Course/Branch : B.E/Civil	**Year / Semester** :IV/VII	Format No.	NAC/TLP-07a.13
Subject Code :EN8591	**Subject Name** : Municipal Solid Waste Management	Rev. No.	02
Unit No : III	**Unit Name** : Collection And Transfer Of Wastes	Date	30.09.2020

OBJECTIVE TYPE QUESTION BANK

S.No.	Objective Questions (MCQ /True or False / Fill up with Choices)	BTL
	Unit-III / Collection And Transfer Of Wastes Methods of Residential and commercial waste collection – Collection vehicles – Manpower – Collection routes – Analysis of waste collection systems; Transfer stations –location, operation and maintenance; options under Indian conditions – Field problems- solving.	
1.	What is the most expensive component of solid waste handling? **a) Collection** b) Storage c) Treatment d) Separation	L2
2.	There is a high demand for compost in a market a) True **b) False**	L1
3.	Metals are produced as waste in industries like….. (a) Skiing (b) Mining **(c) Electroplating** (d) Digging	L1
4.	Tracking system should be dynamic. **a) True** b) False	L1
5.	Tracking system can be improved by modifying _____ system. a) Analyzing b) Chemical component **c) Waste minimization** d) DOT	L3
6.	Which of the following can be used as a tracking tool? a) Chemical analysis b) HWRT c) NPL **d) Barcoding system**	L1
7.	Tracking system has to be done to prevent _____ **a) Illegal waste dumping** b) Waste minimisation c) Waste generation d) Waste analysis	L1
8.	A WAP(Waste Analysis Plan) reduces _____ **a) Improper handling** b) Import c) Export d) Analysis	L3
9.	Tracking of the waste is done to prevent _____	L3

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	a) Export b) Import **c) Midnight dumping** d) Traffic	
10.	Tracking of the waste is done to prevent _____ a) Import **b) economic routing** **c)Efficient utilization of vehicles** d) Traffic	L3
11.	Why is manifest system necessary? **a) To monitor journey of waste** b) To track waste c) To analyse chemicals d) To export	L2
12.	How many pounds of food and food-soiled paper does the average King County household throw away each week? a. 5 **b. 9** c.15 d.20	L2
13.	What are the two largest components of a typical school's garbage? a. Bottle caps **b. Paper** **c. Food Scraps** d. Apple cores	L2
14.	Where does your garbage go when the waste hauler collects it? a. It goes to the ocean, where it's dumped into the ocean. **b. It goes to a garbage transfer station, then to the Cedar Hills Regional Landfill** c. It goes to San Juan Island to be buried.	L2
15.	Which ONE of the following items DOES belong in the blue recycling container? a. Food scraps such as a banana peel **b. A plastic bottle** c. A straw d. A bottle cap	L1
16.	The average composition of Municipal solid waste is: **a) 41% organic, 40% inert & 19% recyclable** b) 20% organic, 60% inert & 20% recyclable c) 30% organic, 20% inert & 50% recyclable d) 19% organic, 41% inert & 40% recyclable	L1
17.	Bio-medical waste can be effectively managed by the thermal process. **a) True** b) False	L1

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18.	The WHO has classified the bio-medical waste into _____ categories. a) 5 **b) 4** c) 3 d) 2	L2
19.	What are the methods in which energy can be recovered from Waste to energy (1) Heat (2) Electricity (3) Co-generation a. By (1) and (2) b. By (2) and (3) **c. By (1), (2) and (3)** d. None of the above	L2
20.	The specific gravity of a material is the ratio of density of water to its own density a. True **b. False**	L1
21.	What is the purpose of transfer station? **a) To minimize costs when waste is hauled long distances** b) To transform the waste into useful energy c) To measure waste amount d) All of the above	L2
22.	Which of the following is needed to b considered for the design of waste collection systems a) Determining number of vehicles b) Determining vehicles time on the route c) Routing **d) All of the above**	L1
23.	Which of the following vehicle is generally usd as transfer vehicle for solid waste? a) Trucks b) Trailers c) Rail cars **d) All of the above**	L1
24.	Which of the following method is used to calculate feasibility of the transfer station? a) Mass balance **b) Break even balance** c) Energy Balance d) None of the above	L1
25.	Determine the number of 7.5m3 containers required per week for waste collection after compaction, for a colony with 200 houses, 3 people per house. The generation rate is 0.6 kg/ person/day. The compacted specific weight is 250kg/m3? a) 3 b) 5 **c) 2** d) 11	L5
26.	Determine the number of 7.84m3 containers required per two week in a suburb after	L5

