CENTRAL POLYTECHNIC COLLEGE, THARAMANI-600 113.
(An Autonomous Institution)

DEPARTMENT OF CIVIL ENGINEERING

QUESTION BANK

ECE41020 – TRANSPORTATION ENGINEERING

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Unit I	HIGHWAY ENGINEERING	
1.1 General-Development of Roads in India-Modes of transportation-Advantages of Roads –Requirements of an ideal road–Indian Road Congress-Classifications of Highways - Highway Pavements-Objectives-Types of Pavements–Flexible and Rigid Pavements-Comparative study of Flexible and Rigid pavements. **1.2** Road structure- Right of way–Width of formation-Road Camber-Super elevation Sight distances–Road gradient-Road Curves-Horizontal curves-Vertical curves-Types Widening of pavement on horizontal curves.		10
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orientation of Runways and correction factors for runway as per ICAO stipulations, parking-wind rose diagram. **5.2** Harbour, port, satellite port, docks, waves and tides-planning of harbours: requirements, classification, location-harbour layout and terminal facilities-coastal structures : piers, break waters, wharves, jetties, quays, spring fenders, dolphins and floating landing stage.	

U.NO	Q NO	QUESTIONS
1	1	Which of the following is not a primary mode of transportation? (a) Roads (b) Railways (c) Air travel (d) Pipelines **Ans:Pipelines**
1	2	What is a key advantage of roads over other modes of transportation? (a) They are the fastest mode for long distances. (b) They have a high carrying capacity for heavy goods. (c) They provide a door-to-door service and flexibility. (d) They have the lowest environmental impact. **Ans:They provide a door-to-door service and flexibility.**
1	3	The Indian Road Congress (IRC) was established primarily to: (a) Manage all road construction projects in India. (b) Formulate standards and specifications for road construction. (c) Provide funding for highway development. (d) Train road construction engineers. **Ans:Formulate standards and specifications for road construction.**
1	4	An ideal road should have all the following requirements except: (a) Low maintenance cost (b) High safety for all users (c) Aesthetically unpleasing design (d) All-weather usability **Ans:Aesthetically unpleasing design**
1	5	What is the main objective of a highway pavement? (a) To provide a strong and durable surface for traffic. (b) To reduce the cost of road construction. (c) To make the road look aesthetically pleasing. (d) To provide a smooth surface for vehicles. **Ans:To provide a strong and durable surface for traffic.**
1	6	A pavement that consists of a number of layers, with the top layer being flexible, is known as a: (a) Rigid pavement (b) Flexible pavement (c) Composite pavement (d) Water-bound macadam **Ans:Flexible pavement**
1	7	Which of the following is an advantage of flexible pavements? (a) Long service life (b) Low maintenance cost (c) Lower initial cost (d) High resistance to temperature variations **Ans:Lower initial cost**
1	8	A major disadvantage of rigid pavements is their: (a) High flexibility (b) Susceptibility to cracking from temperature changes (c) High initial cost (d) Poor riding quality **Ans:High initial cost**

U.NO	Q NO	QUESTIONS
1	10	The primary purpose of providing a road camber is to: (a) Increase the road's aesthetic appeal (b) Ensure drainage of rainwater from the road surface (c) Increase the road's width (d) Reduce the friction between tires and the road **Ans:Ensure drainage of rainwater from the road surface**
1	11	The "width of formation" refers to the width of the: (a) Road including shoulders and drains (b) Carriageway only (c) Right of way (d) Road curves **Ans:Road including shoulders and drains**
1	12	The minimum sight distance required to avoid a collision with an object on the road is known as the: (a) Stopping Sight Distance (SSD) (b) Intermediate Sight Distance (ISD) (c) Overtaking Sight Distance (OSD) (d) Passing Sight Distance (PSD) **Ans:Stopping Sight Distance (SSD)**
1	13	The term "gradient" in road design refers to: (a) The width of the road (b) The number of lanes (c) The longitudinal slope of the road (d) The curve radius of the road **Ans:The longitudinal slope of the road**
1	14	What is the purpose of providing super-elevation on a horizontal curve? (a) To counteract the centrifugal force (b) To increase the speed of the vehicle (c) To improve drainage (d) To reduce the road's width **Ans:To counteract the centrifugal force**
1	15	A circular curve used to connect two straight road segments is an example of a: (a) Vertical curve (b) Horizontal curve (c) Transition curve (d) Reverse curve **Ans:Horizontal curve**
1	16	The purpose of widening a pavement on a horizontal curve is to: (a) Increase the lane width for aesthetic purposes. (b) Ensure that vehicles can navigate the curve without encroaching on adjacent lanes. (c) Reduce the superelevation needed. (d) Improve the road's drainage. **Ans:Ensure that vehicles can navigate the curve without encroaching on adjacent lanes.**
1	17	What is the main reason for the development of roads in India? (a) To promote trade and commerce (b) To improve connectivity and defense (c) To reduce the cost of transportation (d) All of the above **Ans:All of the above**

U.NO	Q NO	QUESTIONS
1	19	What is a major objective of a highway pavement? (a) To protect the subgrade from traffic loads (b) To provide a rough riding surface (c) To prevent drainage of rainwater (d) To reduce the initial cost of construction **Ans:To protect the subgrade from traffic loads**
1	20	The main difference between a flexible and a rigid pavement is: (a) The type of subgrade used (b) The way they distribute traffic loads to the subgrade (c) Their width (d) The materials used for shoulders **Ans:The way they distribute traffic loads to the subgrade**
1	21	Which type of pavement is more prone to rutting and shoving under heavy traffic loads? (a) Rigid pavements (b) Flexible pavements (c) Both are equally prone (d) None of the above **Ans:Flexible pavements**
1	22	A road with a camber that is too steep will likely lead to: (a) Poor drainage (b) Increased risk of skidding (c) A smooth riding surface (d) Reduced tire wear **Ans:Increased risk of skidding**
1	23	The "sight distance" on a road is most affected by: (a) The width of the road (b) The number of lanes (c) The road geometry and obstructions (d) The type of pavement **Ans:The road geometry and obstructions**
1	24	A vertical curve is a curve provided to connect two different: (a) Horizontal curves (b) Road gradients (c) Traffic lanes (d) Shoulders **Ans:Road gradients**
1	25	The "widening of pavement" is specifically required on which type of road element? (a) Straight road sections (b) Horizontal curves (c) Vertical curves (d) Shoulders **Ans:Horizontal curves**
1	26	The "Road Camber" is also known as: (a) Cross slope (b) Longitudinal slope (c) Super elevation (d) Gradient **Ans:Cross slope**

U.NO	Q NO	QUESTIONS
1	28	Which type of pavement is generally more susceptible to damage from frost action? (a) Flexible pavements (b) Rigid pavements (c) Both are equally susceptible (d) Neither is susceptible **Ans:Flexible pavements**
1	29	Which of the following is not a requirement of an ideal road? (a) Safety (b) Smoothness (c) High initial cost (d) Low maintenance **Ans:High initial cost**
1	30	The main function of a road structure is to: (a) Provide a smooth surface for vehicles (b) Distribute traffic loads to the subgrade (c) Provide a drainage system (d) All of the above **Ans:Distribute traffic loads to the subgrade**
1	31	A road with a high volume of heavy trucks should preferably be constructed with: (a) Flexible pavement (b) Rigid pavement (c) Water-bound macadam (d) Gravel pavement **Ans:Rigid pavement**
1	32	What is the purpose of a "super-elevation"? (a) To reduce the road's width on curves (b) To ensure the driver has a better sight distance (c) To balance the outward thrust on a vehicle on a curve (d) To improve the aesthetics of the road **Ans:To balance the outward thrust on a vehicle on a curve**
1	33	What is the primary purpose of a "vertical curve"? (a) To provide a smooth transition between two different gradients (b) To provide a smooth transition between two different superelevations (c) To increase the sight distance on a horizontal curve (d) To reduce the width of the pavement **Ans:To provide a smooth transition between two different gradients**
1	34	What is the consequence of not providing sufficient pavement widening on a sharp horizontal curve? (a) The vehicle will not be able to turn. (b) The vehicle may encroach on the adjacent lane or shoulder, increasing the risk of accidents. (c) The road will be more susceptible to drainage issues. (d) The road will become more aesthetically pleasing. **Ans:The vehicle may encroach on the adjacent lane or shoulder, increasing the risk of accidents.**
1	35	The "Stopping Sight Distance" (SSD) is a function of: (a) Driver reaction time and braking distance (b) Vehicle weight and speed (c) Road width and camber (d) All of the above **Ans:Driver reaction time and braking distance**

