALSE		
The micro morphological character of PP/PE blends can be controlled by	composition	presence of the nucleating agents,	type of compatibilizer	All of these
Compatibilization can also be achieved by	reactive blending	dynamic vulcanization	addition of copolymer	All of these
PVC formulations with elastomers and acrylics blends are known as rigid formulations	True	FALSE		
Miscible polymer blend is associated with a negative value of the free energy and heat of mixing ΔG_m , $\Delta H_m \leq 0$, Second derivative of ΔG_m with composition > 0	True	FALSE		
The Process of modification of the interfacial properties in an immiscible polymer blend, resulting in formation of the interphase and stabilization of the desired morphology, thus leading to the creation of a polymer alloy is called -----	Polymer Blends	Compatibilization	Adhesion	None of these
When the spreading coefficient $S > 0$ results in stabilization of morphology	True	FALSE		
On the basis of Rheological models Immiscible polymer blends are predicted via----	solutions and homologous polymer blends	suspensions, emulsions and block copolymers	All of these	
The viscosity ratio is ----	$\lambda = \text{dispersed phase viscosity} / \text{matrix viscosity}$	$\lambda = \text{matrix viscosity} / \text{dispersed phase viscosity}$	All of these	

The capillarity number is ratio----	shear stress*droplet diameter/ interfacial tension coefficient	droplet diameter/ interfacial tension coefficient	shear stress/ interfacial tension coefficient	All of these
Makroblend is blend of ---	PC/PET	PC/PMMA	PC/ABS	PC/PP
An ideal blend compounder should have: (1) uniform shear and elongational stress field; (2) flexible control of temperature, pressure and residence time; (3) capability for homogenization of liquids having widely different rheological properties; (4) efficient homogenization before onset of degradation; and (5) flexibility for change of mixing parameters in a controllable manner.	True	FALSE		
Maleated Polymers are used as --- in polymer blends	Reactive compatibilizer	Non reactive compatibilizer	None of these	

Polymer Processing Operations

Question Content	Option 1	Option 2	Option 3	Option 4
Jerry cans are made by	injection blow molding	stretch blow molding	thermoforming	injection molding
PET bottles are made using	injection molding	thermoforming	extrusion blow molding	compression molding
Following is the sequence of operations in thermoforming	sheet clamped -- heated---formed -- cooled --removed	sheet heated --- clamped ---formed -- cooled --removed	sheet formed --- clamped --- formed --cooled -- removed	sheet cooled -- heated --formed -- removed
Biaxial rotation of the mold is carried out in	blow molding	rotational molding	extrusion	blow molding
Shuttle machine is a type of	blow molding machine	rotational molding machine	injection molding machine	compression molding machine
Vertical carousel machine is a type of	blow molding machine	rotational molding machine	injection molding machine	compression molding machine
Barbie doll bodies are made by slush molding using	PU	Epoxy resin	Polyester resin	PVC plastisol

Sintex tanks are made by rotational molding using	LDPE	UHMWHDPE	Nylons	LLDPE
Cast Aluminium molds are used for multicavity molds and complex shapes in the following	blow molding machine	rotational molding machine	injection molding machine	compression molding machine
When two melt flow fronts meet it causes a fault called as	warpage	weld lines	bubbles	blisters
In ABS electroplating grade the amount of -----is of critical importance	ethylene content	vinylacetate content	butadiene content	none of the given answers
Hotstamping is a	finishing method	heating method	decorative method	cleaning method
Plastic Shower heads are metalised by	painting	electroplated	vacuum metallising	screen printing

Rubber Technology

Question Content	Option 1	Option 2	Option 3	Option 4
For a material to be a rubber the material should not have one of the following characteristics	low m.w	segmental motion should be possible	should be amorphous	Tg value should be below the room temp
Following rubber shows crystallisation in the stretched state	BR	IIR	NR	Silicone rubber
Controlled degradation of the rubber chains is called	compounding	vulcanisation	mastication	scorch
Compounds which donate sulphur for vulcanisation are called	sulphur donors	non-sulphur vulcanising agents	donors	acceptors
Inner tubes of car tyres is made of	nitrile rubber	natural rubber	polybutadiene rubber	butyl rubber
BR is the abbreviation used for	styrene butadiene rubber	natural rubber	Polybutadiene rubber	polychloroprene rubber
Crazy balls which are a childs toy is made of	SBR	IIR	NBR	Polybutadiene rubber
Hypalon is	chlorinated PE	chlorosulphonated PE	PPVC	XLPE
Following is used to increase compatibility between an inorganic filler and the rubber	coupling agent	antistatic agent	lubricant	antioxidant
In extrusion of cables die used is	straight thro die	cross head die	annular die	plate die