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	compaction, for a colony with 700 units, 5 people per unit. The generation rate is 0.6 Kg/person/day. The compacted specific weight is 250kg/m3 ? a) 9 b) 10 c) 12 **d) 15**	
27.	Transfer stations are designed to a) Minimize haul distance **b) Minimize cost** c) Minimize time d) None	L1
28.	Linear programming model is used for a) **Vehicle routing** b) Minimize haul distance c) Vehicle selection	L1
29.	The point where the plots of direct haul and transfer operation costs intersect is called a) **Breakeven point** b) Zero point c) Direct haul point d) Feasibility point	L
30.	Curbside pick-up facility is provided for **a) Single residences** b) Medium rise apartments c) High rise apartments d) Institutional	L2
31.	Right turns could be preferred in designing the pick-up routes in India a) True **b) False**	L3
32.	Quantity of waste generated is estimated by weight-volume analysis **a) True** b) False	L1
33.	While designing the pick-up route for Indian cities, which of the following points is not valid. a) Loading time b) Volume per truck c) No U turn **d) Right turn are preferred**	L3

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34.	The following average speeds were obtained for various round trip distances to a disposal site. Find the haul- speed constant 'a' and 'b'. Round-trip Distance (x), km/trip | Average haul speed (y),km/h | Total time (h= x/y), h 2 | 17 | 0.12 5 | 28 | 0.18 8 | 32 | 0.25 12 | 36 | 0.33 16 | 40 | 0.40 20 | 42 | 0.48 25 | 45 | 0.56 h= a + bx h= total haul time, h/ trip a= empirical haul time constant, h/trip b= empirical haul time constant, h/km x= average round trip haul distance, km/trip The basic haul- speed equation is, $y=\frac{x}{a+bx}$ **a) a= 0.080 h/trip; b=0.020 h/km** b) a= 0.80 h/trip; b=0.20 h/km c) a= 0.90 h/trip; b=0.30 h/km d) a= 0.980 h/trip; b=0.20 h/km	L6
35.	After finding value of 'a' and 'b' in the question number 34, find the round- trip haul time (h) for a site that is located 11 km away. **a) 0.52 h/trip.** b) 0.42 h/trip. c) 0.62 h/trip. d) 0.55 h/trip.	L6
36.	Solid waste from a new industrial park is to be collected in large containers, some of which will be used in conjunction with stationary compactors. Based on traffic at similar parks, it is estimated that the average time to drive from the garage to the first container and from the last container to garage each day will be (t_1) 15 and (t_2) = 20 min, respectively. If the average time required to drive between containers is 6 min and the one way distance to the disposal site is 15.5 km for which speed limit is 55kmph. Assume 8-hour workday.Determine the pickup time per trip (in hrs/trip).Given: S=0.133; a=0.016; b=0.011; Assume off route factor (W) as 0.15. Pick up time per trip for hauled container system, h/trip | P_{hcs}= pc+uc+dbc pc+uc | 0.4 hour/trip Time per trip for hauled container system, h/trip | $T_{hcs}=P_{hcs}+s+a+bx$ Number of trips per day | $N_d=[(1-W)H-(t_1+t_2)]/(P_{hcs}+s+a+bx)$ **a) 0.5** b) 0.4 c) 0.6 d) 0.7	L6
37.	Set out crew carries full containers from resident storage location to curb/ alley before collection vehicle arrives. **a) True** b) False	L1

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38.	Set-back crew return the container to storage area. a) **True** b) False	L1
39.	Collection Frequency of wet waste **: <u>everyday/ once in 2 days</u>** Collection Frequency of dry waste **: <u>once in a week</u>** communal/ commercial waste **: <u>daily</u>** Market waste :– **minimum 2 to 3 times a day**	L1
40.	Stationary Container System (SCS) is used where a) Container is hauled to disposal sites, emptied, and returned to original location or some other location b) Suitable for areas with higher waste. generation c) **the container used to store waste remain at the point of generation; except when moved to curb or other location to be emptied.**	L1