U.NO	Q NO	QUESTIONS
1	37	What is the main disadvantage of pipelines as a mode of transportation? (a) High cost of construction and maintenance (b) Inability to transport liquids (c) Low speed (d) Inability to provide door-to-door service **Ans:Inability to provide door-to-door service**
1	38	Which of the following is a primary objective of a highway pavement? (a) To reduce tire friction (b) To provide a surface that is not prone to skidding (c) To protect the road's subgrade from frost action (d) All of the above **Ans:All of the above**
1	39	The Right of way is typically wider in: (a) Urban areas (b) Rural areas (c) Hilly areas (d) Mountainous areas **Ans:Rural areas**
1	40	The "road gradient" is expressed as a ratio of: (a) Rise to horizontal distance (b) Rise to vertical distance (c) Vertical distance to rise (d) None of the above **Ans:Rise to horizontal distance**
1	41	A Vertical curve is required when a descending gradient meets an ascending gradient. This is known as a: (a) Summit curve (b) Valley curve (c) Compound curve (d) Reverse curve **Ans:Valley curve**
1	42	What is a major advantage of Rigid pavements over Flexible pavements? (a) They are cheaper to construct initially. (b) They have a much longer service life and lower maintenance costs. (c) They can be constructed on any subgrade without treatment. (d) They are more comfortable to drive on. **Ans:They have a much longer service life and lower maintenance costs.**
1	43	The Indian Road Congress (IRC) is a non-statutory body that works closely with: (a) The United Nations (b) The Ministry of Road Transport and Highways (c) The World Bank (d) The European Union **Ans:The Ministry of Road Transport and Highways**
1	44	A road is classified as a "Major District Road" based on its: (a) Location (b) Traffic volume and function (c) Width of the carriageway (d) All of the above **Ans:Traffic volume and function**

U.NO	Q NO	QUESTIONS
1	46	The road structure is composed of: (a) Subgrade, base course, sub-base, and surface course (b) Camber and gradient (c) Right of way and carriageway (d) All of the above **Ans:Subgrade, base course, sub-base, and surface course**
1	47	In road design, what is the role of Super-elevation? (a) To increase the vehicle's speed. (b) To provide a counter force to the centrifugal force. (c) To improve drainage. (d) To reduce the road's width on curves. **Ans:To provide a counter force to the centrifugal force.**
1	48	The sight distance that a driver requires to stop a vehicle and avoid a collision is known as: (a) Overtaking sight distance (b) Stopping sight distance (c) Intermediate sight distance (d) Safe sight distance **Ans:Stopping sight distance**
1	49	What is a major advantage of vertical curves? (a) They reduce the road's width. (b) They provide a smooth transition between different gradients, improving safety and comfort. (c) They reduce the need for superelevation. (d) They increase the road's aesthetic appeal. **Ans:They provide a smooth transition between different gradients, improving safety and comfort.**
1	50	What is the purpose of widening a pavement on a horizontal curve? (a) To allow vehicles to pass each other more easily. (b) To increase the road's aesthetic appeal. (c) To compensate for the off-tracking of the rear wheels of a vehicle. (d) To reduce the road's gradient. **Ans:To compensate for the off-tracking of the rear wheels of a vehicle.**
2	1	Which of the following is not a principle for ideal highway alignment? (a) Shortest distance (b) Easy gradient (c) Minimum utility crossings (d) Maximum curves **Ans:Maximum curves**
2	2	What is a crucial factor to consider when designing a highway alignment to ensure minimal impact on the environment? (a) Availability of local labor (b) Soil type along the proposed path (c) Avoiding forested areas and wetlands (d) Proximity to tourist destinations **Ans:Avoiding forested areas and wetlands**
2	3	Which of the following is a key consideration for highway alignment to reduce construction costs and land acquisition issues? (a) Avoiding residential areas and religious places (b) Designing for maximum speed (c) Incorporating as many bridges as possible (d) Using sharp curves **Ans:Avoiding residential areas and religious places**

U.NO	Q NO	QUESTIONS
2	5	What is the purpose of an asphalt recycling equipment in road construction? (a) To lay fresh asphalt on new roads (b) To heat and mix aggregates for new asphalt (c) To crush rocks for use as base material (d) To re-use old asphalt from existing pavements **Ans:To re-use old asphalt from existing pavements**
2	6	A bulldozer's primary function in highway construction is for: (a) Grading and shaping the final surface (b) Compacting soil and subgrade layers (c) Pushing and spreading earthwork (d) Lifting heavy construction materials **Ans:Pushing and spreading earthwork**
2	7	Which type of equipment is most suitable for leveling and fine-grading the subgrade or base course of a highway? (a) Scraper (b) Bulldozer (c) Motor grader (d) Tractor **Ans:Motor grader**
2	8	A scraper is an excavating equipment primarily used for which of the following operations? (a) Compacting soil (b) Excavating and transporting earth over short to medium distances (c) Drilling holes for foundations (d) Mixing concrete **Ans:Excavating and transporting earth over short to medium distances**
2	9	What is the main purpose of compaction in road construction? (a) To increase the volume of the soil (b) To improve the aesthetics of the road (c) To increase the density and shear strength of the soil (d) To make the soil softer for easy excavation **Ans:To increase the density and shear strength of the soil**
2	10	Which of the following is an example of compaction equipment used in road construction? (a) Grader (b) Scraper (c) Vibratory roller (d) Asphalt spreader **Ans:Vibratory roller**
2	11	What type of road uses a mixture of stone aggregates, water, and binding materials like kankar or gravel, which are then compacted? (a) Bituminous roads (b) Water Bound Macadam (WBM) roads (c) Cement concrete roads (d) Block roads **Ans:Water Bound Macadam (WBM) roads**
2	12	Which road type is known for its high durability, low maintenance, and rigid structure, making it suitable for heavy traffic? (a) Water Bound Macadam roads (b) Bituminous roads (c) Cement concrete roads (d) Gravel roads **Ans:Cement concrete roads**

U.NO	Q NO	QUESTIONS
2	14	What is the main disadvantage of a Water Bound Macadam (WBM) road? (a) Its inability to carry any traffic (b) Its high initial cost (c) Its high maintenance requirement and dustiness (d) Its low resistance to water damage **Ans:Its high maintenance requirement and dustiness**
2	15	What is the primary purpose of surface dressing in a Bituminous Road? (a) To increase the road's thickness significantly (b) To make the road look shiny and new (c) To provide a skid-resistant wearing surface and seal the road (d) To remove existing cracks **Ans:To provide a skid-resistant wearing surface and seal the road**
2	16	Which of the following is a type of surface dressing? (a) Single surface dressing (b) Double surface dressing (c) Triple surface dressing (d) All of the above **Ans:All of the above**
2	17	What is the primary function of a tractor in the context of excavating equipment in highway construction? (a) Laying asphalt (b) Towing and pulling other heavy equipment (c) Fine grading (d) Compacting soil **Ans:Towing and pulling other heavy equipment**
2	18	The process of removing the topsoil and rock to create a level or graded surface for a highway is called: (a) Compaction (b) Excavation (c) Tilling (d) Grading **Ans:Excavation**
2	19	What is the main difference between a bulldozer and a scraper in terms of their primary function? (a) A bulldozer is used for fine grading, while a scraper is for rough excavation. (b) A bulldozer pushes and spreads material, while a scraper excavates and hauls material. (c) A bulldozer is used for compaction, while a scraper is used for asphalt paving. (d) A bulldozer is self-propelled, while a scraper is always towed. **Ans:A bulldozer pushes and spreads material, while a scraper excavates and hauls material.**
2	20	A motor grader's adjustable blade is most effective for: (a) Breaking up hard rock (b) Compacting soft soil (c) Spreading and leveling materials (d) Excavating trenches **Ans:Spreading and leveling materials**
2	21	Which compaction equipment is best suited for cohesive soils like clay? (a) Smooth wheeled roller (b) Pneumatic tyred roller (c) Sheep's foot roller (d) Vibratory roller **Ans:Sheep's foot roller**