Z-type is a type of	two roll mill	extruder	banbury mixer	calendar
Modern Calendars are heated by	solid rolls	cored rolls	plain rolls	ovens
O-rings are made by the process of	injection molding	transfer molding	extrusion	compression molding

Elastomer Rubber Technology

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Controlled degradation of the rubber chains is called	compounding	vulcanisation	mastication	scorch
Compounds which donate sulphur for vulcanisation are called	sulphur donors	non-sulphur vulcanising agents	donors	acceptors
Inner tubes of car tyres is made of	nitrile rubber	natural rubber	polybutadiene rubber	butyl rubber
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Z-type is a type of	two roll mill	extruder	banbury mixer	calendar
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O-rings are made by the process of	injection molding	transfer molding	extrusion	compression molding

Paints & Adhesives

Question Content	Option 1	Option 2	Option 3	Option 4
A paint normally consists of _____ components.	three	five	four	six
_____ substances accelerate the process of drying.	Solvent	Distemper	Drier	Base
The function of _____ is to make the paint thin so that it can be easily applied on the surface.	Pigment	Solvent	Carrier	Base
Factors affect curing process of a varnish are	Temperature	Humidity of atmosphere	Components of varnish	All of the above
Surface preparation process divided into three stages are	Surface Cleaning	Surface pre-treatment	Surface post-treatment	All the above
Ball mill is also known as pebble mill or tumbling mill	TRUE	FALSE		
In pearl/bead mill grinding media is used as	sand	Ceramic balls	Zirconium beads	Disc
Bead mill is also called as -----mill.	Balls	Sand	Basket	Pearl
The epoxy resins are the _____ products of epichlorohydrin and bisphenol.	Free radical	Addition	Ion-exchange	Condensation
Epoxies are used in wide diversity of applications because of their strength, durability and great versatility.	TRUE	FALSE		
Which of the following is used as curtain-wall sealants?	Polyurethane	Silicones	Polyvinyls	Cellulose derivatives
Emulsion adhesives are based on _____	Polyurethane	Collodion	Urea-formaldehyde	Polyvinyl acetate
Collodion is a mixture of cellulose nitrate with _____	Alcohol	Ketone	Carboxylic acid	Phenol

Product Design & Polymer Testings

Question Content	Option 1	Option 2	Option 3	Option 4
isochronous curves help study effect wrt	pressure	filler	additives	temperature
Injection molding requires for large articles	high viscosity	no viscosity	any viscosity	None mentioned
Strength of product can be increased by	Addition of curves	Addition of corners	Addition of hinges	None mentioned
Sink marks are caused due to	Thin sections	curved sections	hollow sections	None mentioned
Spin welding is used for joining	square parts	any parts	random shape	None mentioned

Emulsion adhesives are based on	Polyurethane	PP	PVC	None mentioned
Which of the following is used as curtain-wall sealants?	Polyurethane	PP	PE	None mentioned
On increasing the temperature, the strength of adhesive	Remain same	increases	First increases than decreases	None mentioned
Notched impact strength is	Half of unnotched	Equal to unnotched	More than unnotched	None mentioned
Abrasion resistance uses	Stone slab	Emory paper	Plain paper	None mentioned
Rockwell Hardness testing uses	Only minor load	Only major load	No load	None mentioned
Fatigue testing can be applied to	where Static loads act	Where friction occurs	Where stress relaxation occurs	None mentioned
Refractive index helps to design	chair	drum	lenses	None mentioned
Pulse echo uses	microwaves	radiowaves	X-rays	None mentioned