U.NO	Q NO	QUESTIONS
2	23	A road with a flexible pavement structure, constructed with a base course of granular material and a surface layer of asphalt concrete is called a: (a) Water Bound Macadam road (b) Cement concrete road (c) Bituminous road (d) Gravel road **Ans:Bituminous road**
2	24	The "Macadam" in Water Bound Macadam roads refers to the construction method pioneered by: (a) John McAdam (b) Thomas Telford (c) Pierre-Marie-Jérôme Trésaguet (d) Leonardo da Vinci **Ans:John McAdam**
2	25	What is a major disadvantage of cement concrete roads compared to bituminous roads? (a) They are more susceptible to water damage (b) They require higher initial investment and have a longer curing time (c) They are less durable and have a shorter service life (d) They are prone to rutting and shoving **Ans:They require higher initial investment and have a longer curing time**
2	26	Which type of road construction involves using a mixture of Portland cement, fine aggregate, and coarse aggregate? (a) Water Bound Macadam (b) Bituminous Roads (c) Cement Concrete Roads (d) Gravel Roads **Ans:Cement Concrete Roads**
2	27	What is the main purpose of a prime coat in bituminous road construction? (a) To provide a wearing surface (b) To increase the road's friction (c) To stabilize the existing base and promote adhesion (d) To waterproof the surface **Ans:To stabilize the existing base and promote adhesion**
2	28	Which type of surface dressing involves the application of a thin layer of binder followed by a layer of stone chips? (a) Single surface dressing (b) Double surface dressing (c) Sand seal (d) Bituminous slurry **Ans:Single surface dressing**
2	29	A tack coat in bituminous road construction is primarily used to: (a) Improve the drainage of the road (b) Seal the pavement from water (c) Provide a bond between the existing and new bituminous layers (d) Increase the road's skid resistance **Ans:Provide a bond between the existing and new bituminous layers**
2	30	What is the primary difference between a double surface dressing and a single surface dressing? (a) Double surface dressing uses a thicker binder, while single dressing uses a thinner one. (b) Double surface dressing involves two applications of binder and stone chips, while single dressing has only one. (c) Double surface dressing is only for rigid pavements, while single is for flexible. (d) Double surface dressing is more prone to stripping. **Ans:Double surface dressing involves two applications of binder and stone chips, while single dressing has only one.**

U.NO	Q NO	QUESTIONS
2	32	A good highway alignment should avoid passing through: (a) Agricultural land with high productivity (b) Existing settlements and historical monuments (c) Industrial areas (d) Areas with stable soil **Ans:Existing settlements and historical monuments**
2	33	The term "right-of-way" in highway alignment refers to: (a) The speed limit on the highway (b) The legal land acquired for the highway's construction (c) The maximum gradient allowed on a road (d) The type of surfacing used on the road **Ans:The legal land acquired for the highway's construction**
2	34	What is the main advantage of using a scraper over a bulldozer for earthwork on a large-scale highway project? (a) Scrapers are more efficient at short-distance material movement (b) Scrapers can excavate, haul, and dump material in a continuous cycle (c) Scrapers are better for clearing rocks and trees (d) Scrapers are more fuel-efficient **Ans:Scrapers can excavate, haul, and dump material in a continuous cycle**
2	35	Why are motor graders often equipped with a scarifier attachment? (a) To break up soft soil (b) To level the ground with more precision (c) To dig trenches (d) To loosen hard packed soil or old pavement surfaces **Ans:To loosen hard packed soil or old pavement surfaces**
2	36	The purpose of a self-propelled vibratory roller is to achieve compaction through a combination of: (a) Static weight and rolling (b) Static weight and vibration (c) Vibration and shearing (d) Shearing and tamping **Ans:Static weight and vibration**
2	37	What is the primary distinction between a WBM road and a Bituminous road in terms of their construction materials? (a) WBM uses only large aggregates, while bituminous uses fine aggregates. (b) WBM uses water as a binder, while bituminous uses a hydrocarbon binder. (c) WBM uses cement as a binder, while bituminous uses lime. (d) WBM roads are rigid, while bituminous roads are flexible. **Ans:WBM uses water as a binder, while bituminous uses a hydrocarbon binder.**
2	38	In the context of Cement Concrete Roads, what is the purpose of providing expansion joints? (a) To prevent cracks due to temperature changes (b) To make the road more flexible (c) To provide drainage for water (d) To add aesthetic appeal to the road **Ans:To prevent cracks due to temperature changes**
2	39	A cement concrete road is generally preferred over a bituminous road for: (a) Low-cost village roads (b) Areas with heavy rainfall (c) Roads with very heavy traffic and axle loads (d) Areas where frequent utility cuts are required **Ans:Roads with very heavy traffic and axle loads**

U.NO	Q NO	QUESTIONS
2	41	A major disadvantage of a steep gradient in a highway alignment is that it: (a) Increases the overall project cost (b) Limits the speed of heavy vehicles (c) Reduces the aesthetic value of the road (d) Increases the land acquisition area **Ans:Limits the speed of heavy vehicles**
2	42	Which factor is most relevant to the "social" aspect of an ideal highway alignment? (a) Soil type (b) Avoiding religious places (c) Maximum curve radius (d) Proximity to a river **Ans:Avoiding religious places**
2	43	The "economic" principle of highway alignment primarily aims to: (a) Minimize vehicle operating costs and construction costs (b) Maximize the number of curves (c) Utilize the most expensive materials (d) Follow the shortest possible route **Ans:Minimize vehicle operating costs and construction costs**
2	44	Which piece of excavating equipment is best suited for clearing and grubbing operations? (a) Tractor (b) Scraper (c) Bulldozer (d) Grader **Ans:Bulldozer**
2	45	The main function of an asphalt recycling equipment is to promote: (a) Waste reduction and sustainability (b) Increased road friction (c) Faster construction of new roads (d) Lower maintenance costs **Ans:Waste reduction and sustainability**
2	46	What is the key difference between a motor grader and a grader? (a) A motor grader is self-propelled, while a grader is towed. (b) A motor grader is used for compaction, while a grader is for excavation. (c) A motor grader is smaller than a grader. (d) A motor grader has a fixed blade, while a grader's blade is adjustable. **Ans:A motor grader is self-propelled, while a grader is towed.**
2	47	In Water Bound Macadam road construction, what is the role of the fine material (screenings)? (a) To fill the voids in the crushed aggregate (b) To act as a primary binder (c) To provide a smooth riding surface (d) To prevent dust generation **Ans:To fill the voids in the crushed aggregate**
2	48	The construction of Bituminous Roads requires the binder to be heated to a specific temperature. What is the main reason for this? (a) To increase the viscosity of the binder (b) To decrease the viscosity and allow for easier mixing and spreading (c) To prevent the binder from solidifying (d) To increase its strength **Ans:To decrease the viscosity and allow for easier mixing and spreading**