Polymer Characterization

Question Content	Option 1	Option 2	Option 3	Option 4
FTIR help in	finding %crystallinity	%filler	melting point	identification
what is FT in FTIR	front total	fourier transform	full total	final transform
In FTIR , source used is	ultraviolet rays	X Rays	Microwaves	radio waves
In ATR mode sample is hit by rays	both sides	no side	edges	borders
C-13 NMR gives peak by TMS at	40	10	100	20
Carbon atom shares bonds on	6 sides	2 sides	1 sides	3 sides
C=C , Chemical shift is in range of	100-150	0-50	0-100	150-200
The scale range 1H NMR is from	0-1000	0-200	0-100	0-200
Gels are used in GPC for separation based on	weight	height	volumn	area
GPC gives information on	MW	Tg	Tm	% crystallinity
PDI is given as	Mw/Mn	Mw/Mz	Mn/Mw	Mn/Mz
Collimeter used to	focus Xrays	stop Xrays	divert Xrays	Absorb Xrays
SEM uses source as	electrons	photons	neutrons	light
SEM to focus the beam use	diodes	electromagnets	anode	air
SEM to focus the beam use	diodes	anode	mirrors	lenses
In TEM sample sample thickness is	50cm	1mm	50mm	0.1 micron

Polymer Waste Management

Question Content	Option 1	Option 2	Option 3	Option 4
For which material symbol 1 indicates in polymer recycling?	HDPE	PS	PVC	None of the option
Which of the following is biodegradable plastic?	PET	PP	PVC	None of the option
Expected durability of unerground pipes is__ Years	15-20	01-Feb	03-Apr	None of the option
Life cycle assessment can be also called as	Grave to Cradle	Grass to root	Root to grass	None of the option
Green Chemistry also called as__	Developing Chemistry	Soft Chemistry	Hard Chemistry	None of the option
When we burn PVC it emits	ammonia	chlorine	oxygen	None of the option
When we burn Nylon & PU it emits	ammonia	chlorine	oxygen	None of the option
For which material symbol 5 indicates in polymer recycling?	PVC	PET	PMMA	None of the option
One of the followings is a blowing agent	ATH	Carbon Black	NaOH	None of the option
Define which amount the following is the chemical recycling	Physical blending of post consumer recycle with virgin material	melt mixing	compounding	None of the option
One of the followings is a antioxidants	Carbonate	NaOH	talc	None of the option
One of the followings is an UV absorber	CaCO ₃	ATH	NaOH	None of the option
Degradation caused due to the action of heat is	Biodegradation	Photodegradation	UV degradation	None of the option
Which statement is correct for PVC?	highly flammable	self extinguishing because of ethylene chain	Soluble in water	None of the option
Degradation cause results from the action of natural daylight is	Biodegradation	Thermal Degradation	All of above	None of the option
Define the term biodegradation	Naturally occuring break	down by microorganism	breakdown into compostable compound	None of the option

Applied Polymer Rheology

Question Content	Option 1	Option 2	Option 3	Option 4
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Stress tensor is a	aymmetric tensor	symmetric tensor	both	none of the above
Strain tensor is a	symmetric tensor	aymmetric tensor	both	none of the above
When fluid is at rest, it can support only	shear	uniform pressure	both	none of the above
A tensor which has only diagonal elements as 1 is called	identity matrix	symmetric matrix	both	none of the above
Principal plane is the one on which only	shear stress acts	normal stress acts	both	none of the above
Principal stress are	normal stresses	shear stresses	both	none of the above
The value dosent change no matter what coordinate system is used to represent the stress, this is an	invariant	shear stress	both	none of the above
The first invariant of a stress tensor is	eigen value	trace of the stress matrix	both	none of the above
Finger tensor represents	change in area around a point	change in length around a point	both	none of the above
Cauchy Green tensor represents	change in length around a point	change in area around a point	both	none of the above
On certain planes in a body, only normal strains act. These planes are	shear planes	principal planes	both	none of the above
Only normal strains act on three mutually perpendicular planes in a body. These strains are	principal strains	shear stresses	both	none of the above
Time dependent increase in strain at constant stress is termed as	creep	stress relaxation	both	none of the above
Time dependent decrease in stress at constant strain is termed as	creep	stress relaxation	both	none of the above
Normal stress difference exists due to the	elastic component of viscoelastic polymers	viscous component of viscoelastic polymers	both	none of the above
Die swell is due to	viscous dissipation	normal stress difference	both	none of the above