U.NO	Q NO	QUESTIONS
2	50	The main disadvantage of a Bituminous road is its susceptibility to: (a) Cracking due to temperature changes and heavy loads (b) Damage from water and subgrade moisture (c) High maintenance cost (d) Low initial cost **Ans:Cracking due to temperature changes and heavy loads**
3	1	Which of the following is not a classification of Indian Railways? (a) Broad Gauge (b) Narrow Gauge (c) Standard Gauge (d) Metre Gauge **Ans:Standard Gauge**
3	2	What is the distance between the inner faces of the two rails called? (a) Sleeper density (b) Rail gauge (c) Creep of rails (d) Coning of wheels **Ans:Rail gauge**
3	3	What is a key requirement of an ideal rail? (a) It should be made of plastic (b) It should have a soft surface (c) It should be strong, durable, and resistant to wear (d) It should be easily bendable **Ans:It should be strong, durable, and resistant to wear**
3	4	The process of providing a slope to the inner faces of the wheel tyres is known as: (a) Creep of rails (b) Coning of wheels (c) Rail gauge (d) Sleeper density **Ans:Coning of wheels**
3	5	What is the phenomenon of a rail's longitudinal movement with respect to the sleepers called? (a) Coning of wheels (b) Creep of rails (c) Rail gauge (d) Fish plating **Ans:Creep of rails**
3	6	A common cause of creep in rails is: (a) The coning of wheels (b) Improper drainage of the track (c) The rolling action of wheels on the rails (d) The use of anti-creepers **Ans:The rolling action of wheels on the rails**
3	7	Which of the following is a function of ballast in a railway track? (a) To act as a cushion for the rails (b) To drain rainwater away from the track (c) To hold the sleepers in place (d) All of the above **Ans:All of the above**

U.NO	Q NO	QUESTIONS
3	9	Which material is not commonly used as ballast? (a) Crushed granite (b) Sandstone (c) Laterite (d) Crushed limestone **Ans:Crushed limestone**
3	10	What is the primary function of sleepers in a railway track? (a) To hold the rails in place and distribute the load (b) To provide drainage for the track (c) To act as a cushion for the rails (d) To prevent creep **Ans:To hold the rails in place and distribute the load**
3	11	Which of the following is a type of sleeper? (a) Wooden sleeper (b) Concrete sleeper (c) Steel sleeper (d) All of the above **Ans:All of the above**
3	12	What is a key requirement of an ideal sleeper? (a) It should be soft and easily bent (b) It should have a uniform density and a high resistance to decay (c) It should be made of wood only (d) It should be lightweight and non-durable **Ans:It should have a uniform density and a high resistance to decay**
3	13	The number of sleepers per rail length is known as: (a) Sleeper density (b) Rail gauge (c) Creep of rails (d) Rail fastening **Ans:Sleeper density**
3	14	What is the primary purpose of a rail joint? (a) To connect two rails together (b) To provide a strong and rigid connection (c) To allow for thermal expansion and contraction of rails (d) To prevent creep **Ans:To allow for thermal expansion and contraction of rails**
3	15	Which of the following is not a type of rail joint? (a) Square joint (b) Staggered joint (c) Bridge joint (d) Welded joint **Ans:Bridge joint**
3	16	What is the function of a fish plate in a rail joint? (a) To hold the sleepers in place (b) To connect two rails together at a joint (c) To prevent creep (d) To provide drainage for the track **Ans:To connect two rails together at a joint**

U.NO	Q NO	QUESTIONS
3	18	A Spike is a type of rail fastening used to: (a) Hold the rail to the sleeper (b) Connect two rails together (c) Prevent creep (d) Provide a cushion for the rail **Ans:Hold the rail to the sleeper**
3	19	What is the primary function of a chair and key fastening system? (a) To provide a strong and rigid connection between the rail and the sleeper (b) To connect two rails together at a joint (c) To prevent creep (d) To provide a cushion for the rail **Ans:To provide a strong and rigid connection between the rail and the sleeper**
3	20	Bearing plates are used to: (a) Provide a larger bearing area for the rail (b) Prevent creep (c) Provide a cushion for the rail (d) Connect two rails together **Ans:Provide a larger bearing area for the rail**
3	21	Elastic fastenings are used to: (a) Connect two rails together (b) Provide a flexible connection between the rail and the sleeper (c) Prevent creep (d) Provide a rigid connection between the rail and the sleeper **Ans:Provide a flexible connection between the rail and the sleeper**
3	22	Anchors and anti-creepers are used to: (a) Secure the rails to the sleepers (b) Connect two rails together (c) Prevent creep in rails (d) Provide a cushion for the rail **Ans:Prevent creep in rails**
3	23	What is a disadvantage of using sand as a ballast material? (a) It provides good drainage (b) It is easily available (c) It is easily displaced and does not hold sleepers firmly (d) It has a high resistance to wear **Ans:It is easily displaced and does not hold sleepers firmly**
3	24	The coning of wheels is a design feature that helps to: (a) Increase the wheel's weight (b) Center the wheel on the rail and prevent lateral movement (c) Increase the wheel's diameter (d) Decrease the friction between the wheel and the rail **Ans:Center the wheel on the rail and prevent lateral movement**
3	25	Which of the following is not a cause of creep in rails? (a) Improper drainage (b) Improper braking (c) The rolling action of wheels (d) The use of anti-creepers **Ans:The use of anti-creepers**

U.NO	Q NO	QUESTIONS
3	27	What is the purpose of rail fastenings? (a) To connect two rails together (b) To secure the rails to the sleepers (c) To prevent creep in rails (d) All of the above **Ans:To secure the rails to the sleepers**
3	28	Fish plates are primarily used for: (a) Providing a cushion for the rails (b) Connecting two rails at a joint (c) Preventing creep in rails (d) Securing the rails to the sleepers **Ans:Connecting two rails at a joint**
3	29	Which of the following is a type of rail section? (a) Flat-footed rail (b) Double-headed rail (c) Bull-headed rail (d) All of the above **Ans:All of the above**
3	30	What is the main function of ballast? (a) To provide a smooth surface for the rails (b) To transfer the load from the sleepers to the subgrade (c) To prevent the rails from rusting (d) To prevent the sleepers from rotting **Ans:To transfer the load from the sleepers to the subgrade**
3	31	A Square joint in a railway track is one where: (a) The joints on both rails are opposite each other (b) The joints on both rails are staggered (c) The rails are welded together (d) The rails are joined at a 45-degree angle **Ans:The joints on both rails are opposite each other**
3	32	What is a key requirement of an ideal rail? (a) It should be a light section (b) It should be resistant to corrosion and abrasion (c) It should be easily welded (d) It should be made of a single piece **Ans:It should be resistant to corrosion and abrasion**
3	33	What is the purpose of blocks in a railway track? (a) To provide a larger bearing area for the rails (b) To hold the sleepers in place (c) To prevent creep (d) To provide a cushion for the rails **Ans:To provide a larger bearing area for the rails**
3	34	Anchors and anti-creepers are typically used on: (a) Straight sections of a railway track (b) Curved sections of a railway track (c) Both straight and curved sections (d) None of the above **Ans:Both straight and curved sections**