Composite Technology

Question Content	Option 1	Option 2	Option 3	Option 4
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Two or more material that combines on macroscopic scale is known as	Mix	Blend	Composites	None of above
Main components of composite materials are	Resin	Reinforcement	Both	None of above
Some of the properties those can improve by composite materials are	Strength	Stiffness	Corrosion resistance	All of the above
material that contains fibres in its matrix is known as	Fibrous Composite	Laminate Composites	Particulate Composites	All of the above
material that contains layers of various materials in its matrix is known as	Fibrous Composite	Laminate Composites	Particulate Composites	All of the above
material that contains particals in its matrix is known as	Fibrous Composite	Laminate Composites	Particulate Composites	All of the above
study of composite behaviour wherein interaction of of constituent materials is examined on microscopic level to analyse properies is called as	Micromechanics	Macromechanics	Both	None of above
study of composite behaviour wherein interaction of of constituent materials is presumed homogenous and effect examined on macroscopic level to analyse properies is called as	Micromechanics	Macromechanics	Both	None of above
In composite material resin is	Continous phase	Disperse phase	Both	None of above
In composite material reinforcement is	Continous phase	Disperse phase	Both	None of above

Mold Die & Design

Question Content	Option 1	Option 2	Option 3	Option 4
Guide pillar is located in ----- half of the mold	Fixed Half	Moving half	Both A & B	None of Above
Locating ring is fixed on ----- plate of the mold	Fixed half clamping plate	Moving half clamping plate	Both A and B	None of Above
Guide bush is located in ----- half of the mold	Fixed half clamping plate	Moving half clamping plate	Both A and B	None of Above
Function of locating ring is	Align the sprue bush	Align mold to the molding machine	Align the clamping plate	None of Above

The type of guide pillar shown in the above figure is	Standard guide pillar – guide bush	Spigotted guide pillar – guide bush	Both A and B	None of Above
Dowel pin is used for	Aligning 2 components	Fixing 2 components	Both A and B	None of Above
The type of guide pillar shown in the above figure is	Standard guide pillar – guide bush	Spigotted guide pillar – guide bush	Both A and B	None of Above
Function of sprue bush is	Convey melt to the cavity	Convey melt to the runner	Both A and B	None of Above
Sprue bush is a part of	Feed system	Ejection system	Cooling system	None of the above
Mold is clamped on the machine using	C clamps	Plates	Both A and B	None of Above
Function of cold slug well is	Distribute melt	Take up melt from the previous cycle	Both A and B	None of Above
Thumb rule for feed system is	All extremities should fill at same time	All extremities should fill at same pressure	All extremities should fill at same time, temperature and pressure	None of the above
Runner efficiency is defined as	Ratio of area to periphery	Ratio of periphery to area	Both A and B	None of Above
The efficiency of a fully round runner is	0.15	0.25	0.3	0.35
The efficiency of a fully square runner is	0.15	0.25	0.3	0.35
The gate shown in the figure is	Fan gate	Sprue gate	Submarine gate	All of above
The gate shown in the figure is	Fan gate	Sprue gate	Submarine gate	Diaphragm gate
The gate shown in the figure is	Fan gate	Pin point gate	Submarine gate	Diaphragm gate

Polymer Processing Operations

Question Content	Option 1	Option 2	Option 3	Option 4
In blow molding, to inflate soft plastic, which medium is used?	Air	Water	Oil	Alcohol
Which of the following plastics is not used in blow molding?	Terephthalate	Polythene	PVC	Polypropylene
What is the minimum air pressure required in the blow molding process?	350 kPa	400 kPa	450 kPa	500 kPa

What can be the maximum pressure to be given to plastic for blow molding process?	700 kPa	750 kPa	800 kPa	850 kPa
Which of the following is not a type of blow molding process?	Injection blow molding	Extrusion blow molding	Multi-smaller blow molding	Multi-larger blow molding
What is the minimum thickness required by the plastic for vacuum forming?	0.125 mm	0.25 mm	0.375 mm	0.5 mm
Which of the following is not an application of blow molding process?	Toy bodies	Door liners	Bottles	Pipes
What is the maximum thickness that can be allowed for a plastics sheet in a vacuum forming process?	3 mm	3.1 mm	3.2 mm	3.3 mm
The heater in the vacuum forming process is heated up to 90°C.	TRUE	FALSE		
The initial cost in blow molding is low.	TRUE	FALSE		
The moulding method used to produce hollow objects like bottles in thermo plastics is:	Slush moulding	Transfer moulding	Blow moulding	Investment casting
The long plastic rods and tubes are produced by _____.	Compression moulding	Extrusion	Injection moulding	Casting
Blow moulding is a very slow process, however economical for producing products with better quality.	TRUE	FALSE		
In extrusion blow moulding process, it is very difficult to trim away excess of plastics.	TRUE	FALSE		
Single stage stretch blow moulding is always preferred than two stage stretch blow moulding for increase in production rate.	TRUE	FALSE		