U.NO	Q NO	QUESTIONS
3	36	The coning of wheels helps to: (a) Increase the stress on the outer rail on a curve (b) Reduce the stress on the outer rail on a curve (c) Increase the speed of the train (d) Reduce the life of the rails **Ans:Reduce the stress on the outer rail on a curve**
3	37	What is the function of ballast? (a) To prevent the sleepers from moving (b) To provide a drainage system for the track (c) To act as a cushion for the rails (d) All of the above **Ans:All of the above**
3	38	What is the main disadvantage of a Staggered joint? (a) It is not as strong as a square joint (b) It is more expensive to construct (c) It creates a non-uniform riding surface (d) It is more difficult to maintain **Ans:It creates a non-uniform riding surface**
3	39	Which of the following is a type of sleeper that is not made of wood? (a) Steel sleeper (b) Concrete sleeper (c) Cast iron sleeper (d) All of the above **Ans:All of the above**
3	40	The double-headed rail section is obsolete because: (a) It was too heavy (b) It was difficult to manufacture (c) It was not economical to use (d) It was not as strong as the bull-headed rail **Ans:It was not economical to use**
3	41	A flat-footed rail section is the most common type of rail in use today because: (a) It is the cheapest (b) It is the easiest to manufacture (c) It has a large base and is very stable (d) It is the most lightweight **Ans:It has a large base and is very stable**
3	42	What is the main reason for coning of wheels? (a) To increase the friction between the wheel and the rail (b) To provide uniform wear on the rail and wheel flange (c) To decrease the speed of the train (d) To prevent the wheels from slipping **Ans:To provide uniform wear on the rail and wheel flange**
3	43	The creeping of rails can be prevented by: (a) Using a heavier rail section (b) Using more sleepers (c) Using anchors and anti-creepers (d) All of the above **Ans:Using anchors and anti-creepers**

U.NO	Q NO	QUESTIONS
3	45	What is the function of a bearing plate? (a) To distribute the load from the rail to the sleeper (b) To provide a larger bearing area (c) To prevent the sleeper from decaying (d) To prevent creep **Ans:To distribute the load from the rail to the sleeper**
3	46	A Bull-headed rail section has a head and foot of: (a) Equal size (b) Unequal size (c) The same shape (d) Different shapes **Ans:Unequal size**
3	47	Fish bolts are used to connect the fish plates to the: (a) Rails (b) Sleepers (c) Ballast (d) Subgrade **Ans:Rails**
3	48	The functions of ballast include: (a) Providing drainage (b) Providing elasticity to the track (c) Preventing the growth of weeds (d) All of the above **Ans:All of the above**
3	49	The requirements of ballast include: (a) Being hard and tough (b) Being angular and cubical (c) Being free from dust and impurities (d) All of the above **Ans:All of the above**
3	50	What is a disadvantage of a Staggered joint in a railway track? (a) It is more expensive (b) It does not provide a smooth ride (c) It is more difficult to maintain (d) It is not as strong as a square joint **Ans:It does not provide a smooth ride**
4	1	What is a turnout? (a) A device to slow down trains. (b) A track structure that allows a train to move from one track to another. (c) A type of rail fastening. (d) A signal used to stop trains. **Ans:A track structure that allows a train to move from one track to another.**
4	2	A right-hand turnout allows a train to divert to the: (a) Left-hand side (b) Right-hand side (c) Both left and right side (d) Straight ahead **Ans:Right-hand side**

U.NO	Q NO	QUESTIONS
4	4	A station is defined as a place where: (a) Trains are always at a standstill. (b) Passengers and goods are loaded and unloaded. (c) Only passenger trains stop. (d) Only goods trains stop. **Ans:Passengers and goods are loaded and unloaded.**
4	5	A station where passengers board and alight from trains is called a: (a) Goods platform (b) Passenger platform (c) Mainline platform (d) Branch line platform **Ans:Passenger platform**
4	6	A yard is an area where: (a) Trains are repaired and maintained. (b) Passengers board and alight from trains. (c) Tracks are arranged to store, sort, and dispatch trains and wagons. (d) Signals are located. **Ans:Tracks are arranged to store, sort, and dispatch trains and wagons.**
4	7	Which of the following is not a type of yard? (a) Marshalling yard (b) Goods yard (c) Sorting yard (d) Engine shed **Ans:Engine shed**
4	8	A level crossing is a location where: (a) Two rail tracks cross each other. (b) A rail track crosses a road at the same level. (c) A rail track crosses a river. (d) Two rail tracks cross at different levels. **Ans:A rail track crosses a road at the same level.**
4	9	The primary function of an Engine Shed is for: (a) Storing wagons (b) Repair and maintenance of locomotives (c) Storing ballast (d) Sorting trains **Ans:Repair and maintenance of locomotives**
4	10	What is a Turntable used for? (a) To change the direction of a locomotive (b) To transfer goods from one wagon to another (c) To clean the tracks (d) To stop trains at a station **Ans:To change the direction of a locomotive**
4	11	A Scotch Block is a device used to: (a) Prevent a train from moving forward (b) Divert a train to a different track (c) Stop a train in an emergency (d) Provide a cushion for a train **Ans:Prevent a train from moving forward**

U.NO	Q NO	QUESTIONS
4	13	The fouling mark is a visual marker that indicates: (a) The point beyond which a train is not allowed to proceed (b) The point up to which a train can stop without fouling an adjacent track (c) The location of a signal (d) The location of a crossing **Ans:The point up to which a train can stop without fouling an adjacent track**
4	14	Which of the following is not a type of crossing? (a) Diamond crossing (b) Scissor crossing (c) Gauntlet track (d) Turnout crossing **Ans:Turnout crossing**
4	15	What is the primary object of signalling in railways? (a) To provide information to the driver about the track ahead and ensure safety. (b) To control the speed of the train. (c) To provide a visual signal to passengers. (d) To prevent a train from moving backward. **Ans:To provide information to the driver about the track ahead and ensure safety.**
4	16	Which of the following is a type of signalling based on function? (a) Stop signal (b) Caution signal (c) Permission signal (d) All of the above **Ans:All of the above**
4	17	Interlocking is a system of signalling that: (a) Prevents a train from moving too fast (b) Ensures that conflicting movements cannot occur at the same time (c) Allows a train to move in a desired direction (d) Provides a visual signal to the driver **Ans:Ensures that conflicting movements cannot occur at the same time**
4	18	A left-hand turnout allows a train to divert to the: (a) Left-hand side (b) Right-hand side (c) Both left and right side (d) Straight ahead **Ans:Left-hand side**
4	19	Crossings are essential components of: (a) A railway yard (b) A railway station (c) A railway track (d) All of the above **Ans:All of the above**
4	20	The main function of a passenger platform is to: (a) Store goods (b) Allow passengers to board and alight from trains (c) Provide a waiting area for passengers (d) All of the above **Ans:Allow passengers to board and alight from trains**

U.NO	Q NO	QUESTIONS
4	22	A marshalling yard is a type of yard that is used to: (a) Store locomotives (b) Sort wagons and form new trains (c) Store passenger trains (d) Repair locomotives **Ans:Sort wagons and form new trains**
4	23	What is a Triangle in railways? (a) A triangular piece of land (b) A track layout used to change the direction of a locomotive (c) A type of signal (d) A type of crossing **Ans:A track layout used to change the direction of a locomotive**
4	24	A Traverse is a device used to: (a) Move a locomotive from one track to another in a shed (b) Change the direction of a locomotive (c) Stop a train in an emergency (d) Provide a cushion for a train **Ans:Move a locomotive from one track to another in a shed**
4	25	A Scotch Block is also known as a: (a) Derailer (b) Buffer stop (c) Fouling mark (d) Crossing **Ans:Derailer**
4	26	The Fouling mark is a critical safety feature that prevents: (a) A train from moving too fast (b) Two trains from colliding on adjacent tracks (c) A train from derailing (d) A train from moving backward **Ans:Two trains from colliding on adjacent tracks**
4	27	A Scissors crossing is a type of crossing that allows a train to: (a) Move from one track to another (b) Change its direction (c) Cross two tracks at the same level (d) All of the above **Ans:Cross two tracks at the same level**
4	28	Signalling based on location includes: (a) Station signalling (b) Block signalling (c) All of the above (d) None of the above **Ans:All of the above**
4	29	The principles of interlocking ensure that: (a) The signals and points are operated in a sequence to prevent conflicting movements. (b) The signals are always red. (c) The points are always locked. (d) The trains move in a desired direction. **Ans:The signals and points are operated in a sequence to prevent conflicting movements.**