Surface Coating Technology

Question Content	Option 1	Option 2	Option 3	Option 4
A paint normally consists of _____ components.	3	5	4	6
_____ substances accelerate the process of drying.	Solvent	Distemper	Drier	Base

The function of _____ is to make the paint thin so that it can be easily applied on the surface.	Pigment	Solvent	Carrier	Base
The mixture of oil and a pigment is known as _____	Varnish	Paint	Lacquer	Enamel
A varnish is a mixture of _____ and oil.	Resin	Pigment	Turpentine	Soybean
A mixture of oil and pigment in water is known as _____	Enamel	Emulsion	Shellac	Lacquer
Which organic coating is made from Lac dissolved in alcohol?	Lacquer	Shellac	Emulsion	Enamel
How many ingredients are varnish composed of?	2	3	4	5
Driers in varnish are used as	Reducers	Retarders	Accelerators	Oxidisers
The word varnish is derived from the word	Latin varne	Latin Vernix	Greek Vernix	Green varne
Which of the below is an oil based varnish?	Urethane	Acrylic	Polyurethane	Urea
Water based finishes have a blue tint to it.	TRUE	FALSE		
Dyes are soluble in many liquids whereas, pigments are insoluble in water and many solvents.	TRUE	FALSE		
Factors affect curing process of a varnish are	Temperature	Humidity of atmosphere	Components of varnish	All of the above
Surface preparation process divided into three stages are	Surface Cleaning	Surface pre-treatment	Surface post-treatment	All the above

Specialty Polymer Applications

Question Content	Option 1	Option 2	Option 3	Option 4
Principle ways to improve thermal stability of polymers are i) to increase crystallinity ii) Introduce crosslinking iii) Increase inherent stiffness iv) remove thermooxidative weak links.	only i) and ii)	Only ii) and iv)	i), ii) and iii)	All the mentioned
For a polymer to be considered thermally stable it must retain its physical properties at ----- for extended periods or upto ----- for very short time.	100°C, 1000°C	100°C, 500°C	250°C, 1000°C	200°C, 800°C
Polyquinoxalines are stable at-----	500°C	550°C	1000°C	700°C

To improve thermal resistance, increase in crystallinity is not much useful due to	Increase in solubility, and need for rigorous processing conditions	Decrease in solubility, and need for rigorous processing conditions	No effect of crystallinity on thermal resistance	
Characteristic property of heat resistant polymers are high stiffness & strength due to its low density when used in fiber reinforced composite.	TRUE	FALSE		
Aliphatic carbon-carbon bonds should be avoided in heat resistant polymers due to (a) Higher bond energy (b) Tendency to oxidize on prolonged exposure to heat in presence of air (c) Lower bond energy	Both (a) and (c)	Both (b) and (c)	Both (a) and (b)	Only (C)
Which one of the following group should be avoided in heat resistant polymer?	Aromatic	Methylene	Imide	Sulphone
Which one of the following technique is used to estimate thermal stability of polymer?	FTIR	Solution viscometry	Isothermal Thermogravimetry	None of these
Which of the following polymer cannot be classified under thermally stable polymer?	PTFE	Polyimide	Aromatic Polyamide	Polystyrene
Which of the following polymer is considered as high temperature polymer	Polyethylene terephthalate	Polyether ether ketone	Polycarbonate	Polypropylene
Higher thermal stability cause more difficulty in processing the polymer. The processability of these polymers can be improved by (a) Increasing molecular weight (b) Copolymerization (c) Plasticizer addition	Both (a) and (c)	Both (b) and (c)	Both (a) and (b)	Only (b)
Polyimide is one of the most suitable polymeric material for high temperature bearing application due to (a) Low thermal stability (b) Excellent dimensional stability under load (c) Self-lubricating properties	Both (a) and (c)	Both (b) and (c)	Both (a) and (b)	Only (b)

Specialty polymers are often provides multifunctional properties.	TRUE	FALSE		
Material Considerations for Specialty Polymers to be commercially viable are	It must meet stringent environmental conditions	High Performance standards	Cost-Effective	All of the mentioned
Distribution of monomer along the backbone or side chain can be controlled	Controlling monomer reactivity	Concentration and addition order	Reaction Conditions	All of the mentioned

Fibre Science & Technology

Question Content	Option 1	Option 2	Option 3	Option 4
Rupa wants to present her friend a gift made of plant-fibre. Which of the following will she select?	Jute bag	silk shawl	silk saree	acrylic scarf
Which statement out of the following is incorrect?	Use of Charkha was use to spin nylon	In India, jute is mainly grown in Kerala and Hydrabad	To make fabric, the fibres are first converted into yarns.	Sufi saint Kabir was a weaver
TPI means:	twist per inch	turn per inch	turn per incline	twist per incline
Which of the following is coming from form natural fibre	Modacrylic	Rayon	Polyester	Silk
A synthetic fibre is	Cotton	Linen	Wool	Saran
Separation of seeds from cotton balls is known as:	Weaving	Knitting	Ginning	Running
Which of the following processes is carried out on looms?	Carding	Knitting	Ginning	Spinning
which part of the plant does Cotton balls belong?	Root	Fruit	Stem	Flower
Twisting of fibres makes them:	Strong	Soft	colourful	Longer
Coir fabric is obtained from:	Coconut plant	Cotton	Sheep hairs	rubber plant
Acrylic is also called as :	Cotton plant	Jute plant	Kashmiri-sheep	None of these
Which of the following is not a natural fibre?	Cotton	Jute	Nylon	Flax
Which set of substances is not used for making fibres?	Silk, cotton	Yak hair, camel hair	Husk, bones	Flax, wool
Synthetic Yarn is woven to get fabric using	Charkha	Spinning machines	Looms	Knitting needles
The correct sequence to get cloth is :	Fibre, fabric, yarn	Fibre,yarn , fabric	Fabric ,yarn,fibre	yarn ,fibre, fabric

Polymer in Advance Applications

Question Content	Option 1	Option 2	Option 3	Option 4
Composite materials are classified based on:	Type of matrix	Size-and-shape of reinforcement	Type of matrix and Size-and-shape of reinforcement	None
Major load carrier in dispersion-strengthened composites	Matrix	Fiber	Both matrix and fiber	None
Usually softer constituent of a composite is	Matrix	Reinforcement	Both matrix and reinforcement are of equal strength	none
The continuous phase of a composite material is known as its _____	dispersed phase	Surrounding phase	Matrix Phase	Fiber Phase
Which of the following is not a characteristic trait of composite materials?	High strength, toughness, modulus	Lightweight	Easy to assemble	Sensitive to temperature change
Two or more material that combines on macroscopic scale is known as	Mix	Blend	Composites	None of above
Main components of composite materials are	Resin	Reinforcement	Both	None of above
Some of the properties those can improve by composite materials are	Strength	Stiffness	Corrosion resistance	All of the above
material that contains fibres in its matrix is known as	Fibrous Composite	Laminate Composites	Particulate Composites	All of the above
material that contains layers of various materials in its matrix is known as	Fibrous Composite	Laminate Composites	Particulate Composites	All of the above
material that contains particals in its matrix is known as	Fibrous Composite	Laminate Composites	Particulate Composites	All of the above
study of composite behaviour wherein interaction of of constituent materials is examined on microscopic level to analyse properies is called as	Micromechanics	Macromechanics	Both	None of above

study of composite behaviour wherein interaction of constituent materials is presumed homogenous and effect examined on macroscopic level to analyse properties is called as	Micromechanics	Macromechanics	Both	None of above
In composite material resin is	Continuous phase	Disperse phase	Both	None of above
In composite material reinforcement is	Continuous phase	Disperse phase	Both	None of above