U.NO	Q NO	QUESTIONS
4	31	A station can be a: (a) Junction station (b) Terminal station (c) Halt station (d) All of the above **Ans:All of the above**
4	32	A yard is an area where triangles and turntables are used for: (a) Repair and maintenance (b) Storage of wagons (c) Changing the direction of locomotives (d) Loading and unloading of goods **Ans:Changing the direction of locomotives**
4	33	The Turntable is typically found in an: (a) Engine shed (b) Goods yard (c) Marshalling yard (d) All of the above **Ans:Engine shed**
4	34	A Traverse is a device that is used to: (a) Move a locomotive from one track to another in a shed (b) Change the direction of a locomotive (c) Stop a train in an emergency (d) Provide a cushion for a train **Ans:Move a locomotive from one track to another in a shed**
4	35	A Scotch Block is a device that is used to: (a) Prevent a train from moving forward (b) Divert a train to a different track (c) Stop a train in an emergency (d) Provide a cushion for a train **Ans:Prevent a train from moving forward**
4	36	The Buffer stop is a critical safety feature that: (a) Prevents a train from moving too fast (b) Absorbs the impact of a train at the end of a track (c) Provides a visual signal to the driver (d) Prevents a train from derailing **Ans:Absorbs the impact of a train at the end of a track**
4	37	What is the main function of interlocking in a railway signalling system? (a) To provide a cushion for the rails (b) To ensure that conflicting movements of trains are not possible (c) To connect the rails together (d) To prevent creep **Ans:To ensure that conflicting movements of trains are not possible**
4	38	Signalling is essential for: (a) Safety of train operation (b) Speed of train operation (c) Both A and B (d) None of the above **Ans:Both A and B**

U.NO	Q NO	QUESTIONS
4	40	The Fouling mark is a visual marker that indicates the: (a) Point beyond which a train is not allowed to proceed (b) Point up to which a train can stop without fouling an adjacent track (c) Location of a signal (d) Location of a crossing **Ans:Point up to which a train can stop without fouling an adjacent track**
4	41	A Diamond crossing is a type of crossing where: (a) Two tracks cross each other at an acute angle. (b) Two tracks cross each other at right angles. (c) Two tracks cross each other at different levels. (d) Two tracks cross each other at the same level. **Ans:Two tracks cross each other at the same level.**
4	42	What is the purpose of a Traverse? (a) To move a locomotive from one track to another in a shed. (b) To change the direction of a locomotive. (c) To stop a train in an emergency. (d) To provide a cushion for a train. **Ans:To move a locomotive from one track to another in a shed.**
4	43	The principles of interlocking are based on the concept of: (a) The use of signals to control train movement (b) The use of points to control train movement (c) The use of signals and points to control train movement (d) The use of signals and points to prevent conflicting movements **Ans:The use of signals and points to prevent conflicting movements**
4	44	A Goods platform is a type of platform that is used for: (a) Loading and unloading of goods (b) Storing goods (c) Providing a waiting area for passengers (d) All of the above **Ans:Loading and unloading of goods**
4	45	A Triangle is a type of track layout that is used to: (a) Change the direction of a locomotive (b) Store wagons (c) Repair locomotives (d) Sort trains **Ans:Change the direction of a locomotive**
4	46	What is the main purpose of a Buffer stop? (a) To prevent trains from moving too fast (b) To absorb the impact of a train at the end of a track (c) To provide a visual signal to the driver (d) To prevent a train from derailing **Ans:To absorb the impact of a train at the end of a track**
4	47	What is the main function of an Engine Shed? (a) To store wagons (b) To repair and maintain locomotives (c) To store ballast (d) To sort trains **Ans:To repair and maintain locomotives**

U.NO	Q NO	QUESTIONS
4	49	The principles of interlocking ensure that: (a) The signals and points are operated in a sequence to prevent conflicting movements. (b) The signals are always red. (c) The points are always locked. (d) The trains move in a desired direction. **Ans:The signals and points are operated in a sequence to prevent conflicting movements.**
4	50	What is a left-hand turnout? (a) A track structure that allows a train to move to the left-hand side. (b) A track structure that allows a train to move to the right-hand side. (c) A track structure that allows a train to move straight ahead. (d) A track structure that allows a train to move in any direction. **Ans:A track structure that allows a train to move to the left-hand side.**
5	1	Which of the following is a component of airport planning? (a) Terminal building (b) Runways (c) Taxiways (d) All of the above **Ans:All of the above**
5	2	The objective of airport planning is to: (a) Provide a safe and efficient air transportation system (b) Increase the number of aircraft (c) Decrease the cost of air travel (d) All of the above **Ans:Provide a safe and efficient air transportation system**
5	3	The orientation of runways is primarily determined by: (a) The length of the runway (b) The prevailing wind direction (c) The type of aircraft (d) The number of passengers **Ans:The prevailing wind direction**
5	4	A wind rose diagram is used for: (a) Determining the length of the runway (b) Determining the orientation of the runway (c) Determining the number of taxiways (d) All of the above **Ans:Determining the orientation of the runway**
5	5	What is a Harbour? (a) A body of water where ships are repaired. (b) A body of water where ships can be safely moored. (c) A body of water where goods are loaded and unloaded. (d) A body of water that is connected to a port. **Ans:A body of water where ships can be safely moored.**
5	6	A Port is a harbour with: (a) Facilities for loading and unloading goods (b) Facilities for repairing ships (c) Facilities for passengers (d) All of the above **Ans:Facilities for loading and unloading goods**

U.NO	Q NO	QUESTIONS
5	8	Docks are a type of harbour facility that: (a) Are used for repairing ships (b) Are used for loading and unloading goods (c) Are used for mooring ships (d) All of the above **Ans:All of the above**
5	9	Waves and Tides are important factors in harbour planning because: (a) They affect the stability of the harbour (b) They affect the depth of the water (c) They affect the safety of ships (d) All of the above **Ans:All of the above**
5	10	What is a Wharf? (a) A structure that is built on the shore for ships to moor alongside. (b) A structure that is built perpendicular to the shore for ships to moor alongside. (c) A structure that is built parallel to the shore for ships to moor alongside. (d) A floating structure for ships to moor alongside. **Ans:A structure that is built on the shore for ships to moor alongside.**
5	11	A Jetty is a coastal structure that is used for: (a) Mooring ships (b) Protecting the harbour from waves (c) Guiding the flow of water (d) All of the above **Ans:Mooring ships**
5	12	A Quay is a coastal structure that is used for: (a) Loading and unloading goods (b) Repairing ships (c) Mooring ships (d) All of the above **Ans:Loading and unloading goods**
5	13	What is a Spring fender? (a) A device used to absorb the impact of a ship (b) A device used to moor a ship (c) A device used to protect the wharf from waves (d) A device used to guide the flow of water **Ans:A device used to absorb the impact of a ship**
5	14	What is a Dolphin? (a) A marine animal (b) A type of harbour (c) A structure used for mooring ships in a harbour (d) A type of coastal structure that protects the wharf from waves **Ans:A structure used for mooring ships in a harbour**
5	15	What is a Floating landing stage? (a) A floating structure for ships to moor alongside. (b) A fixed structure for ships to moor alongside. (c) A floating structure for passengers to board and alight from ships. (d) A fixed structure for passengers to board and alight from ships. **Ans:A floating structure for passengers to board and alight from ships.**