Advance Polymer Science

Question Content	Option 1	Option 2	Option 3	Option 4
Which of the following can activate chain initiation?	heat	light or radiation	catalysts	all of the mentioned
Which of the following monomers cannot undergo chain growth polymerization?	CH ₂ =CH ₂	CH ₂ =CHCN	CH ₂ =CHCOOR	COOH-CH ₂ -COOH
Why is addition polymerization also known as vinyl polymerization?	monomers are unsaturated compounds	its a chain reaction	most monomers contain (CH ₂ =CH-) group	all of the mentioned
Which of the following cannot initiate the chain reaction in polymerization of acrylo-nitrile?	Anion	Cation	Free radical	coordination
What does chain initiation step of free radical polymerization consists of?	none of the mentioned	addition of free radical to monomer	all of the mentioned	none of the mentioned
Which is the rate determining step of chain initiation step?	initiator decomposition	chain initiation of monomer	chain propagation	none of the mentioned
Which mode in the chain termination step is accompanied by a transfer of hydrogen molecule?	combination	disproportionation	propagation	all of the mentioned
The substance that is so effective, which can suppress the rate as well as degree of polymerization is a _____	retarder	inhibitor	promoter	none of the mentioned
Which of the following mechanism can occur for the termination step to take place?	combination	disproportionation	all of the mentioned	none of the mentioned
Which of the following factors does termination mechanism depend on?	type of active centre	nature of monomer	reaction conditions	all of the mentioned

How many initiator fragments are present in the dead polymer formed by combination mode of chain termination?	2	1	3	0
What is the initiator efficiency in chain initiation step of free radical polymerization?	fraction of unreacted monomers	extent of reaction	fraction of radicals actually contributing	number of initiator molecules
Polymeric molecules _____ a definite crystalline structure.	Have	Do not have	Completely having	Partially having
The polymer is 100% crystalline	TRUE	FALSE		
As the crystallinity increases The brittleness of the polymer	Increases	Decreases	Moderate	Remains constant

Membrane Technology

Question Content	Option 1	Option 2	Option 3	Option 4
What is advantage of membrane separation technique over others separation technoque	All of these	Energy efficiency	High separation capacity	Selective separation and capital investments
Kidney dialyis is a	Pressure driven separation process	Thermally driven separation process	Concentration driven separation process	None of these
In reverse osmosis	The direction of solvent flow Can be reversed by applying pressure greater than osmotic pressure	The direction of solvent flow can be reversed by applying pressure less than osmotic pressure	The direction of solvent flow can be reversed by using a permeable membrane	The solvent flow can be reversed by concentrating the mixture
Glass transition temperature means	When a rubbery polymer turns into glass	When a glassy polymers turns into rubbery polymer	When the polymer becomes a melt	When the melting point is reached
Polycarbonates are	Amorphous	Not ductile	Fragile	Thermosetting
Which material gives good thermal and chemical stability to membrane.	Ceramic	Polyamide	Polysulfone	Polyimide

Membrane module means.....	A membrane module is a representation of the type of pores in a membrane	A membrane module is a unit housing the membrane	A membrane is representation of an ideal membrane	A membrane module is representation of the concentration changes during separation
Which factors are important to control thickness of layer In plasma polymerization?	Monomer concentration	Gas flow rate	Polymerization time	All of these
Porosity in track-etching method is mainly determined by time	radiation	etching	none of these	pressurization
Template leaching method is used to preparemembrane	porous glass	non-porous glass	Both of these	None of these
What is the hydraulic membrane permeability, if the pressure drop is 1000 units, the flux is 50 units?	0.02	0.04	0.05	0.06
What is the membrane thickness, if transmembrane flux is 5000, permeability is 50 units and driving force is 100units	1	10	20	30
The water flux is	Directly proportional to membrane thickness	Inversely proportional to membrane thickness	Exponentially proportional to membrane thickness	None of these
In membrane, micropores have..... pore size	>50 nm	<50 nm	2-50 nm	< 2 nm
Scanning electron microscopy is used for characterising....	surface structure	porosity	pore size distribution	all of these

Polymer Reaction Engineering

Question Content	Option 1	Option 2	Option 3	Option 4
Cationic and anionic polymerization suitable for	Solution technique only	Emulsion technique only	Suspension technique only	Bulk, solution, suspension and emulsion
Atactic polymers are	Amorphous and soft	Amorphous and hard	Crystalline and soft	Crystalline and hard