U.NO	Q NO	QUESTIONS
5	17	Airport planning involves: (a) Selecting a suitable site (b) Determining the size and layout of the airport (c) Designing the airport facilities (d) All of the above **Ans:All of the above**
5	18	Runway orientation is determined to ensure that the crosswind component is less than: (a) 10 knots (b) 20 knots (c) 30 knots (d) 40 knots **Ans:20 knots**
5	19	The wind rose diagram shows the: (a) Direction and speed of the wind (b) Direction and intensity of the waves (c) Direction and speed of the tides (d) All of the above **Ans:Direction and speed of the wind**
5	20	What is the main difference between a Harbour and a Port? (a) A Harbour is for ships, while a Port is for goods. (b) A Harbour is a body of water, while a Port is a harbour with facilities for loading and unloading goods. (c) A Harbour is for small ships, while a Port is for large ships. (d) A Harbour is for passengers, while a Port is for goods. **Ans:A Harbour is a body of water, while a Port is a harbour with facilities for loading and unloading goods.**
5	21	A satellite port is typically located: (a) On the coast (b) In a river (c) In a lake (d) All of the above **Ans:On the coast**
5	22	Waves and Tides are coastal phenomena that affect harbour planning by: (a) Changing the water level and creating currents (b) Changing the water's temperature (c) Changing the water's salinity (d) All of the above **Ans:Changing the water level and creating currents**
5	23	A Breakwater is a coastal structure that is used to: (a) Protect the harbour from waves (b) Guide the flow of water (c) Mooring ships (d) All of the above **Ans:Protect the harbour from waves**
5	24	The location of a harbour is influenced by: (a) The depth of the water (b) The presence of a natural shelter (c) The availability of land (d) All of the above **Ans:All of the above**

U.NO	Q NO	QUESTIONS
5	26	What is the main difference between a Pier and a Jetty? (a) A Pier is for mooring, while a Jetty is for loading and unloading. (b) A Pier is for loading and unloading, while a Jetty is for guiding the flow of water. (c) A Pier is for mooring, while a Jetty is for guiding the flow of water. (d) There is no difference. **Ans:A Pier is for mooring, while a Jetty is for guiding the flow of water.**
5	27	Spring fenders are a type of harbour facility that: (a) Are used to absorb the impact of a ship (b) Are used to moor a ship (c) Are used to protect the wharf from waves (d) Are used to guide the flow of water **Ans:Are used to absorb the impact of a ship**
5	28	The layout of a harbour is determined by: (a) The type of ships (b) The type of goods (c) The purpose of the harbour (d) All of the above **Ans:All of the above**
5	29	Floating landing stage is a type of harbour facility that is used for: (a) Loading and unloading goods (b) Mooring ships (c) Passengers to board and alight from ships (d) All of the above **Ans:Passengers to board and alight from ships**
5	30	A Dolphin is a harbour facility that is used for: (a) Mooring ships (b) Protecting the wharf from waves (c) Guiding the flow of water (d) All of the above **Ans:Mooring ships**
5	31	The planning of harbours involves: (a) Selecting a suitable site (b) Determining the size and layout of the harbour (c) Designing the harbour facilities (d) All of the above **Ans:All of the above**
5	32	What is a Breakwater? (a) A structure that is built to protect the harbour from waves. (b) A structure that is built to guide the flow of water. (c) A structure that is built to moor ships. (d) A structure that is built to load and unload goods. **Ans:A structure that is built to protect the harbour from waves.**
5	33	What is a Jetty? (a) A structure that is built to moor ships. (b) A structure that is built to guide the flow of water. (c) A structure that is built to load and unload goods. (d) A structure that is built to protect the harbour from waves. **Ans:A structure that is built to moor ships.**

U.NO	Q NO	QUESTIONS
5	35	What is a Floating landing stage? (a) A floating structure for ships to moor alongside. (b) A fixed structure for ships to moor alongside. (c) A floating structure for passengers to board and alight from ships. (d) A fixed structure for passengers to board and alight from ships. **Ans:A floating structure for passengers to board and alight from ships.**
5	36	The orientation of runways is determined by: (a) The length of the runway (b) The prevailing wind direction (c) The type of aircraft (d) The number of passengers **Ans:The prevailing wind direction**
5	37	What is a Pier? (a) A structure that is built parallel to the shore. (b) A structure that is built perpendicular to the shore. (c) A structure that is built on the shore. (d) All of the above. **Ans:A structure that is built perpendicular to the shore.**
5	38	A Breakwater is a coastal structure that is used to: (a) Protect the harbour from waves (b) Guide the flow of water (c) Mooring ships (d) All of the above **Ans:Protect the harbour from waves**
5	39	What is a Wharf? (a) A structure that is built on the shore for ships to moor alongside. (b) A structure that is built perpendicular to the shore for ships to moor alongside. (c) A structure that is built parallel to the shore for ships to moor alongside. (d) A floating structure for ships to moor alongside. **Ans:A structure that is built parallel to the shore for ships to moor alongside.**
5	40	The planning of harbours involves: (a) Selecting a suitable site (b) Determining the size and layout of the harbour (c) Designing the harbour facilities (d) All of the above **Ans:All of the above**
5	41	A satellite port is typically located: (a) In a different country (b) Far from the main port (c) For military purposes (d) Only for small ships **Ans:Far from the main port**
5	42	What is a Dolphin? (a) A marine animal (b) A type of harbour (c) A structure used for mooring ships in a harbour (d) A type of coastal structure that protects the wharf from waves **Ans:A structure used for mooring ships in a harbour**

U.NO	Q NO	QUESTIONS
5	44	The orientation of runways is determined to ensure that the crosswind component is less than: (a) 10 knots (b) 20 knots (c) 30 knots (d) 40 knots **Ans:20 knots**
5	45	What is a Harbour? (a) A body of water where ships are repaired. (b) A body of water where ships can be safely moored. (c) A body of water where goods are loaded and unloaded. (d) A body of water that is connected to a port. **Ans:A body of water where ships can be safely moored.**
5	46	What is a Port? (a) A harbour with facilities for loading and unloading goods. (b) A harbour with facilities for repairing ships. (c) A harbour with facilities for passengers. (d) A harbour that is only for small ships. **Ans:A harbour with facilities for loading and unloading goods.**
5	47	Docks are a type of harbour facility that: (a) Are used for repairing ships (b) Are used for loading and unloading goods (c) Are used for mooring ships (d) All of the above **Ans:All of the above**
5	48	Waves and Tides are important factors in harbour planning because: (a) They affect the stability of the harbour (b) They affect the depth of the water (c) They affect the safety of ships (d) All of the above **Ans:All of the above**
5	49	The location of a harbour is influenced by: (a) The depth of the water (b) The presence of a natural shelter (c) The availability of land (d) All of the above **Ans:All of the above**
5	50	A pier is a coastal structure that is built: (a) Parallel to the shore (b) Perpendicular to the shore (c) On the shore (d) All of the above **Ans:Perpendicular to the shore**

PART B/C	UNIT NO	Q.NO	Question
B	1	1	What are the main advantages of road transportation compared to other modes?
B	1	2	Explain the historical context of road development in India before the modern era.
B	1	3	What is the primary objective of a highway pavement?
B	1	4	Differentiate between the two main types of highway pavements.
B	1	5	List two key differences between flexible and rigid pavements in terms of load distribution.
B	1	6	State one advantage and one disadvantage of a flexible pavement.
B	1	7	Define "Right of Way" (ROW) in the context of road design.
B	1	8	What is the purpose of "Road Camber" and how is it achieved?
B	1	9	Why are "Sight Distances" critical for road safety?
B	1	10	What is the difference between a "Road Gradient" and a "Road Camber"?
B	1	11	State two reasons for widening a pavement on a horizontal curve.
B	1	12	How does the widening of a pavement on a horizontal curve contribute to road safety?
B	1	13	Name two types of flexible pavements based on their construction method.
B	1	14	What are the two main types of rigid pavements?
B	1	15	What is the relationship between the "Width of formation" and the number of traffic lanes?
B	2	1	What are the key principles for an ideal highway alignment?
B	2	2	Name two factors that affect highway alignment.
B	2	3	What is the primary function of a bulldozer in highway construction?
B	2	4	Differentiate between the functions of a grader and a scraper.
B	2	5	What is the main purpose of compaction equipment in road construction?

B	2	6	Briefly explain the purpose of asphalt recycling equipment.
B	2	7	Describe the main components of a Water Bound Macadam (WBM) road.
B	2	8	What is a major disadvantage of a cement concrete road?
B	2	9	State one advantage and one disadvantage of bituminous roads.
B	2	10	What is the primary purpose of a "surface dressing" on a bituminous road?
B	2	11	List two types of surface dressings for bituminous roads.
B	2	12	How does a cement concrete road's construction differ fundamentally from a bituminous road's construction?
B	2	13	What is the significance of "excavating equipment" in modern road construction?
B	2	14	What is the difference between a static roller and a vibratory roller?
B	2	15	Why are WBM roads not commonly used for high-traffic highways today?
B	3	1	What is the main purpose of the classification of Indian Railways?
B	3	2	Define "Rail Gauges" and mention the most common one in India.
B	3	3	What is "Coning of Wheels"?
B	3	4	Define "Creep of rails" and its primary cause.
B	3	5	State two functions of ballast in railway tracks.
B	3	6	What are the main requirements of an ideal ballast?
B	3	7	Name two materials commonly used as ballast in railway construction.
B	3	8	Why is sand not considered a good material for ballast?
B	3	9	What is the primary function of sleepers?
B	3	10	What is "Sleeper Density"?

B	3	11	Name two types of rail joints.
B	3	12	What is the purpose of "Fish Plates" in rail joints?
B	3	13	What are "elastic fastenings" and why are they preferred over traditional spikes?
B	3	14	What is the function of "Anchors" and "Anti-creepers"?
B	3	15	What is the purpose of "Bearing plates"?
B	4	1	What is a railway station and what is its primary function?
B	4	2	Differentiate between a passenger and a goods platform.
B	4	3	Define a "railway yard" and state its main purpose.
B	4	4	What is a "Level Crossing"?
B	4	5	What is the purpose of a "Scotch Block"?
B	4	6	What is the function of a "Buffer Stop"?
B	4	7	Define "Points and Crossings" in railway terminology.
B	4	8	Differentiate between a right-hand and a left-hand turnout.
B	4	9	What is the primary objective of railway signaling?
B	4	10	Name two types of signaling based on their location.
B	4	11	What is the principle of "interlocking"?
B	4	12	Name a type of signal based on its function.
B	4	13	What is a "Fouling Mark" and why is it important?
B	4	14	What is the difference between a "Turntable" and a "Traverse"?
B	4	15	What is the purpose of a "crossing" in a turnout?
B	5	1	What are the primary objectives of airport planning?

B	5	2	What are the main components of an airport?
B	5	3	What is the purpose of the ICAO stipulations for runway orientation?
B	5	4	What are the two main types of runway correction factors?
B	5	5	Define a "wind rose diagram."
B	5	6	How is a wind rose diagram used in airport planning?
B	5	7	Differentiate between a "harbour" and a "port."
B	5	8	What is the primary purpose of "docks" in a port?
B	5	9	Name two essential requirements for a good harbour.
B	5	10	What are the two main classifications of harbours?
B	5	11	What is the difference between a "pier" and a "wharf"?
B	5	12	What is the purpose of a "breakwater"?
B	5	13	Define a "floating landing stage."
B	5	14	What is the function of a "Dolphin" in coastal structures?
B	5	15	What is a "spring fender" and why is it used?
C	1	1	Describe the importance of road transportation in the socio-economic development of India.
C	1	2	Explain the components and working principle of a flexible pavement.
C	1	3	Discuss the factors to be considered when choosing between a flexible and a rigid pavement for a new highway project.
C	1	4	A road has a camber of 2% and a width of 7.5 meters. Calculate the difference in height between the crown and the edge of the pavement.
C	1	5	A road has a total right of way of 30 meters. If the road formation width is 15 meters, what is the available land for future expansion?
C	1	6	A vehicle is traveling at 80 km/h on a road with a stopping sight distance of 150 meters. Calculate the required stopping distance.

C	1	7	Differentiate between horizontal and vertical curves in road design and explain the purpose of each.
C	1	8	Calculate the extra widening required for a two-lane road with a design speed of 60 km/h on a horizontal curve of radius 150 meters. Assume the wheel base is 6 meters.
C	1	9	A vehicle with a wheelbase of 6 meters is turning on a horizontal curve with a radius of 120 meters. Calculate the mechanical widening required for this curve.
C	1	10	A rigid pavement is designed for a design life of 30 years, while a flexible pavement is designed for 15 years. Explain why there is a difference in their design life.
C	2	1	Describe the process of conducting a preliminary survey for highway alignment.
C	2	2	Explain the working of a motor grader in road construction and its key applications.
C	2	3	A road section requires compaction to a specified density. Explain the role of a compaction equipment and the factors influencing the choice of equipment.
C	2	4	With a neat sketch, describe the typical cross-section of a Water Bound Macadam (WBM) road.
C	2	5	A road is to be built in an area with heavy rainfall. Recommend a suitable road type and justify your choice with its advantages.
C	2	6	With a sketch, describe the typical cross-section of a bituminous road.
C	2	7	Explain the process of constructing a flexible bituminous road, highlighting the role of each layer.
C	2	8	Describe the different types of surface dressings and their suitability for different traffic conditions.
C	2	9	A bituminous road is showing signs of distress and cracking. Suggest a suitable surface dressing method to rectify the issue and explain the process.
C	2	10	What is the significance of 'Excavating Equipments' in modern road construction? Explain with an example of a piece of equipment and its function.
C	3	1	Describe the main classifications of Indian Railways based on their traffic density and gauge.
C	3	2	Explain the causes of creep in rails and describe two methods of its prevention.
C	3	3	With a neat sketch, illustrate the function of ballast in a railway track.

C	3	4	A railway section requires 50 cubic meters of ballast. If the density of the crushed stone is 1.6 tonnes/m3, what is the weight of the required ballast?
C	3	5	Describe the advantages and disadvantages of concrete sleepers compared to wooden sleepers.
C	3	6	With a sketch, describe the components of a suspended rail joint.
C	3	7	Calculate the number of sleepers required for a 13-meter rail length with a sleeper density of (n+5).
C	3	8	Explain the function of each component in a rail fastening system with a sketch.
C	3	9	Why are "elastic fastenings" becoming more popular in modern railway construction?
C	3	10	An ideal rail section must satisfy several requirements. Describe any three of these requirements.
C	4	1	Describe the different types of railway stations based on their operational functions.
C	4	2	Explain the difference between a "Shunting Yard" and a "Marshalling Yard."
C	4	3	Explain the purpose of an "Engine Shed" and a "Triangle" in railway operations.
C	4	4	With a neat sketch, describe the main components of a simple turnout.
C	4	5	Why is it crucial to have proper "Points and Crossings" in railway tracks?
C	4	6	Describe the various types of signals used in a railway system based on their function, giving an example for each.
C	4	7	Why is "signaling" a critical aspect of railway safety?
C	4	8	Explain the concept of "interlocking" and how it contributes to railway safety.
C	4	9	Describe the working principle of a simple mechanical interlocking system.
C	4	10	Differentiate between a "Terminal Station" and a "Junction Station." Give an example for each.
C	5	1	Describe the layout characteristics of an airport.
C	5	2	Explain the significance of the "wind rose diagram" in determining the number and orientation of runways for an airport.

C	5	3	Explain the different components of a wind rose diagram with a sketch.
C	5	4	Describe the effects of waves and tides on harbour planning and how they are accounted for.
C	5	5	Describe the key factors to be considered when selecting a site for a new harbour.
C	5	6	With a sketch, illustrate a typical "breakwater" and explain its working principle.
C	5	7	Differentiate between a "jetty" and a "quay" and their respective uses.
C	5	8	Explain the purpose of each component in a coastal structure like a wharf.
C	5	9	Describe the requirements and facilities of a "satellite port."
C	5	10	Describe the key facilities and layout of a modern port.