Polyethylene produced by Ziegler-natta catalyst has	Excellent strength	Less branched polymer	High melting point	All of these
For a plug flow reactor?	axial diffusivity is infinite, radial diffusivity is infinite	axial diffusivity is infinite, radial diffusivity is zero	axial diffusivity is zero, radial diffusivity is zero	axial diffusivity is zero, radial diffusivity is infinite
Which reactor is suitable for polycondensation reaction?	Plug Flow Reactor	Continuous Stirred Tank Reactor	Semibatch Reactor	Batch Reactor
The concentration of the micelle is measured as _____	Micelle concentration	Critical micelle concentration	Critical concentration	Monomer concentration
The equilibrium constant of chemical reaction _____ in the presence of catalyst.	Increases	Decreases	Remains unaffected	Unpredictable
Polypropylene compared to polythene is	Harder	Stronger	Lighter	All of these
If N_0 is initial no. of moles, N_A is no. of moles at any time 't'. How to calculate extent of reaction 'P'?	$P = (N_0 - N)/N_0$	$P = (N - N_0)/N$	$P = N_0 - N$	$P = N - N_0$
When the concentration of reactant molecules is increased, the rate of reaction increases. The best explanation is: As the reactant concentration increases,	The average kinetic energy of molecules increases.	The frequency of molecular collisions increases.	The order of reaction increases.	None of these
Weight average chain length (WACL) is expressed as...	Ratio of second to first moment of distribution	Ratio of first to second moment of distribution	Ratio of first to zero moment of distribution	Product of first and second moment of distribution
Moment of polymer means	Sum of concentration of polymer	Sum of molecular weight of polymer	Ratio of Concentration and molecular weight	Product of density and molecular weight
Select correct statement	Molecular weight of commercial polymer is from 200-2000	Degree of polymerization for commercial polymer is from 200-2000	Commercial polymer has high melt viscosity to permit easy processing	All of these

In step growth polymerization:	High molecular weight from beginning as monomer consumed early in reaction	High molecular weight obtained at end of process	All of these	Can't predict
In free radical polymerization, extent of conversion:	Increases with increase in temperature, polymerization time, initiator and monomer concentration	Increases with increase in temperature, polymerization time but decrease with initiator and monomer concentration	Increases with decrease in temperature, polymerization time and increases with initiator and monomer concentration	Increases with decrease in temperature, polymerization time, initiator and monomer concentration

Packaging Technology

Question Content	Option 1	Option 2	Option 3	Option 4
Which one of the following defines package correctly?	Reflecting the ever changing nature of its contain.	The act of creating or producing a package.	A coordinated system of preparing goods for transport.	A physical form that is intended to contain, protect, transport and inform.
Marketing oriented packaging function communicate to consumers via....I)Colour II)Texture III)Typography style IV)Symbol	I, II and III	II, III and IV	I, II and IV	I, II, III and IV
What is sustainability in packaging?	All of these	Is a balancing act between environment and consumption.	Is a balancing act between environment and industry.	Is a balancing act between environment and pollution.

_____ systems consider the reverse flow of products, their reuse, and the marketing and distribution of recovered products.	Eco	Open-loop	Closed-loop	Dynamic
Oxygen is usually removed from the pack usually from dried food, because of...	To reduce oxidation	Inhibit aerobic microbial growth	All of these	None of the above
Cushioning material includes..	starch and PU based foam	Paper and Corrugated fiberboard pads	Bubble Wrap and air pillows	All the these
The term permeability is defined as	Permeability = Solubility * diffusivity	Permeability = Solubility/diffusivity	Permeability = diffusivity/Solubility	Permeability = diffusivity/(Solubility) ²
Durring bottling of cold drink (e.g.Pepsi), the main resistance to mass transfer for the absorbtion of carbon dioxide in water lies in the	Gas film	liquid film	liquid-gas interphase	none of these
Mechanical strength of polymerand melt viscosity of polymerwith increase in molecular weight.	Increases, increases	Decreases, decreases	Increases, decreases	Decreases, increases
In the history of packaging of the food industry, which among these was never a material of packaging?	Bakelite	Pottery and vases	Iron and tin plated steel	None of the mentioned
Which of the following need not be in the same vision of field?	Product name	Quantity	Date mark	Place of Origin
The activity to design and produce container for perticular product is ...	Guaranty	Warranty	Labelling	Packaging
Colligative properties include...	Lowering of vapour pressure	Elevation of boiling point	Depression of freezing point & Osmotic pressure	All of these
In packaging surface finish usually applied or required ...	To protect material from moisture, wear, abrasion, fungus or insect attack.	To change Materials appearance (Colour and texture)	To enhance materials durability, surface hardness or other properties.	All of these

Which lacquer is used for fruits packaging	Acid Resistant Lacquer	Sulphur resistant Lacquer	Epoxyphenolic Lacquer	Organosols Lacquer
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